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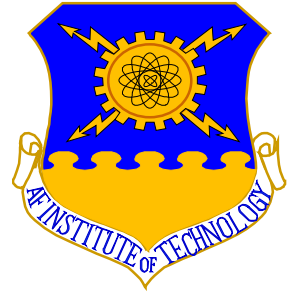Follow this and additional works at: https://scholar.afit.edu/docs

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Air Force Institute of Technology
Research Report 2007

Period of Report: 1 October 2006 to 30 September 2007

Graduate School of Engineering and Management

**GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT
AIR FORCE INSTITUTE OF TECHNOLOGY
WRIGHT-PATTERSON AIR FORCE BASE, OHIO**

AIR FORCE INSTITUTE OF TECHNOLOGY
Wright-Patterson Air Force Base, Ohio

Air Force Institute of Technology
Research Report 2007
Foreword

Research is the cornerstone of the dramatic advances in air, space, and cyber technology that underpin the nation's ability to meet the international and homeland security challenges of tomorrow. Research is also an integral part of graduate education, providing graduates with in-depth knowledge, critical thinking skills, and problem solving abilities. At the Air Force Institute of Technology (AFIT), our faculty and students engage in research with the goal of sustaining the technological supremacy of the United States Air Force (USAF) and the Department of Defense (DoD).

AFIT maintains active partnerships with our Air Force's organizations and operational communities as well as the DoD and other federal agencies to maximize the contributions of our research programs to national needs. Our faculty and students also engage in collaborations with researchers at universities throughout the nation to advance the state-of-the-art in a variety of disciplines. AFIT cooperates with commercial enterprises to ensure timely transfer of new technology to US industry through Cooperative Research and Development Agreements (CRADAs) whenever appropriate.

This Research Report is prepared annually to report on the significant contributions of this institution; to solicit continued involvement and support from our Air Force, DoD, and other federal partners; and to encourage new sponsors to participate in AFIT's research programs. AFIT welcomes new opportunities to engage in research projects that are of mutual interest to our customers, faculty, and students.

Heidi R. Ries, Ph.D.
Dean for Research
Graduate School of Engineering
  and Management

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1. INTRODUCTION

1.1. OVERVIEW

This Research Report presents the FY07 research statistics and contributions of the Graduate School of Engineering and Management (EN) at AFIT. AFIT research interests and faculty expertise cover a broad spectrum of technical areas related to USAF needs, as reflected by the range of topics addressed in the faculty and student publications listed in this report. In most cases, the research work reported herein is directly sponsored by one or more USAF, or DoD agencies.

AFIT welcomes the opportunity to conduct research on additional topics of interest to the USAF, DoD, and other federal organizations when adequate manpower and financial resources are available and/or provided by a sponsor. In addition, AFIT provides research collaboration and technology transfer benefits to the public through CRADAs. Interested individuals may discuss ideas for new research collaborations, potential CRADAs, or research proposals with individual faculty using the contact information in Appendix A or via the AFIT Yellow Pages at www.afit.edu

Additional information on the research programs at AFIT may also be found on the research web home page at http://www.afit.edu/en/enr/. The Office of Research and Sponsored Programs, Graduate School of Engineering and Management can be reached at 937-255-3633, (DSN 785-3633) or by email: research@afit.edu. The primary points of contact are Dr. Michael J. Caylor, Director of Sponsored Programs, 937-255-3636 x7104, DSN 785-3636 x7104 and Dr. Heidi R. Ries, Dean for Research, 937-255-3636 x4544, DSN 785-3636 x4544.

1.2. THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT RESEARCH COLLABORATION

As detailed in the 2007-2008 catalog at http://www.afit.edu/en/ener/catalog.cfm, AFIT offers Master's and Doctoral programs in a variety of disciplines through six departments: the Department of Mathematics and Statistics (ENC), the Department of Electrical and Computer Engineering (ENG), the Department of Engineering Physics (ENP), the Department of Operational Sciences (ENS), the Department of Systems and Engineering Management (ENV), and the Department of Aeronautics and Astronautics (ENY). In all of these disciplines, research is an integral component of graduate education, developing an individual student's skills and providing new knowledge of interest to many.

A brief listing of each department's research areas of emphasis appears below. Please contact the faculty, relevant departmental office, or the Office of Research and Sponsored Programs for further information, or visit the Graduate School of Engineering and Management departmental websites at www.afit.edu

The **Department of Aeronautics and Astronautics** invites research topic proposals and collaborative suggestions for the Aeronautical, and Astronautical engineering programs. The following list highlights the Department's research specialties:

Aeroelasticity and Design Optimization	**Materials and Structural Analysis**
Aerospace Structures and Materials	**Mechanics of Materials and Structures**
Analysis of Computer Turbines	**Micro Air Vehicles**
Autonomous Control of UAVs	**Non-Linear Dynamics**
Computational Fluid Dynamics	**Reentry Dynamics**
Control of High Performance Aircraft	**Rocket & Space Propulsion**
Dynamic Flight Simulation	**Rotocraft Aeromechanics**
Experimental Fluid Dynamics	**Satellite Cluster Dynamics, Navigation,**
High Velocity Impact	**& Control**
Impact Dynamics	**Spacecraft Dynamics & Control**
Inflatable Space Structures	

The **Department of Electrical and Computer Engineering** invites research topic proposals and collaborative suggestions for the Electrical Engineering, Computer Engineering, and Computer Science programs, as well as the **Advanced Navigation Technology Center (ANT)** and the **Center for Cyberspace Research (CCR)**. The following list highlights the Department's research specialties:

Advanced Security-focused Computing Architectures	Information Visualization
Artificial Intelligence	Information Engineering, Exploitation, and Dissemination
Automatic Target Recognition	Micro and Nanosystems
Communications/Radar	Parallel and Distributed Processing
Computer Communication Networks	Signal and Image Processing
Cyber Operations and Security	Software Engineering
Electromagnetics/Low Observables	Wireless Networks
Evolutionary Algorithms	Wireless Sensor Networks
Guidance, Navigation and Control	

The **Department of Engineering Physics** invites research topic proposals and collaborative suggestions for the Applied Physics, Nuclear Engineering, Electro-Optics (jointly operated with the Department of Electrical and Computer Engineering), and Materials Science (jointly operated with the Department of Aeronautics and Astronautics) programs, as well as the **Center for Directed Energy (CDE)** and the **Center for MASINT Studies and Research (CMSR)**. The following list highlights the Department's research specialties within these programs:

Combating Weapons of Mass Destruction	Lasers and Electro-Optics
Computational Physics	Nuclear Weapons and Effects
Counterproliferation	Remote Sensing and Signature Analysis
Directed Energy Weapons	Space Weather
Electronic and Photonic Materials	

The **Department of Mathematics and Statistics** invites research topic proposals and collaborative suggestions for the following research specialties:

Acoustic Wave Scattering	Information Fusion
Category Theory	Multiscale Methods
Combinatorial Optimization	Nonlinear Optimization
Design of Experiments	Numerical Analysis
Electromagnetics	Partial Differential Equations
Gait Recognition	Reliability
Image Analysis	Wavelets

The **Department of Operational Sciences** invites research topic proposals and collaborative suggestions within the areas of Operations Research, Logistics Management programs, as well as the **Center for Operational Analysis (COA)**. The following list highlights the Department's research specialties:

Applied/Multivariate Statistics	Operational Modeling and Simulation
Capacity and Queue Modeling	Operational Problems and Heuristic Modeling
Decision and Risk Analysis	
Information Operations/Information Warfare	Sensor/Classifier Fusion
	Space and International Logistics
Inventory Management/Theory	Space Logistics Modeling
Math Programming and Optimization	Stochastic Systems Analysis
Network Modeling	Supply Chain Management

The **Department of Systems and Engineering Management** is seeking research topic proposals and collaborative suggestions for the Cost Analysis, Engineering Management, Environmental Engineering and Science, Information Resource Management, Research and Development Management programs, as well as the **Center for Systems Engineering (CSE)**. The following list highlights the Department's research specialties:

Applied Environmental Sciences
Cost Analysis
Crisis Project Management
Crisis Engineering Services Management
Crisis Knowledge Management
Defense Product Development
Economics and Finance
Facility and Infrastructure Management
Information Assurance and Security
Knowledge and Strategic Information Management
Leadership and Management

Multidisciplinary Distributed Cognition
Nanotoxicity and Pharmacokinetic Modeling
Operational Information Integration
Organizational Change and Theory
Organizational Control Center Performance
Sustainable Development
System Dynamics Modeling
Systems Engineering
Technology Development and Application

Another avenue for educational and research collaboration with the Graduate School of Engineering and Management is through association with one or more of **AFIT's Research Centers**. A brief listing of each Center's educational or research areas of emphasis appears below. Please contact the Centers directly (see Ch. 6), or contact the Office of Research and Sponsored Programs for further information (937-255-3633, DSN 785-3633).

The **Advanced Navigation Technology (ANT) Center** is a forward-looking navigation research center seeking to identify and solve tomorrow's most challenging navigation problems by focusing on three research thrusts: multiple-vehicle autonomous navigation and control, non-GPS precision navigation, and robust GPS navigation.

The **Center for Directed Energy (CDE)** is dedicated to Air Force and DoD research in high energy lasers (HEL), high power microwaves (HPM), and their enabling technologies. The Center is an advocate for transitioning these systems to the battlefield through vigorous scientific and engineering research, graduate education programs and diverse consulting activities.

The **Center for Cyberspace Research (CCR)** is one of the National Security Agency (NSA) and Department of Homeland Security's designated Centers of Academic Excellence in Information Assurance Education (CAE/IAE). CCR is also a National Science Foundation Cyber Corp institution. CCR's objectives are to provide cutting-edge offensive and defensive research solutions for cyberspace and cyber security applications and produce a cadre of technically educated leaders for the DoD and federal Government.

The **Center for MASINT Studies and Research (CMSR**) is focused on Air Force and Department of Defense Measurement and Signature Intelligence (MASINT) scientific, technical and operational activities through graduate research programs. CMSR is a national resource for educating a new generation of MASINT professionals.

The **Center for Operational Analysis (COA)** directs defense relevant research and timely technology transfer in providing approaches and solutions to current and future operational and resource issues while developing critical and forward thinking analysts, managers, and leaders.

The **Center for Systems Engineering** (**CSE**) is established to promote education, training, research, and consultation throughout the DoD in the best practices of Systems Engineering, Systems Architecture, Evolutionary Acquisition, Risk Management, and Total Life Cycle Project Management.

2. SPECIAL RECOGNITIONS

2.1. FACULTY FELLOWS

Badiru, Adedeji B., Professor of Systems and Engineering Management, Fellow of the Institute of Industrial Engineers, Fellow of the Nigerian Academy of Engineering.

Bridgman, Charles J., Professor Emeritus of Nuclear Engineering, Department of Engineering Physics, Fellow of the American Nuclear Society.

Elrod, William E., Professor Emeritus of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of American Society of Mechanical Engineers International.

Franke, Milton E., Professor Emeritus of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers.

Houpis, Constantine H., Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Mall, Shankar, Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

Maybeck, Peter S., Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Pachter, Meir, Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Palazotto, Anthony N., Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Civil Engineers.

Perram, Glen P., Professor of Physics, Department of Engineering Physics, Fellow of the Directed Energy Professional Society.

Ruggles-Wrenn, Marina B., Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

Soni, Som R., Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society for Composites.

Thomas, M. U., Dean, Graduate School of Engineering and Management, Fellow of the Institute of Industrial Engineers, Fellow of the American Society of Quality, Fellow of the Institute for Operations Research and Management Sciences.

Torvik, Peter J., Professor Emeritus of Aerospace Engineering and Engineering Mechanics, Department of Aeronautics and Astronautics, Fellow of the American Institute of Aeronautics and Astronautics, Life Fellow of American Society of Mechanical Engineers International, Fellow of the Ohio Academy of Science.

2.2. PROFESSIONAL CERTIFICATIONS

Anthenien, Ralph A., Professional Engineer, State of Ohio

Badiru, Adedeji B., Leadership Certificate, University of Tennessee Leadership Institute

Badiru, Adedeji B., Professional Engineer, State of Oklahoma

Baldwin, Rusty O., Professional Engineer, State of Ohio

Baldwin, Rusty O., Certified Information Systems Security Professional (CISSP)

Barelka, Alex J., Certified Project Management Professional (PMP)

Cunningham, William A. III, Certified Transportation and Logistics (CTL) by the American Society of Transportation and Logistics (AST&L)

Goltz, Mark N., Hazardous Waste Management Specialty Certification as a Diplomate Environmental Engineer, American Academy of Environmental Engineers

Goltz, Mark N., Professional Engineer, State of Minnesota

Goltz, Mark N., Board Certified Environmental Engineer, American Academy of Environmental Engineers

Greendyke, Robert B., Professional Engineer, State of Texas

Grimaila, Michael R., Certified Information Systems Security Professional (CISSP), International Information Systems Security Certification Consortium ((ISC)²)

Grimaila, Michael R., INFOSEC Assessment Methodology (IAM) and INFOSEC Evaluation Methodology (IEM) Certification, National Security Agency INFOSEC Assurance Training and Rating Program (NSA/IATRP)

Grimaila, Michael R., Gold Standard, Level 4, Security Essentials Certification (GSEC) from the SysAdmin, Audit, Network, Security Institute's (SANS) Global Information Assurance Certification (GIAC) Program

Grimaila, Michael R., Certified Information Security Manager (CISM), Information Systems Audit and Control Association (ISACA)

Heil, Michael L., Professional Engineer, State of Colorado

Houpis, Constantine H., Professional Engineer, State of Ohio

Kunz, Donald L., Professional Engineer, Commonwealth of Virginia

Mattioda, Daniel D., FAA Airframe and Powerplant License

Mattioda, Daniel D., FCC Ground Radio Operators License with Radar Endorsement

Mullins, Barry E., Professional Engineer, State of Colorado

Palazotto, Anthony N., Professional Engineer, State of Ohio

Perram, Glen P., Professional Engineer, State of Ohio

Quinn, Dennis W., Professional Engineer, State of Ohio

Reeder, Mark F., Professional Engineer, State of Ohio

Slagley, Jeremy,   Certified Industrial Hygienist, American Board of Industrial Hygienists

Thomas, M. U., Professional Engineer, State of Michigan

Turner, J. M., Certified Enterprise Architect, Federal Enterprise Architecture Certification Institute

2.3. RESEARCH AWARDS

2.3.1. FACULTY

BALDWIN, RUSTY O.,

General Bernard A. Schriever Award for contributions to advancing aerospace power, technology, and doctrine, 2006.

CANFIELD, ROBERT A.,

American Institute of Aeronautics and Astronautics Sustained Service Award, 2007.

Rasmussen, C., and Canfield, R. A., "The Least Squares Finite Element Method Applied to Fluid-Structure Interaction Problems," 2nd Annual ASME Dayton Engineering Sciences Symposium, Dayton, Ohio, 30 October 2006. Best Presentation Award.

COOPER, MARTHA C.,

Social Science Research Network (SSRN) top ten downloads of working paper, "The Intellectual Structure of Supply chain Management: A Bibliometric Approach," Francois Charvet, Martha Cooper, and John Gardner, May and June, 2007.

"Organizational Commitment and Governance for Supply Chain Success," International Journal of Physical Distribution and Logistics Management. The article was highly commended in the 2007 Emerald Literati Network Awards for Excellence – Outstanding Paper Competition.

Bernard J. La Londe Best Paper in the Journal of Business Logistics, 2007.

DECKRO, RICHARD F.,

MORS Best Working Group Paper, WG 8, Information Operations/Information Warfare, 2007.

GOLTZ, MARK N.,

Affiliate Societies Council of Dayton Outstanding Engineers and Scientists Education Award, 2007.

HALL, SHANE N., Maj,

Young Researcher, Institute for Operations Research and the Management Sciences, 2007.

HAVRILLA, MICHAEL J.,

Best student paper award, 2nd place, to J. Stewart at the Antenna Measurements Technique Association Conference, Oct 2006.

KHAROUFEH, JEFFREY P.,

Best Paper Award in Operations Research Track, Industrial Engineering Research Conference, 2007.

Best in Working Group: Space Topics, Satellite payloads for inclusion on a satellite bus. Presented at the Air Force Operations Research Symposium, Albuquerque, NM, October 17-20, 2006.

Nominated for a Presidential Early Career Award in Science and Engineering (PECASE), Air Force Office of Scientific Research, 2006.

KURKOWSKI, STUART H., Maj,

Nominated to the HKN Honor Society, November 2006.

MARTIN, RICHARD K.,

HKN (Eta Kappa Nu, Delta Xi Chapter) Instructor of the Year, March 2007.

MOORE, JAMES T.,

"Solving the Theater Distribution Problem with Tabu Search", Military Operations Research Society Symposium, Annapolis, MD, 12-14 Jun 2007 selected as best paper in Composite Group D and nominated for Barchi Prize.

OGDEN, JEFFREY A.,

"Organizational Commitment and Governance for Supply Chain Success," International Journal of Physical Distribution and Logistics Management. The article was highly commended in the 2007 Emerald Literati Network Awards for Excellence – Outstanding Paper Competition.

PALAZOTTO, ANTHONY N.,

Larson, R., and Palazotto, A., "Analysis of Wave Propagation in Functionally Graded Circular Plates Under Impact Loading", Best Paper Award presented at the 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

PERRY, MARCUS B.,

MORS Best Working Group Paper, WG 8, Information Operations/Information Warfare, 2007.

RAINES, RICHARD A.,

Colonel Charles A. Stone Award, Wright Memorial Chapter Air Force Association for personal leadership in the advancement of the Air Force Institute of Technology mission, September 2007.

The Kittyhawk Chapter of the Association of Old Crows, Information Operations Award winner—for significant contributions in development of information technology programs or related doctrine or tactics, or in the application of information operations; 2007 AFIT, AU, AETC Nominee for the Secretary of the Air Force Harold Brown Award--for significant achievement in research and development.

RAQUET, JOHN F.,

US Air Force John L. McLucas Basic Research Award (Honorable Mention), 2007.

Colonel Charles A. Stone Award for personal leadership in the advancement of the Air Force Institute of Technology mission, 2006.

RUGGLES-WRENN, MARINA B.,

Col. Gage H. Crocker Outstanding Professor Award, 2007.

The American Ceramic Society, Certificate of Recognition and Appreciation, 2006.

ASME International, Pressure Vessel and Piping Division, Certificate of Appreciation, 2006.

SAVILLE, MICHAEL A., Maj,

Promoted to Full Member Sigma Xi, November 2006.

WILLIAMS, PAUL D., Maj,

AFIT Teacher of the Year – 2007 Leslie M. Norton Award Winner – Student award for the faculty member who demonstrates the highest standards of excellence in and out the classroom. #1/162 EN Professors.

ZALEWSKI, DANIEL J., Col,

MORS Best Working Group Paper, WG 8, Information Operations/Information Warfare, 2007.

2.3.2. STUDENTS

AFTANAS, JASON, Capt,

Project Management Institute Thesis Award, March 2007.

ARTELLI, MICHAEL, Maj,

MORS Best Working Group Paper, WG 8, Information Operations/Information Warfare, 2007.

BARTON, RICHARD J., Capt,

Association of Old Crows (AOC), Electronic Defense Academic Research Award, March 2007.

COHEE, BRANNEN C., Maj,

Mervin E. Gross Award, June 2007.

CORDEIRO, JAMES, Maj,

Best Paper Award in Operations Research Track, Industrial Engineering Research Conference, 2007.

FENSTERER, GERALD, 1Lt,

Air Force Historical Foundation Award, March 2007.

FRANZ, TIMOTHY P., Maj,

Air Force Association, Lt Edwin E. Aldrin Award, March 2007.

Mervin E. Gross Award, March 2007.

GEFFRE, JENNIFER, 1Lt,

The Military Operations Research Society Award, March 2007.

GIMELSHTYN, MAXIM, Capt,

The MASINT Committee Outstanding Thesis Award, March 2007.

JACKSON, WILLIAM, SMSgt,

The Secretary James G. Roche Award, March 2007.

KOO, ROBERT, 1Lt,

"Feature Extraction Using Principal and Independent Component Analysis for Hyperspectral Imagery", 2007 Air Force Institute of Technology Commandant's Award, March 2007.

LARSON, R.,

Larson, R., and Palazotto, A., " Analysis of Wave Propagation in Functionally Graded Circular Plates Under Impact Loading", presented at the 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007. Best Paper Award.

MICHALSKI, SYDNEY, Capt,

International Society of Logistics' 2007 Jerome G. Peppers Outstanding Student Award, March 2007.

MONTMINY, DAVID P., Capt,

The National Defense Industrial Association (NDIA), Louis F. Polk Award, March 2007.

MOTT, STEPHEN D., 2Lt,

Armed Forces Communications-Electronics Association (AFCEA) Command, Control, Communications, Computers, and Intelligence (C4I) Research Excellence Award Winner, March 2007.

OLIVER, BRAD, Maj,

"Optimizing the Undergraduate Pilot Training Scheduling Process", The Military Operations Research Society Award, June 2007.

RASMUSSEN, C.,

Rasmussen, C., and Canfield, R. A., "The Least Squares Finite Element Method Applied to Fluid-Structure Interaction Problems," 2nd Annual ASME Dayton Engineering Sciences Symposium, Dayton, OH. October 30, 2006. Best Presentation Award.

SEYBA, JASON R., 2Lt,

Armed Forces Communications-Electronics Association (AFCEA) Command, Control, Communications, Computers and Intelligence (C4I) Research Excellence Award Winner, June 2007.

SILVA, RYAN J., 2Lt,

Association of Old Crows (AOC), Information Security/Inforamtion Operations Academic Research Excellence Award, March 2007.

SPINELLI, CHRISTOPHER, Capt,

Institute of Navigation's Research Excellence Award, March 2007

3. RESEARCH STATISTICS

3.1.   RESEARCH ASSESSMENT QUESTIONNAIRE RESULTS

An AFIT Research Assessment Questionnaire, shown on the following page, was sent to each sponsor of a Master's thesis and doctoral dissertation project during FY 2007 to determine the project's contribution, significance and cost avoidance. Detailed results of the questions asked are shown in Table 3.1. The data in this table are based on 73 questionnaires returned out of the 292 questionaires mailed.

Table 3.1: Sponsor Assessment of AFIT Research

QUESTION	EN
Did this research contribute to a current Air Force/DoD project? (Yes answers)	99%

The thesis work was:
   Highly significant
   Significant
   Slightly significant
   Not significant
	
	30%
	57%
	12%
	1%

Average man-years of effort saved by the sponsors.	.88
Average cost avoided per thesis/dissertation by the sponsors.	$122,929
Total cost avoided for all theses and dissertations sponsored (estimated).	$31 M

Rank of respondents
   Colonel (DR IV/GM-15)
   Lt Col (DR-III/GM-14)
   Major   (DR-II/GM-13)
   Captain (DR-I/GS-12)
   Other
	
	25%
	40%
	16%
	4%
	15%

RESEARCH ASSESSMENT QUESTIONNAIRE

TO:

Thank you for sponsoring the AFIT thesis or dissertation listed below. AFIT is working hard to keep its research focused on defense technologies of interest to the Air Force and to the nation.

Title:

Student Author: Designator:

Faculty Advisor:

Date of Graduation:

Please help us determine the value and contribution of this research to your organization's

mission by answering the questions below:

1. Did this research contribute to a current task or goal of interest to your organization?   Y / N

2. Would you have completed this work if AFIT had not done it?   Y / N

3. Regardless of your answers above, how would you rate this work?   Highly significant
           Significant
           Slightly significant
           No significance

4. If AFIT had not done this work, please estimate what it would have cost your organization to

perform it, either by using in-house resources or by contract. Man-Years _____ $_____

Please note that typically an MS thesis requires 0.5MY of the student's time and one month of the faculty advisor's time. For a PhD dissertation the numbers are 2MY for the student and 4 months for the advisor.

5. Would you like to make any remarks? (These will be shared with the academic department and the faculty chairperson.) (If necessary, please continue on reverse side.)

You may mail this to AFIT/ENR, 2950 Hobson Way, Wright-Patterson AFB OH 45433-7765, or fax it to 937-656-7139 (DSN 986-7139), or just e-mail your answers (only) to 1 to 5 to research@afit.edu
If you use e-mail, please include the designator above so that we might identify the project.

Thank you.

_____   _____
Name of Evaluator   Office Symbol

_____
Grade/Rank of Evaluator

3.2. RESEARCH AND CONSULTING OUTPUT MEASURES

There are measurable indicators of AFIT's contribution to the engineering and scientific community and AFIT's success in staying well informed of technical possibilities and scientific opportunities. These indicators include the number and quality of technical publications accepted by the editors of journals; the number of presentations accepted for regional, national and international conferences; the number of research projects conducted; the number of consultations performed for Air Force and DoD customers; and finally, the number of student graduate research papers, MS theses, and PhD dissertations completed and submitted to the Defense Technical Information Center. For FY07, these output measures are shown in Table 3.2.

Table 3.2: Faculty Research and Sponsored Programs Output by Graduate School Department

	Graduate School (EN) Total	Graduate School by Department					
		Math & Stats (ENC)	Electrical & Comp Eng (ENG)	Engineering Physics (ENP)	Operational Sciences (ENS)	Sys & Eng Management (ENV)	Aeronautics & Astro (ENY)
Number of Faculty (FTE)	136	16	36	19	20	23	22
Refereed Publications	207	25	64	19	30	24	45
Refereed Presentations	263	8	143	24	59	20	9
Other Presentations and Publications	267	31	71	41	11	35	78
Sponsor Funded Projects	171	4	57	36	16	11	47
Substantial Consultations	76	5	30	11	22	8	0
Books	5	0	1	0	1	2	1
Chapters of Books	5	0	3	0	0	2	0
Patents	1	0	1	0	0	0	0
Doctoral Dissertations Advised	21	0	9	5	3	0	4
Master's Theses Advised	298	0	71	19	53	56	99
Graduate Research Papers Advised	66	0	9	0	28	29	0

FTE: Full-time equivalent

3.3. RESEARCH AND CONSULTING SPONSORSHIP

As part of an Air Force institution, the faculty members of the Air Force Institute of Technology focus their research on current problems as well as future systems of the Air Force and other DoD organizations. Evidence of this focus is that 82% of technical, and 74% of all theses and dissertations listed in Table 3.2 are externally sponsored by Air Force, DoD and Government agencies. In addition, most of the research projects and consultations are carried out for Air Force and DoD units. The data are summarized in Table 3.3 and Figure 3.1.
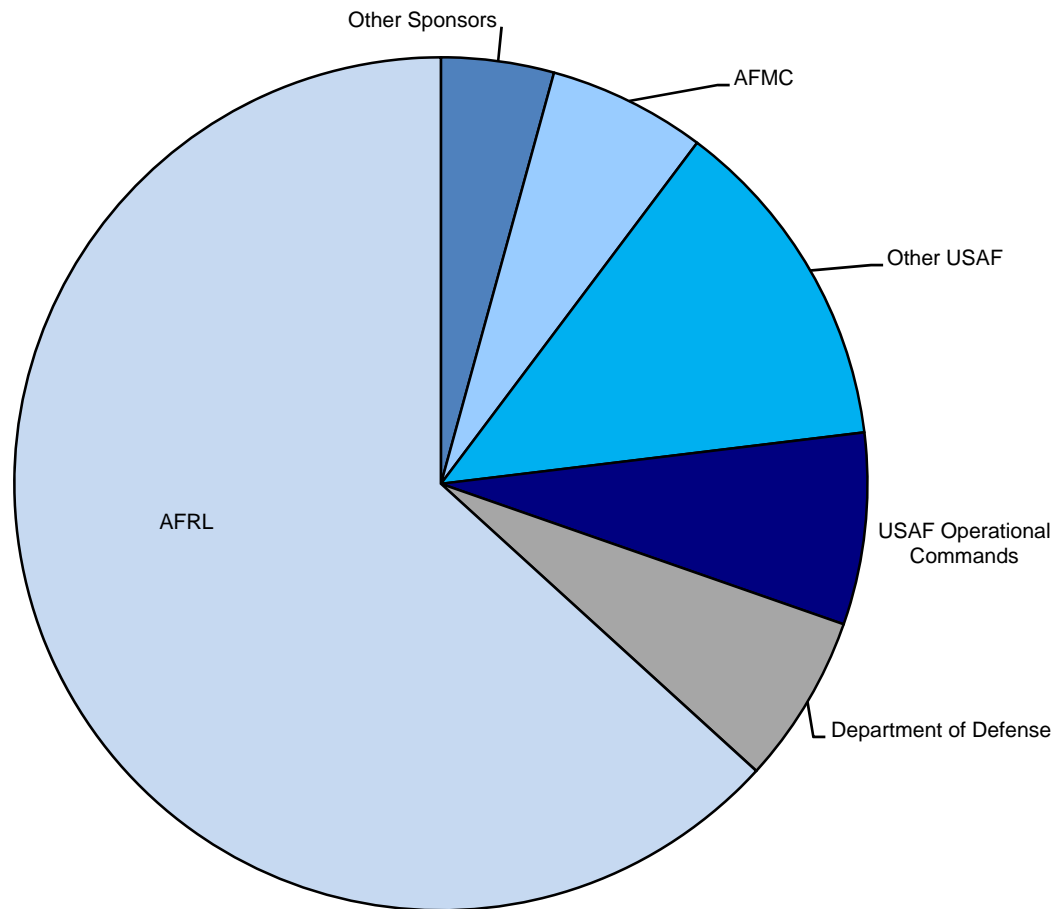
Figure 3.1: Sponsors of AFIT Theses and Dissertations

Table 3.3: AFIT External Sponsorhip by Organization

SPONSOR ORGANIZATION	PhD Dissertations	Master's Theses	Graduate Research Papers	Funded Projects	Substantial Consultations
HQ UNITED STATES AIR FORCE		5	9	1	
OFFICE OF THE SECRETARY OF THE AIR FORCE	2	6	6	11	1
AIR EDUCATION AND TRAINING COMMAND		2	1	1	
19th Air Force			1		
AIR COMBAT COMMAND		2	2	6	2
8th Air Force		3	1		1
National Air and Space Intelligence Center	2	5	1	7	5
AIR FORCE MATERIEL COMMAND		9	4		
Aeronautical Systems Center		5	1		3
Air Force Research Laboratory (AFRL)			3		
Air Force Office of Scientific Research (AFOSR)	2	18		27	3
Air Vehicles Directorate (VA)	1	25		21	2
Directed Energy Directorate (DE)	3	3		9	
Human Effectiveness Directorate (HE)		5		6	
Information Directorate (IF)	1	5		7	1
Materials & Manufacturing Directorate (ML)		8		6	1
Munitions Directorate (MN)		5		3	3
Propulsion Directorate (PR)		16		5	
Requirements Directorate (XR)		1			
Sensors Directorate (SN)	5	35		23	9
Space Vehicles Directorate (VS)	2	13		2	
AIR FORCE SPACE COMMAND		2			
AIR MOBILITY COMMAND		1	11		3
US AIR FORCE OPERATING AGENCIES					
Air Force Center for Environmental Excellence		4			
Air Force Civil Engineer Support Agency		4			
Air Force Communications Agency		4		1	1
Air Force Cost Analysis Agency		1		1	
Air Force Geographical Info Systems Support Center		1			
Air Force Test Pilot School		1	1		
Air Force Technical Application Center	1	1		1	2
DEPARTMENT OF DEFENSE			1	7	6
Defense Logistics Agency		1			
Defense Threat Reduction Agency		5		1	2
High Energy Laser Joint Technology Office		1		7	
US Office of Secretary Defense		1		1	
US Strategic Command		1			
US Transportation Command		1			
United States Army	1	2		1	3
United States Navy		2			2
DEPARTMENT OF ENERGY	1	1			
OTHER FEDERAL AGENCIES					
Environmental Protection Agency		2		1	
National Aeronautics and Space Administration		1			
National Geospatial Intelligence Agency		1		2	
National Parks Services		1			
National Security Agency		2		3	4
NATIONAL SCIENCE FOUNDATION				1	
NATIONAL ACADEMY OF SCIENCES	1				
CANADIAN ROYAL MILITARY					5
DAYTON AREA GRADUATE STUDIES INSTITUTE				5	
TOTALS	**22**	**212**	**42**	**162**	**59**

NOTE: Some student publications have multiple sponsors; See App C for Selected Acronym List

3.4. OUTSIDE FUNDING FOR THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT

Many of the Graduate School of Engineering and Management's theses and research projects completed under faculty supervision (sponsored or unsponsored) are funded in part by other Air Force, DoD and government units and agencies. Often, this funding results from collaboration between faculty and thesis sponsors and occurs when the research project can be leveraged by the purchase of equipment or services not otherwise available. Tables 3.4 and 3.5, and Figure 3.3, summarize outside funding for FY07, and Figure 3.2 summarizes the past seven fiscal years of outside sponsored funding.

Table 3.4 New FY07 Awards to Academic Departments & Research Centers by Type

Department	Research #	Research Dollars	Education #	Education Dollars	Total #	Total Dollars
Mathematics & Statistics (ENC)	4	68,979	-	-	4	68,979
Electrical & Computer Eng (ENG)	52	2,241,268	5	1,090,018	57	3,331,286
Engineering Physics (ENP)	34	2,316,659	3	548,922	36	2,865,581
Research & Sponsored Programs (ENR)	1	10,201	-	-	1	10,201
Operations Sciences (ENS)	16	388,825	-	-	16	388,825
Systems & Eng Management (ENV)	11	644,877	-	-	11	644,877
Aeronautical & Astronautical Eng (ENY)	43	1,014,789	4	150,045	47	1,164,834
TOTAL	**161**	**6,685,599**	**12**	**1,788,985**	**173**	**8,474,584**

Research Center	#	Dollars	#	Dollars	#	Dollars
Advanced Navigation Technology Center (ANT)	25	1,140,390	1	20,160	26	1,160,550
Center for Directed Energy [CDE]	17	1,353,227	2	38,922	19	1,392,149
Center for Cyberspace Research (CCR)	9	390,987	4	1,069,858	13	1,460,845
Center for MASINT Studies and Research [CMSR]	5	357,240	1	510,000	6	867,240
Center for Operational Analysis (COA)	12	343,825	-	-	12	343,825
Center for Systems Engineering (CSE)	6	215,150	2	109,725	8	324,875
Center for Space Studies & Research (CSSR)	2	97,869	-	-	2	97,869
TOTAL	**76**	**3,893,268**	**10**	**1,748,665**	**86**	**5,647,353**

Notes: DoD regulations limit AFIT's charges to DoD organizations. Accounting for these nonchargeable items, the cost of our research program at a comparable civilian university would have been approximately $15 million
All Center funds are also included in departmental funding

Figure 3.2: New Award History FY00-FY07
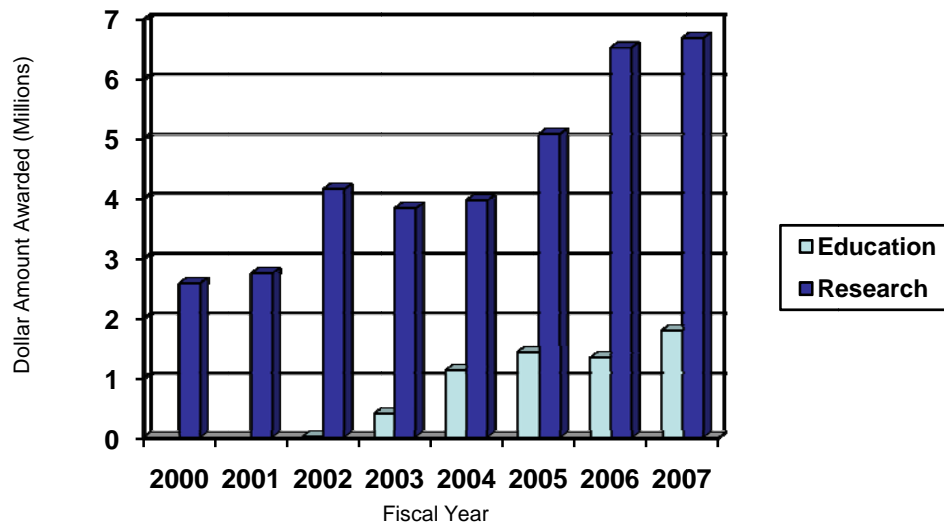
Figure 3.3: Sponsors of FY07 Funded Projects

Breakdown by AFRL Directorate
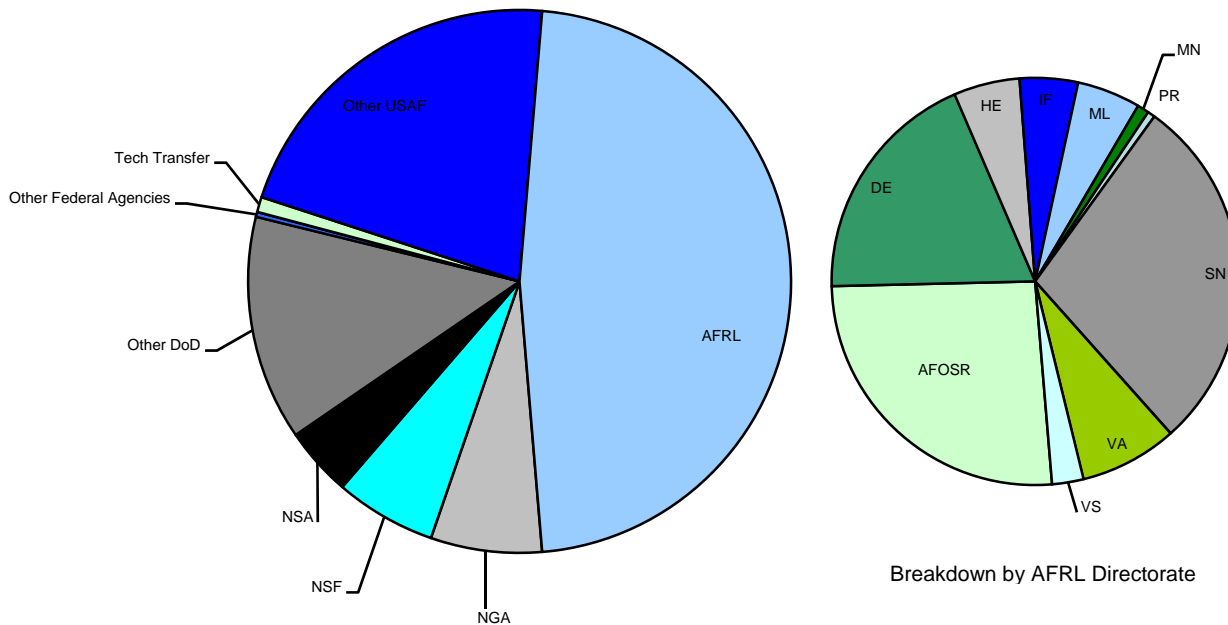
Table 3.5 New FY07 Awards to Academic Departments & Research Centers by Sponsor

Dept.	AFRL	Other USAF	Other DoD	NGA	NSF	NSA	Other Federal	Non-Federal	Total
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
ENC	68,979	-	-	-	-	-	-	-	68,979
ENG	1,655,917	481,601	285,450	50,000	510,710	327,448	-	20,160	3,331,286
ENP	1,215,776	380,000	759,805	510,000	-	-	-	-	2,865,581
ENR	10,201	-	-	-	-	-	-	-	10,201
ENS	271,825	97,000	-	-	-	20,000	-	-	388,825
ENV	120,000	421,328	78,800	-	-	-	24,750	-	644,878
ENY	676,506	422,567	9,444	-	-	-	-	56,317	1,164,834
TOTAL	**4,019,204**	**1,802,496**	**1,133,499**	**560,000**	**510,710**	**347,448**	**24,750**	**76,477**	**8,474,584**

Research Center									
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
ANT	869,679	101,961	118,750	50,000	-	-	-	20,160	1,160,550
CCR	355,000	100,987	166,700	-	510,710	327,448	-	-	1,460,845
CDE	889,632	-	502,517	-	-	-	-	-	1,392,149
CMSR	132,240	225,000	-	510,000	-	-	-	-	867,240
COA	246,825	97,000	-	-	-	-	-	-	343,825
CSE	84,000	240,875	-	-	-	-	-	-	324,875
CSSR	-	97,869	-	-	-	-	-	-	97,869
TOTAL	**2,577,376**	**863,692**	**787,967**	**560,000**	**510,710**	**327,448**	**-**	**20,160**	**5,647,353**

Note: All Center funds are also included in departmental funding

4. SPONSORSHIP OF STUDENT RESEARCH

4.1. DOCTORAL DISSERTATIONS

4.1.1. OFFICE OF THE SECRETARY OF THE AIR FORCE

GROSS, KEVIN C., *Phenomenological Model for Infrared Emissions from High-Explosive Detonation Fireballs*. AFIT/DS/ENP/07-03. Faculty Advisor: Dr. Glen P. Perram. Sponsor: SAF and NASIC/DE.

SMETEK, TIMOTHY E., *Hyperspectral Imagery Target Detection Using Improved Anomaly Detection and Signature Matching Methods*. AFIT/DS/ENS/07-07. Faculty Advisor: Dr. Kenneth W. Bauer. Sponsor: SAF.

4.1.2. AIR COMBAT COMMAND

NATIONAL AIR AND SPACE INTELLIGENCE CENTER

GROSS, KEVIN C., *Phenomenological Model for Infrared Emissions from High-Explosive Detonation Fireballs*. AFIT/DS/ENP/07-03. Faculty Advisor: Dr. Glen P. Perram. Sponsor: SAF and NASIC/DE.

4.1.3. AIR EDUCATION AND TRAINING COMMAND

AIR FORCE INSTITUTE OF TECHNOLOGY
Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

DREHER, PETER, A., *Dynamic Response of a Collidant Impacting a Low Pressure Airbag*. AFIT/DS/ENY/07-09. Faculty Advisor: Dr. Robert A. Canfield. Sponsor: N/A.

NGUYEN, THAO Q., *Efficient GPS Position Determination Algorithms*. AFIT/DS/ENG/07-09. Faculty Advisor: Dr. Meir Pachter. Sponsor: N/A.

4.1.4. AIR FORCE TECHNICAL APPLICATIONS CENTER

DISHAW, JAMES R., *Time Dependent Discrete Ordinates Neutron Transport Using Distribution Iteration in XYZ Geometry*. AFIT/DS/ENP/07-S01. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: AFTAC.

4.1.5. AIR FORCE RESEARCH LABORATORY

AFRL: AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

ADAMSON, PAUL E., *A General Quantum Mechanical Method to Predict Positron Spectroscopy*. AFIT/DS/ENP/07-04. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: AFOSR/NL.

CORDEIRO JR., JAMES D., *Unreliable Retrial Queues in a Random Environment*. AFIT/DS/ENS/07-03. Faculty Advisor: Dr. Jeffrey P. Kharoufeh. Sponsor: AFOSR.

AFRL: AIR VEHICLES DIRECTORATE

WALSTON, JENNIFER G., *Search Techniques for Multi-Objective Optimization of Mixed-Variable Systems Having Stochastic Responses*. AFIT/DS/ENS/07-06. Faculty Advisor: Dr. James W. Chrissis. Sponsor: AFRL/VASD & The National Academy of Sciences.

AFRL: DIRECTED ENERGY DIRECTORATE

JOHNSON, PETER M., *Phase Diversity and Polarization Augmented Techniques for Active Imaging*. AFIT/DS/ENG/07-05. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/DESA.

STRONG, DAVID M., *Polarimeter Blind Deconvolution Using Image Diversity*. AFIT/DS/ENG/07-23. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/DESA.

TERRY, NATHAN B., *Raman Fiber Lasers and Amplifiers Based on Multimode Graded-Index Fibers and Their Application to Beam Cleanup*. AFIT/DS/ENP/07-02. Faculty Advisor: Lt Col Thomas G. Alley. Sponsor: AFRL/DE.

AFRL: INFORMATION DIRECTORATE

MANN, CHRISTOPHER R., *Energy-Efficient Querying of Wireless Sensor Networks*. AFIT/DS/ENG/07-19. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/IFSC.

AFRL: SENSORS DIRECTORATE

EDGE, KENNETH S., *A Framework for Analyzing and Mitigating the Vulnerabilities of Complex Systems via Attack and Protection Trees*. AFIT/DS/ENG/07-13. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SNT.

FORMWALT, BYRON P., *Modeling, Simulation, and Estimation of Optical Turbulence*, AFIT/DS/ENG/07-04. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/SNJM.

OCHOA, EDWARD M., *Hybrid Micro-Electro-Mechanical Tunable Filter*. AFIT/DS/ENG/07-23. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/SNDP.

SALLBERG, SCOTT A., *Sampled-Data Kalman Filtering and Multiple Model Adaptive Estimation* for *Infinite-Dimensional Continuous-Time Systems*. AFIT/DS/ENG/07-08. Faculty Advisor: Dr. Peter S. Maybeck. Sponsor: AFRL/SN.

SISKANINETZ, WILLIAM J., *Bipolar Cascade Vertical-Cavity Surface-Emitting Lasers for RF Photonic Link Applications*. AFIT/DS/ENG/07-22. Faculty Advisor: Lt Col James A. Fellows. Sponsor: AFRL/SNDP.

AFRL: SPACE VEHICLES DIRECTORATE

IRVIN JR., DAVID J., *Optimal Control Strategies for Constrained Relative Orbits*. AFIT/DS/ENY/07-03. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/VS.

JORRIS, TIMOTHY, R., *Common Aero Vehicle Autonomous Reentry Trajectory Optimization Satisfying Waypoint and No-Fly Zone Constraints*. AFIT/DS/ENY/07-04. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/VS.

4.1.6. US ARMY RESEARCH DEVELOPMENT AND ENGINEERING COMAND

SCHULZ, CHRISTOPHER S., *Rotorcraft Smoothing Via Linear Time Periodic Methods*. AFIT/DS/ENY/07-10. Faculty Advisor: Dr. Donald L. Kunz. Sponsor: USA RDECOM.

4.1.7.   DEPARTMENT OF ENERGY

BECK, ERIC V., *A Multireference Density Functional Approach to the Calculation of the Excited States of Uranium Ions.* AFIT/DS/ENP/07-01. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: DOE.

4.1.8.   THE NATIONAL ACADEMY OF SCIENCES

WALSTON, JENNIFER G., *Search Techniques for Multi-Objective Optimization of Mixed-Variable Systems Having Stochastic Responses*. AFIT/DS/ENS/07-06. Faculty Advisor: Dr. James W. Chrissis. Sponsor: AFRL/VASD & The National Academy of Sciences.

4.2. MASTER'S THESES

4.2.1. HQ UNITED STATES AIR FORCE

BLOOD, DEBORA L., *Predicting the Benefits, Barriers, and Bridges for USAF Expeditionary Combat Support System Implementation*. AFIT/GIR/ENS/07-01. Faculty Advisor: Maj Barry Brewer. Sponsor: HAF/A4IT.

GENTIL, KATHRINE J., *Developing Advanced Academic Degree Educational Profiles for Career Fields*. AFIT/GOR/ENS/07-08. Faculty Advisor: Maj Shane Knighton. Sponsor: HAF/A1.

HENNETTE, JAY C., *AFSO 21: A Comparison of Private Sector and Air Force Practices*. AFIT/GLM/ENV/07-09. Faculty Advisor: Dr. David Vaughan. Sponsor: HAF/A3.

JOHNSON, JOHN P., *Balanced Scorecard: Aggregating Aircraft Mission Capable Rates*. AFIT/GLM/ENS/07-06. Faculty Advisor: Dr. Alan Johnson. Sponsor: HAF/A4ID.

WALKER, S. DAVID., *The Effects of Career Broadening on Leadership Development*. AFIT/GLM/ENV/07-M6. Faculty Advisor: LtCol Kent Halverson. Sponsor: HAF/A1DD.

4.2.2. OFFICE OF THE SECRETARY OF THE AIR FORCE

BARBA-SORRA, VICTOR M., *Controller Design for Accurate Antenna Pointing Onboard a Spacecraft*. AFIT/GAE/ENG/07-03. Faculty Advisor: Dr. Meir Pachter. Sponsor: SAF.

BLAIR, AARON M., A*ssessing Perceptions of Knowledge Management Maturity/Capabilities: A Case Study of SAF/FM*. AFIT/GIR/ENV/07-M3, Faculty Advisor: LtCol Summer E. Bartczak. Sponsor: SAF.

CRAWFORD, BRIAN P., *Approximate Analysis of an Unreliable M/M/2 Retrial Queues*. AFIT/GOR/ENS/07-05. Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: SAF.

DAINTY, BENJAMIN G., *Use of Two-Way Time Transfer Measurements to Improve Geostationary Satellite Navigation*. AFIT/GSS/ENG/07-01, Faculty Advisor: Dr. John F. Raquet. Sponsor: SAF.

KALLEMYN, BENJAMIN S., *Prioritizing Satellite Payload Selection via Optimization*. AFIT/GOR/ENS/07-14. Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: SAF.

WRIGHT, GARY L., *A Comparative Assessment of Knowledge Management Education Across the United States Department of Defense*. AFIT/GIR/ENV/07-M17. Faculty Advisor: LtCol Summer E. Bartczak. Sponsor: SAF/XC.

4.2.3. AIR COMBAT COMMAND

AFTANAS, JASON M., *Optimizing the Prioritization of Natural Disaster Recovery Projects*. AFIT/GEM/ENS/07-01. Faculty Advisor: Maj Shane Knighton. Sponsor: ACC/A7-2.

SIMMERS, DOUGLAS M., *Identifying Knowledge, Skill, and Ability Requirements for 33S Officers in Deployed Environments*. AFIT/GIR/ENV/07-M16. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: ACC/A6OO.

8th AIR FORCE

CZUMAK, MICHAEL N., III, *Recommendations for a Standardized Program Management Office (PMO) Time Compliance Network Order (TCNO) Patching Process*. AFIT/GIR/ENV/07-M8. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFNOC/DET1 (8AF).

SHAW, ALFRED K., *A Model for Performing Mission Impact Analysis of Network Outages*. AFIT/GCS/ENG/07-10. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 8th AF/AFNOC.

SMITH, TIFFINY S., *In Pursuit of an Aptitude Test for Potential Cyberspace Warriors*. AFIT/GIR/ENG/07-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 315 IOS/CC.

NATIONAL AIR AND SPACE INTELLIGENCE CENTER

CORYELL, CHRISTOPHER E., *Using Concept Maps to Efficiently Build Information Models for SAVANT*. AFIT/GCE/ENG/07-03. Faculty Advisor: LtCol Timothy J. Halloran. Sponsor: NASIC/SC.

CLAYCAMP, RYAN C., *Threat Modeling of Spacecraft Attitude Control Subsystem*. AFIT/GA/ENY/07-M04. Faculty Advisor: LtCol Nathan A. Titus. Sponsor: NASIC/SMSV.

CRIDER, KENDRA L., *Radial Diffusion Between Coaxial Cylinders*. AFIT/GAE/ENY/07-M09. Faculty Advisor: Dr. Paul I. King. Sponsor: NASIC/ADNA.

GEFFRE, JENNIFER L., *A Layered Social and Operational Network Analysis*. AFIT/GOR/ENS/07-07. Faculty Advisor: Dr. Richard Deckro. Sponsor: NASIC/FCEB & AFRL/HECS.

SEDER, JOSHUA S., *Examining Clandestine Social Networks for the Presence of Non-Random Structure*. AFIT/GOR/ENS/07-24. Faculty Advisor: Dr. Marcus Perry. Sponsor: AFRL/HECS & NASIC/FCEB.

4.2.4. AIR EDUCATION AND TRAINING COMMAND

BOYD, EDWARD K., *Professionalism in the USAF: A Comparative Analysis of Commissioned Officers with Non-Commissioned Officers*. AFIT/GIR/ENV/07-M4, Faculty Advisor: LtCol Kent C. Halverson. Sponsor: AETC.

HEATH VAN HORN, MATHEW J., *An Analysis of the Balance of Management, Technical and Leadership Progression through the Three USAF Officer Tiers*. AFIT/GIR/ENV/07-M10. Faculty Advisor: Dr. Alan Heminger. Sponsor: SOC/DEO/SOS (AETC).

AIR FORCE INSTITUTE OF TECHNOLOGY
Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

BAILEY, LANDON C., *Refinement of an Instrument to Assess Readiness for Knowledge Management*. AFIT/GIR/ENV/07-M2, Faculty Advisor: LtCol Daniel T. Holt. Sponsor: N/A.

BALDWIN, JASON L., *Optimal Control of a Circular Satellite Formation Subject to Gravitational Perturbations*. AFIT/GA/ENY/07-M02. Faculty Advisor: LtCol Nathan Titus. Sponsor: N/A.

BELLUCCI, JOSEPH P., *Improved Hyperspectral Image Testing Using Synthetic Imagery and Factorial Designed Experiments*. AFIT/GOR/ENS/07-01. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

BITTLE, NICOLE, M., *Estimating the Aerodynamic and Heating Properties of an Unknown Reentry Vehicle Using Least Squares Filtering*. AFIT/GSS/ENY/07-M01. LtCol Kerry D. Hicks. Sponsor: N/A.

BOND, MATTHEW S., JAMES A. RODRIGUEZ and HIEU T. NGUYEN. *A Systems Engineering Process for an Integrated Structural Health Monitoring System.* AFIT/GSE/ENY/07M-02. Faculty Advisor: Dr. Som R. Soni. Sponsor: N/A.

BROAS, TINA M., *The Effect of Downsizing on Attrition Rates in the Department of Defense (DoD).* AFIT/GCA/ENV/07-M1, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

BRUNNER, ABRAHAM F., *Spacecraft Proximity Operations Used to Estimate the Dynamical & Physical Properties of a Resident Space Object.* AFIT/GA/ENY/07-M03. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

BRYANT, MICHAEL, *Forecasting the KC-135 Cost Per Flying Hour: A Panel Data Analysis* AFIT/GCA/ENV/07-M2, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

BURRELL, DERREN P., *An Analysis of the Military Retirement System: How Does Retirement Return Influence Retention?* AFIT/GCA/ENV/07-M3. Faculty Advisor: LtCol Jeffrey S. Smith. Sponsor: N/A.

BYNUM, ARNOLD R., *An Analysis of Delivering Persistent Real Time Imagery Intelligence to Combatant Commanders.* AFIT/GLM/ENV/07-M1. Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

CATES, MICHAEL S., *Corporate Entrepreneurship Assessment Instrument (CEAI): Refinement and Validation of a Survey Measure.* AFIT/GIR/ENV/07-M7. Faculty Advisor: LtCol Daniel T. Holt. Sponsor: N/A.

CAULK, RYAN F., *Outlier Detection in Hyperspectral Imaging Using Closest Distance to Center with Ellipsoidal Multivariate Trimming.* AFIT/GOR/ENS/07-02. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

CAVALLARO, KRISTEN L., *Analyzing the Interdiction of Sea-Borne Threats Using Simulation Optimization*. AFIT/GOR/ENS/07-03. Faculty Advisor: Dr. Sharif Melouk. Sponsor: N/A.

CHO, NAM-SUK., *Critical Infrastructure Rebuild Prioritization Using Simulation Optimization*. AFIT/GOR/ENS/07-04. Faculty Advisor: Dr. Sharif Melouk. Sponsor: N/A.

CHOI, PETER M., *The Effects of Social Network Centrality on Group Satisfaction*. AFIT/GEM/ENV/07-M2. Faculty Advisor: LtCol Kent C. Halverson. Sponsor: N/A.

COATES, GREGORY M., *Collaborative, Trust-Based Security Mechanisms for a National Utility Intranet.* AFIT/GIA/ENG/07-05. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: N/A.

COLACICCO, JOSEPH M., *Analysis of Army Transformation and the Effects on Customer Ordering Behavior.* AFIT/GLM/ENS/07-03. Faculty Advisor: Dr. William Cunningham, III. Sponsor: N/A.

COLLUP, JUSTIN W., *Forecasting Demand for Civilian Pilots: A Cost Savings Approach to Managing Air Force Pilot Resources*. AFIT/GCA/ENV/07-M4. Faculty Advisor: LtCol Jeffery S. Smith. Sponsor: N/A.

CROUSE, JOSHUA D., *Development of Cursor-on-Target Control for Semi-Autonomous Unmanned Aircraft Systems.* AFITGAE/ENY/07-J04. Research Adivsor: Maj Paul Blue. Sponsor: N/A.

CROW, SHIRLEY D., *An Evaluation of Organizational and Experience Factors Affecting the Perceived Transfer of U.S. Air Force Basic Combat Skills Training*. AFIT/GLM/ENV/07-M2. Faculty Advisor: Maj Sharon Heilmann. Sponsor: N/A.

DENISON, NICHOLAS A., *Automated Carrier Landing of an Unmanned Combat Aerial Vehicle Using Dynamic Inversion*. AFIT/GAE/ENY/07-J06. Faculty Advisor: Maj Christopher Shearer. Sponsor: N/A.

DEVUONO, AMANDA J., *Flight Dynamic Response of HALE Aircraft to KC-135 Flowfield*. AFIT/GAE/ENY/07-S06. Faculty Advisor: Maj Christopher Shearer. Sponsor: N/A.

DRIES, ERIK J., *Scaling Ant Colony Optimization with Hierarchical Reinforcement Learning Partitioning*. AFIT/GCS/ENG/07-16. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: N/A.

DUNCAN, DAVID J., *Rapid Runway Repair (RRR): an Optimization for Minimum Operating Strip (MOS) Selection*. AFIT/GEM/ENV/07-M4. Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A.

ELKINS, JOSEPH S., *Internal Versus External Acquisition for Small Weapons Systems*. AFIT/GLM/ENV/07-M3. Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

ELLIS, TROY R., *Airborne Laser Tracking Signal Degradation From Wave Optics Simulation of Propagation Through Computational Fluid Dynamics Models of Aero-Optics*. AFIT/GEO/ENG/07-02. Faculty Advisor: Capt Jason D. Schmidt. Sponsor: N/A.

ETTER, ROBERT B., *CFD Investigation of Effect of Depth to Diameter Ratio on Dimple Flow*. AFIT/GAE/ENY/07-J07. Faculty Advisor: LtCol Raymond Maple. Sponsor: N/A.

FOREMAN, JAMES D., *Predicting the Effect of Longitudinal Variables on Cost and Schedule Performance*. AFIT/GIR/ENC/07M-01. Faculty Advisor: Dr. Edward D. White, III. Sponsor: N/A.

FRAM, BRYAN JOSHUA, *An Analysis of Operationally Responsive Space in Terms of Cost and Utility With the Use of a Hybrid Launch Vehicle*. AFIT/GA/ENY/07-M06. Faculty Advisor: Dr. Michael Heil. Sponsor: N/A.

FRANZ, TIMOTHY P., *IO Foundations to Cyberspace Operations*. AFIT/GIA/ENG/07-02. Faculty Advisor: Dr. Richard A. Raines. Sponsor: N/A.

GABRIELE, THOMAS PAUL., *Active Control of a Thin Deformable Inplane Actuated Mirror*. AFIT/GA/ENY/07-M07. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

GIACOMAZZI, MICHAEL P., II, *An Analysis of the Impact of Defense Acquisition Reforms and External Factors on Schedule Growth of Defense Weapon Systems*. AFIT/GCA/ENV/07-M6. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

GIMELSHTEYN, MAXIM, *Classifying Commercial Receiver Emissions Using Fisher Discriminant Analysis*. AFIT/GE/ENG/07-08. Faculty Advisor: Dr. Michael A. Temple. Sponsor: N/A.

GORSUCH, ROGER L., *Analysis of Routing Worm Propagation on an IPv4 Network*. AFIT/GCS/ENG/07-04. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A.

GUETTLER, DAVID B., *Satellite Attitude Control Using Atmospheric Drag*. AFIT/GA/ENY/07-M10. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

HAJOVSKY, BLAKE B., *Satellite Formation Control Using Atmospheric Drag*. AFIT/GA/ENY/07-M11. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

HARRELL, RYAN M., *A Multivariate Magnitude Robust Control Chart for Mean Shift Detection and Change Point Estimation*. AFIT/GOR/ENS/07-09. Faculty Advisor: Dr. Marcus Perry. Sponsor: N/A.

HARTLAGE, ROBERT B., *An Efficient Metaheuristic for Dynamic Network Design and Message Routing*. AFIT/GOR/ENS/07-10. Faculty Advisor: Maj Gary Kinney. Sponsor: N/A.

HERBRANSON, TRAVIS J., *Isolating Key Players in Clandestine Networks*. AFIT/GOR/ENS/07-11. Faculty Advisor: Dr. Richard Deckro. Sponsor: N/A.

HINES, MICHAEL S., *Fuel Estimation Using Dynamic Response*. AFIT/GA/ENY/07-M12. Faculty Advisor: LtCol Nathan A. Titus. Sponsor: N/A.

HUDSON, SEAN W., *Identifying Bot Infections on Air Force Networks using Advanced Methodologies*. AFIT/GCE/ENG/07-05. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: N/A.

HYLAND, MATTHEW T., *Performance Evaluation of Ad-Hoc Routing Protocols in a Swarm of Autonomous Unmanned Aerial Vehicles*. AFIT/GCS/ENG/07-07. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A.

JAMES, STEVEN A., *A Small Scale Imaging Platform for Algorithm Performance Evaluation*. AFIT/GAE/ENG/07-01. Faculty Advisor: Dr. Guna S. Seetharaman. Sponsor: N/A.

JOHNSON, MATTHEW T., *Thermally Activated, Variable Blazed Grating for Coherent Beam Steering*. AFIT/GEO/ENG/07-04. Faculty Advisor: Dr. Guna S. Seetharaman. Sponsor: N/A.

KERNS, DAVID A., *Automatic Target Recognition User Interface Tool*. AFIT/GOR/ENS/07-15. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

KOO, ROBERT, *Feature Extraction Using Principal and Independent Component Analysis for Hyperspectral Imagery*. AFIT/GOR/ENS/07-16. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

LOW, BRIAN R., *Mapping Change Management: A Co-citation Analysis*. AFIT/GEM/ENV/07-M8. Faculty Advisor: LtCol Daniel T. Holt. Sponsor: N/A.

LUNAS, FREDERIC W., *Triangulating Social Capital Measurement for Turnover Research: Applications to the U.S. Military*. AFIT/GIR/ENV/07-M11. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

MARSHALL, TOMMY V., II, *A Comparative Assessment of Knowledge Management Leadership Approaches within the Department of Defense*. AFIT/GIR/ENV/07-M12. Faculty Advisor: LtCol Summer E. Bartczak. Sponsor: N/A.

MCGAHA, CHRISTOPHER C., *Filtered Rayleigh Scattering Measurements in a Buoyant Flowfield*. AFIT/GAE/ENY/07-M18. Faculty Advisor: Dr. Mark Reeder. Sponsor: N/A.

MILLER, Z. R., *Final Development, Testing, and Flight Preparation of the Rigidizable Inflatable Get-Away-Special (RIGEX)*. AFIT/GAE/ENY/07-J14. Faculty Advisor: Dr. Richard Cobb. Sponsor: N/A.

MITCHELL, ROBERT H., JR., *Real Options as a Strategic Management Framework: A Case Study of the Operationally Responsive Space Initiative*. AFIT/GRD/ENV/07-M2. Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A.

MOON, HYOUNG-ILL, *South Korea's Current Position on FMS*. FIT/GLM/ENV/07-M5. Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

MORRIS JR., GERALD W. *The Chaos of Katrina: A Nonlinear Analysis of Federal Logistics Support During Hurricane Katrina Relief Operations*. AFIT/GLM/ENS/07-10. Faculty Advisor: LtCol Bradley Anderson. Sponsor: N/A.

NGUYEN, HIEU T., see BOND, MATTHEW S.

NORSKY, PETER C., *A Technology Investment Value Model For The Air Force Research Laboratory Focused Long Term Challenges*. AFIT/GOR/ENS/07-18. Faculty Advisor: Dr. Richard Deckro. Sponsor: N/A.

OWENS, JEREMY J., *Final Assembly, Testing and Processing of the Rigidizable Inflatable Get-Away-Special Experiment (RIGEX) for Spaceflight Qualification*. AFIT/GA/ENY/07-S02. Faculty Advisor: Dr. Richard Cobb. Sponsor: N/A.

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PARK, SEUNG-BAE., *A Multi-Objective Decision-Making Model for Resources Allocation in Humanitarian Relief*. AFIT/GOR/ENS/07-20. Faculty Advisor: Maj Gary Kinney. Sponsor: N/A.

PARRISH, MICHAEL R., *A Meta-Analysis of Questionnaire Response Rates in Military Samples*. AFIT/GRD/ENV/07-M4. Faculty Advisor: LtCol Kent C. Halverson. Sponsor: N/A.

PATRASCU, ADRIAN C., *Optimizing Distributed Sensor Placement for Border Patrol Interdiction Using Microsoft Excel*. AFIT/GOR/ENS/07-21. Faculty Advisor: Dr. James Moore. Sponsor: N/A.

PETERSON, FREDERICK W., *Predicting Performance Using Cohesion and Social Network Density: A Comparative Analysis*. AFIT/GEM/ENV/07-M11. Faculty Advisor: LtCol Kent C. Halverson. Sponsor: N/A.

REYES, KEVIN B., *HSI: Outlier Detection Methods in Hyperspectral Imagery*. AFIT/GOR/ENS/07-22. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

ROCHE, JAMES F., *Performance of Airborne Tactical High Energy Laser Arrays With Non-Redundant Autocorrelations Through Turbulence*. AFIT/GAP/ENG/07-01. Faculty Advisor: Capt Jason D. Schmidt. Sponsor: N/A.

RODRIGUEZ, JAMES A., see BOND, MATTHEW S.

ROEHL, JOHN M., *Internet Protocol Geolocation: Development of a Delay-Based Hybrid Methodology for Locating the Geographic Location of a Network Node*. AFIT/GIR/ENV/07-M15. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: N/A.

RUTER, PHILIP E., II, *Cost Growth in Weapons Systems: Re-Examining Rubber Baselines and Economic Factors*. AFIT/GCA/ENV/07-M9. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

SALAVERRY JUAN A., *Predicting Argentine Jet Fuel Prices*. AFIT/GLM/ENC/07M-01. Faculty Advisor: Dr. Edward White, III. Sponsor: N/A.

SOLFELT, D. A., *CFD Analysis of a T-38 Wing Fence*. AFIT/GAE/ENY/07-J19. Faculty Advisor: LtCol Raymond Maple. Sponsor: N/A.

SPRINGS, ANITA C., *Assessing the Impact of the Work Environment on Training Transfer: An Investigation of the Air Force Acquisition Management Course*. AFIT/GIR/ENV/07-J4. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.

STELLY, JOHN M., *Price Vs. Performance: The Value Of Next Generation Fighter Aircraft*. AFIT/ENV/GCA/07-M10. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

SUGRUE, KIMBERLY, A., *Optimal Orbital Coverage of Theater Operations and Targets*. AFIT/GA/ENY/07-M17. Faculty Advisor: LtCol Nathan A. Titus. Sponsor: N/A.

TAITANO, YURI P., *Hyperspectral Imagery Target Detection Using the Iterative RX Detector.* AFIT/GOR/ENS/07-25. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

THEONY, CLIFFORD M., *The Net Effects of Social Network Density and Organizational Citizenship Behavior on Performance.* AFIT/GEM/ENV/07-M14. Faculty Advisor: LtCol Kent C. Halverson. Sponsor: N/A.

TONEY, ROBERT P., *Management Versus Non-Management Knowledge Transfer From Training To Real Work Environments: A Meta-Analysis.* AFIT/GEM/ENV/07-M15. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.

TOWER, PAUL K., *An Analysis of Robust Workforce Scheduling Models for a Nurse Rostering Problem.* AFIT/GLM/ENS/07-12. Faculty Advisor: Maj Shane Knighton. Sponsor: N/A.

TY, ANTHONY R., *Aerosolization and TaqMan PCR Detection/Quantification of Bradyrhizobium japonicum USDA 110 as a Biowarfare Simulant.* AFIT/GES/ENV/07-M4. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.

WALDRON, JAMES M., *Characterization of Chlorinated Ethene Degradation in a Vertical Flow Constructed Wetland.* AFIT/GEM/ENV/07-M17. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.

WARD, CHARLES W., *Commander and User Perceptions of the Army's ITV Architecture.* AFIT/GLM/ENS/07-13. Faculty Advisor: Dr. William Cunningham, III. Sponsor: N/A.

WILKEN, BRIAN A., *Change-Point Methods for Overdispersed Count Data.* FIT/GOR/ENS/07-26. Faculty Advisor: Dr. Marcus Perry. Sponsor: N/A.

WILLIAMS, JASON P., *Robustness of Multiple Clustering Algorithms on Hyperspectral Images.* AFIT/GOR/ENS/07-27. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

WOLFF, JASON B., *The Perceived Effectiveness of Mentoring by Company Grade Officers in the United States Air Force.* AFIT/GLM/ENV/07-M7. Faculty Advisor: Maj Sharon Heilmann. Sponsor: N/A.

4.2.5. AIR FORCE MATERIEL COMMAND

BERG, BRYAN, K., *The Application of System Engineering Techniques to the Integration of a Digital Nuclear Weapon Onto The F-15.* AFIT/GSE/ENY/07-M05. Faculty Advisor: Maj Joerg Walter. Sponsor: 912 AESG/VA.

BECKLY, CHRISTOPHER M., *Sizing Mobility Readiness Spares Packages for Today's Warfighting Units.* AFIT/GLM/ENS/07-01. Faculty Advisor: LtCol Bradley Anderson. Sponsor: AFMC/A8S.

CAIRO, LUIS N., *An Analysis of the Deployment of System Oriented Architecture Environments in Air Force Combined Air Operations Centers.* AFIT/GIR/ENV/07-M6. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: 46TS/OGEA.

CASPERS, MATTHEW S., *CFD Investigation of Flow Past Idealized Engine Nacelle Clutter.* AFIT/GAE/ENY/07-M08 Faculty Advisor: LtCol Raymond C. Maple Sponsor: 46 TW OG.

FOWLER, JOSHUA D., *Impact of Window Selection on Zero-Doppler Clutter Estimation and Subtraction for ISAR Applications.* AFIT/GE/ENG/07-07. Faculty Advisor: Dr. Michael A. Temple. Sponsor: 46 TS/OGEE.

GEMAS, DAVID L., *A Systems Engineering Approach to Analyzing Weather Input Sensitivities of the Joint Precision Air Drop System.* AFIT/GSE/ENY/07J-01. Faculty Advisor: LtCol Steven T. Fiorino. Sponsor: 516th ASW/XR.

HARDER, ADAM, D., *Experimental Characterization of Turbulent Flow around Cylinder Arrays.* AFIT/GAE/ENY/07-M12. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: 46TW/OG.

MAIORANO, ERIKA E., *Decision Analysis with Value Focused Thinking as a Methodology to Select Buildings for Deconstruction.* AFIT/GEM/ENV/07-M9. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: WPAFB, Env. Mgt. (AFMC).

MAYNARD, JILL L., *Commercial Firm Training Practices Versus Aerial Port Hazardous Cargo Frustration.* AFIT/GLM/ENS/07-08. Faculty Advisor: Dr. Alan Johnson. Sponsor: AFMC/LSO.

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ASHER, DOUGLAS W., MARK BLOMME, SHAWN COREY and ROBERT FILBEY. *Impact Analysis of Electronic Attack on Airborne Synthetic Aperture Radar.* AFIT/ISE/ENY/07J-03. Faculty Advisor: Dr. David Jacques. Sponsor: 659 AESS (ASC).

BLOMME, MARK, see ASHER, DOUGLAS W.

COLE III, GEORGE P., *Feasibility Study of Variance Reduction in the Logistics Composite Model.* AFIT/GLM/ENS/07-04. Faculty Advisor: Dr. Alan Johnson. Sponsor: ASC/ENMS.

COREY, SHAWN, see ASHER, DOUGLAS W.

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AIR FORCE RESEARCH LABORATORY [AFRL]

AFRL: AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

ABAN, EDMUND D., *Adaptive Gravitational Gossip in Monitoring the Joint Battlespace Infosphere*, AFIT/GCS/ENG/07-01. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

BACK, CHRISTOPHER A., *Effects of Prior Aging on the Creep Response of Carbon Fiber Reinforced PMR-15 Neat Resin at 288°C in an Air Environment.* AFIT/GAE/ENY/07-J02. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsors: AFOSR/NL and AFRL/MLBCM.

BROECKERT, JOSEPH L., *Effects of Prior Aging at Elevated Temperature in Air and in Argon Environments on Creep Response of PMR15 Neat Resin.* AFIT/GMS/ENY/07-M01. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsor: AFOSR/NE.

CAMERON, GREGORY J., *An Evaluation of High Velocity Wear.* AFIT/GAE/ENY/07-M06, Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFOSR/NM.

CAMPBELL, JOSHUA S., STANLEY L. COOLEY, MATTHEW F. DURKIN, AND BRIAN K. MADDOCKS. *Investigating Hastily-Formed Collaborative Networks*. AFIT/GSE/ENY/07-M01. Faculty Advisor: LtCol John M. Colombi. Sponsor: AFOSR.

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GRAY, THOMAS E., *Investigation of Gate Current in Neutron Irradiated AlxGa1-xN/GaN Heterogeneous Field Effect Transistors Using Voltage and Temperature Dependence.* AFIT/GNE/ENP/07-02. Faculty Advisor: Dr. James C. Petrosky. Sponsor: AFRL/VS and AFOSR.

HARMON, DUANE F., *Overcoming TCP Degradation in the Presence of Multiple Intermittent Link Failures Utilizing Intermediate Buffering.* AFIT/GE/ENG/07-11. Faculty Advisor: Maj Scott R. Graham. Sponsor: AFOSR.

LADRIDO, CHRISTINE G., *Effect of Prior Aging on Fatigue Response of IM7/BMI 5250-4 at 191°C.* AFIT/GAE/ENY/07-J10. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsors: AFOSR/NE and AFRL/MLBCM.

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SAILSMAN, JERMAINE S., *Modeling Acoustic Effects on Shear Coaxial Jet Flow Utilizing Molecular Dynamic Simulation.* AFIT/GA/ENY/07-M16. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFOSR.

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STUCKEY, NATHAN C., *Stochastic Estimation and Control of Queues Within a Computer Network.* AFIT/GE/ENG/07-24. Faculty Advisor: LtCol Juan R. Vasquez. Sponsor: AFOSR.

VANDERHYDE, MICHAEL J., *Comparison of Thermodynamic Equilibrium and Non-Equilibrium Representation of Materials.* AFIT/GAE/ENY/07-M25. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/MNAC and AFOSR.

AFRL: AIR VEHICLES DIRECTORATE

ADAMS, BRANDON, J., *Structural Stability of a Joined-Wing Sensorcraft.* AFIT/GAE/ENY/07-J01. Faculty Advisor: Dr. Robert Canfield. Sponsor: AFRL/VASD.

ANDREWS, JENNIFER P., *Lamb Wave Propagation in Varying Thermal Environments.* AFIT/GA/ENY/07-M01. Faculty Advisor: Dr. Anthony N. Palazotto. AFRL/VASA.

BURKINSHAW, MATTHEW G., *Comparative Study of Aerodynamic Interference During Aft Dispense of Munitions.* AFIT/GAE/ENY/07-J03. Faculty Advisor: LtCol Raymond C. Maple. Sponsor: AFRL/VAAI.

BURNS, BRIAN S., *Autonomous Unmanned Aerial Vehicle Rendezvous for Automated Aerial Refueling (AAR)*. AFIT/GAE/ENY/07-M05, Faculty Advisor: Maj Paul Blue. Sponsor: AFRL/VAC.

CARR, RYAN, *Quantifying Non-Equilibrium in Hypersonic Flows Using Entropy Generation*. AFIT/GAE/ENY/07-M07. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/VASD.

CRIDER, JEFFREY S., *Damage Detection Using Lamb Waves for Structural Health Monitoring*. AFIT/GA/ENY/07-M05. Faculty Advisor: Maj Eric D. Swenson. Sponsor: AFRL/VASA.

DILLSAVER, MATTHEW, J., *Experimental Investigation of Oblique Wing Aerodynamics at Low Speed*. AFIT/GAE/ENY/07-M10. Faculty Advisor: Dr. Milton Franke. Sponsor: AFRL/VAAA.

FRANKE, C. J., *Aircraft Engine Cycle Optimization for the Next Generation Theater Transport*. AFIT/GAE/ENY/07-M11. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/VAOT.

HAN, SEJIN, *Finite Element Analysis of Lamb Waves Acting within a Thin Aluminum Plate*. AFIT/GAE/ENY/07-S02. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/VASA.

HEUCK JR., WILLIAM D., *A Future-Based Risk Assessment for the Survivability of Long Range Strike Systems*. AFIT/GRD/ENS/07-01. Faculty Advisor: Maj Gary Kinney. Sponsor: AFRL/VAOT.

KILLIAN, D. N., *The Aerodynamic Performance of the Houck Configuration Flow Guides*. AFIT/GAE/ENY/07-J09. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/VAAA.

MARLIN, MICHAEL J., *Wide Area Search and Engagement Simulation Validation*. AFIT/GAE/ENY/07-M17. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/VAC.

MCNIEL, CHARLES M., *Demonstration of Clean Particle Seeding for Particle Image Velocimetry in a Closed Circuit Supersonic Wind Tunnel*. AFIT/GAE/ENY/07-M19. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/VAAI.

MENDOZA, L. L., JR., *Damage Considerations of a Flexible Micro Air Vehicle Wing Using 3-D Laser Vibrometry*. AFIT/GAE/ENY/07-J13. Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFRL/VASD.

MICHALSKI, SYDNEY C., *Determining Logistics Ground Support Manpower Requirements for a Reusable Military Launch Vehicle*. AFIT/GLM/ENS/07-09. Faculty Advisor: Dr. Alan Johnson. Sponsor: AFRL/VACD.

PELTIER, D. W., *Performing Particle Image Velocimetry in a Supersonic Wind Tunnel Using Carbon Dioxide As The Seed Material*. AFIT/GAE/ENY/07-J17. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/VAA.

ROSARIO, ROLAND A., *Optimal Sensor Threshold Control and the Weapon Operating Characteristic for Autonomous Search and Attack Munitions*. AFIT/GAE/ENG/07-02. Faculty Advisor: Dr. Meir Pachter. Sponsor: AFRL/VA.

RUFA, JUSTIN, R., *Development of an Experimental Platform for Testing Autonomous UAV Guidance and Control Algorithms*. AFIT/GAE/ENY/07-M20. Faculty Advisor: Maj. Paul A. Blue. Sponsor: AFRL/VAC.

SMITH, JEREMY J., *Simulation of the Dynamically Coupled KC-135 Tanker and Refueling Boom*. AFIT/GAE/ENY/07-M21. Faculty Advisor: Dr. Donald Kunz. Sponsor: AFRL/VACD.

SPENCER, JAMES H., *Optical Tracking for Relative Positioning in Automated Aerial Refueling*. AFIT/GE/ENG/07-22. Faculty Advisor: LtCol Matthew Goda. Sponsor: AFRL/VACC.

TOBIAS, A. P., *Experimental Methods to Characterize Nonlinear Vibration of Flapping Wing Micro Air Vehicles.* Faculty Advisor: AFIT/GAE/ENY/07-M23. Dr. Anthony Palazotto. Sponsor: AFRL/VASD.

WALKER, MICHAEL M., *The Aerodynamic Performance of the 24 Inch Houck Configuration.* AFIT/GAE/ENY/03-M30. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/VAAA.

WALKER, ROBERT L., *Finite Element Solution: Nonlinear Flapping Beams for Use With Micro Air Vehicle Design.* AFIT/GAE/ENY/07-M26. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/VASD.

WESTFALL, J.T., *Structural Optimization of a Distributed Actuation System in a Flexible Inplane Morphing Wing.* AFIT/GAE/ENY/07-J22. Faculty Advisor: Dr. Robert Canfield. Sponsor: AFRL/VASA.

ZOLLARS, MICHAEL, D., *Optimal Wind Corrected Flight Path Planning For Autonomous Micro Air Vehicles.* AFIT/GAE/ENY/07-M28. Faculty Advisor: Maj Paul A. Blue. Sponsor: AFRL/VAC.

AFRL: DIRECTED ENERGY DIRECTORATE

BAIRD, C. JAMES., *Direct Diode Pumped Raman Amplified Based on a Multimode Graded Index Fiber.* AFIT/GAP/ENP/07-01. Faculty Advisor: LtCol Thomas G. Alley. Sponsor: AFRL/DE.

GAMBOA, OMAR, *Stimulated Brillouin Scattering Beam Cleanup and Beam Phasing Through Two Passive Channels.* AFIT/GAP/ENP/07-03. Faculty Advisor: Maj Timothy H. Russell. Sponsor: AFRL/DE.

WISDOM, BRETT W., *Assessment of Optical Turbulence Profiles Derived from Probabilistic Climatology.* AFIT/GEO/ENP/07-02. Faculty Advisor: LtCol Steven T. Fiorino. Sponsor: AFRL/DE.

AFRL: HUMAN EFFECTIVENESS DIRECTORATE

GEFFRE, JENNIFER L., *A Layered Social and Operational Network Analysis. AFIT/GOR/ENS/07-07.* Faculty Advisor: Dr. Richard Deckro. Sponsor: NASIC/FCEB & AFRL/HECS.

FORTSON, LARRY W., JR., *Towards the Development of a Defensive Cyber Damage and Mission Impact Methodology.* AFIT/GIR/ENV-M9. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFRL/HEX.

SCHWENN, KARL R., *Biological Cell Identification by Integrating Micro-Fluids, Electrical Impedance Spectroscopy and Stochastic Estimation.* AFIT/GE/ENG/07-20. Faculty Advisor: LtCol Juan R. Vasquez. Sponsor: AFRL/HEPB.

SEDER, JOSHUA S., *Examining Clandestine Social Networks for the Presence of Non-Random Structure.* AFIT/GOR/ENS/07-24. Faculty Advisor: Dr. Marcus Perry. Sponsor: AFRL/HECS & NASIC/FCEB.

SEYBA, JASON R., *Voice and Video Capacity of a Secure Wireless System.* AFIT/GCS/ENG/07-14. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFRL/HE.

AFRL: INFORMATION DIRECTORATE

DEFREITAS, ADRIAN A., *Developing Parallel Ant Colony Synchronization Strategies.* AFIT/GCS/ENG/07-15. Faculty Advisor: Maj Christopher B. Mayer. Sponsor: AFRL/IFS.

FENSTERER, GERALD D., *Planning and Assessing Stability Operations: A Proposed Value-Focused Thinking Approach.* AFIT/GOR/ENS/07-06. Faculty Advisor: Maj Gary Kinney. Sponsor: AFRL/IFSE.

LLEWELLYN, LARRY C., II, *Distributed Fault-Tolerant Quality of Service Routing in Hybrid Directional Wireless Networks*. AFIT/GE/ENG/07-15. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR and AFRL/IF.

STEVENS, MICHAEL R., *Use of Trust Vectors in Support of the CyberCraft Initiative*. AFIT/GIA/ENG/07-03. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/IFGB.

WINNINGHAM, BRYAN W., *Characterization of Intercalated Graphite Fibers for Microelectromechanical Systems (MEMS) Applications*. AFIT/GE/ENG/07-25. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/IFTA.

AFRL: MATERIALS AND MANUFACTURING DIRECTORATE

ALLARD, MARK E., *Characterization of a Polymer-Based MEMS Pyroelectric Infrared Detector*. AFIT/GEO/ENG/07-01. Faculty Advisor: LtCol James A. Fellows. Sponsor: AFRL/MLPJF.

BACK, CHRISTOPHER A., *Effects of Prior Aging on the Creep Response of Carbon Fiber Reinforced PMR-15 Neat Resin at 288°C in an Air Environment*. AFIT/GAE/ENY/07-J02. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsors: AFOSR/NL and AFRL/MLBCM.

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KATWYK, DAVID W., *Tension-Compression Fatigue Behavior of a Carbon Fiber/Epoxy (IM7/EPON 862) Composite Fabricated Using Vacuum Assisted Resin Transfer Molding Process*. AFIT/GA/ENY/07-M14. Faculty Advisor: Dr. Shankar Mall. Sponsor: AFRL/MLBCO.

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SALVIA, ROBERT A., *Effects of prior aging at 191°C on creep response of IM7/BMI 5250-4*. AFIT/GAE/ENY/07-J23. Faculty Advisors: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/MLBCM and AFOSR/NL.

SCHWENDIMAN, K.A., *Critical Life Prediction Research on Boron-Enhanced Ti-6Al-4V*. AFIT/GAE/ENY/07-J24. Faculty Advisor: Dr. Shankar Mall. Sponsor: AFRL/MLLMD.

SUTTER, DAVID, A., *Three-Dimensional Analysis of a Composite Repair and the Effect of Overply Shape Variation on Structural Efficiency*. AFIT/GAE/ENY/07-M22. Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFRL/MLBC.

AFRL: MUNITIONS DIRECTORATE

BELLOTT, MARK M., *Microelectro-Mechanical (MEMS) Safe and Arm Device*. AFIT/GE/ENG/07-03. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/MNMF.

FLETCHER, JORDAN L., *Real-Time GPS-Alternative Navigation Using Commodity Hardware*. AFIT/GCS/ENG/07-02. Faculty Advisor: Maj Michael J. Veth. Sponsor: AFRL/MN.

GLAUVITZ, NATHAN E., *Toward a Flying MEMS Robot*. AFIT/GE/ENG/07-09. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/MNAV.

MILLER, VIRGINIA., *Conceptual MEMS Devices for a Redeployable Antenna*. AFIT/GE/ENG/07-30. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/MNMF.

VANDERHYDE, MICHAEL J., *Comparison of Thermodynamic Equilibrium and Non-Equilibrium Representation of Materials.* AFIT/GAE/ENY/07-M25. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/MNAC and AFOSR.

AFRL: PROPULSION DIRECTORATE

AN, YOUNG MAN., *Raman Scattering Study of Supercritical Bi-Component Mixtures Injected into a Subcritical Environment.* AFIT/GA/ENY/07-S01. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/PRAS.

ANDERSON, WESLY S., *Design, Construction, and Validation of the AFIT Small Scale Combustion Facility and Section Model of the Ultra-Compact Combustor.* AFIT/GAE/ENY/07-M01. Faculty Advisor: Maj Richard Branam. Sponsor: AFRL/PRS and AFRL/PRTC.

ANDRUS, IONIO Q., *Comparative Analysis of a High Bypass Turbofan Using a Pulsed Detonation Combustor.* AFIT/GAE/ENY/07-M02. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/PRTA.

BATCHELOR, RYAN G., *Fuel Spray Analysis of The F-22 Augmentor Pilot Fuel Injector.* AFIT/GAE/ENY/07-S01. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/PRTC.

BRAUN, JASON C., *Effects of Temperature and Environment on Creep Behavior of an Oxide-Oxide Ceramic Matrix Composite.* AFIT/GAE/ENY/07-M04, Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/PRTC and AFRL/MLLN.

GREATTING, HEATHER, *Analysis of the Feasibility of a Space-Based ICBM Interceptor and Propulsion System Trade Study.* AFIT/GA/ENY/07-M09. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/PRS.

HOFFMAN, DAVID A., *Experimental Investigation of Turbojet Thrust Augmentation Using an Ejector.* AFIT/GAE/ENY/07-M13. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/PRTC.

HOWELL, THOMAS G., *Catalytic Partial Oxidation Reforming of JP8 and S8.* AFIT/GAE/ENY/07-J08. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/PRPS.

JANTZ, BRADLEY. *Contamination of the TacSat-2 Spacecraft Structure by a 200-Watt Hall Effect Thruster.* AFIT/GA/ENY/07-M13. Faculty Advisor: Maj Richard Branam. Sponsor: AFRL/PRS.

LAFFEY, P. D., *The Effects of Environment on the Interlaminar Shear Performance of an Oxide/OxideCeramic Matrix Composite at Elevated Temperature.* AFIT/GAE/ENY/07-J11. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/PRTC.

KOETHER, STEPHEN J., *Validation of the AFIT Small Scale Combustion Facility and OH Laser-Induced Fluoresence of an Atmospheric Laminar Premixed Flame.* AFIT/GAE/ENY/07-S03. Faculty Advisor: Dr. Paul King. Sponsor: AFRL/PRTC.

RADTKE, J. T., *Efficiency and Pressure Loss Characteristics of an Ultra-Compact Combustor with Bulk Swirl.* AFIT/GAE/ENY/07-J18. Faculty Advisor: Dr. Paul King. Sponsor: AFRL/PRTC.

SZYMCZAK, N.R., *Compressive Creep Behavior of Nextel™ 720/Alumina Ceramic Matrix Composite At 1200◦C in Air and in Steam Environment.* AFIT/GAE/ENY/07-J20. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/PRTC.

TOMASZEWSKI, JAMES W., *Characterization of a Hall Effect Thruster Using Thermal Imaging.* AFIT/GA/ENY/07-M18. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/PRS.

UMHOLTZ, M., *A Comparison of Film Cooling Techniques in a High Speed, True Scale, Fully Cooled Turbine Vane Ring.* AFIT/GAE/ENY/07-J21. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/PRF.

WHITING, BRIDGETT A., *Cyclic Creep and Recovery Behavior of NextelTM 720/Alumina Ceramic Matrix Composite at 1200 °C in Air and in Steam Environments.* AFIT/GAE/ENY/07-S05. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/PRTS.

AFRL: SENSORS DIRECTORATE

ABBOTT, LAIRD, GARRETT KNOWLAN, CRAIG PHILLIPS and CHRISTIAN STILLINGS. *Systems Engineering Analysis for Transition of the Fleeting Target Technology Demonstrator.* AFIT/GSE/ENY/07-M03. Faculty Advisor: Dr. Richard Cobb. Sponsor: AFRL/SN.

ALBAIRAT, OUAIL, *Multi-Dimensional Classification Algorithm for Automatic Modulation Recognition.* AFIT/GE/ENG/07-01. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/SNR.

BARTON, RICHARD J., *Design and Analysis of a Compact Passive Ultra-Wideband Hexagonal Spiral Array Antenna.* AFIT/GE/ENG/07-02. Faculty Advisor: Dr. Andrew J. Terzuoli. Sponsor: AFRL/SNR.

BENSON, JOSHUA A., *Software Protection Against Reverse Engineering Tools.* AFIT/GIA/ENG/07-01. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/SNTA.

BIRRER, BOBBY D., *Metamorphic Program Fragmentation as a Software Protection.* AFIT/GCE/ENG/07-01. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SNT.

BRAKUS, BRIAN M., *A Modular Mixed-Signal VLSI Design Approach for Digital Radar Applications.* AFIT/GCE/ENG/07-02. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/SND.

BUSCHELMAN, ERIC A., *Material Characterization Improvement in High Temperature Rectangular Waveguide Measurements.* AFIT/GE/ENG/07-05. Faculty Advisor: Dr. Michael J. Havrilla. Sponsor: AFRL/SNS.

HAKER, MARSHALL E., *Hardware Realization of a Transform Domain Communications System.* AFIT/GE/ENG/07-10. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/SNRW.

HARKISS, SAMUEL I., *A Study of Bi-Directional Reflectance Distribution Functions and their Effect on Infrared Signature Models.* AFIT/GE/ENP/07-01. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/SN.

HARNER, ALAN L., *Sub-Surface Navigation Using Very-Low Frequency Electromagnetic Waves.* AFIT/GE/ENG/07-12. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/SNRP.

HART, SAMUEL A., *APHID: Anomaly Processor in Hardware for Intrusion Detection.* AFIT/GCE/ENG/07-03. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SNTA.

HAYDEN, WALTER J., *Locating Encrypted Data Hidden Among Non-Encrypted Data Using Statistical Tools.* AFIT/GCS/ENG/07-06. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/SNTA.

HOLSTON, MATTHEW E., *Moving Target Focusing, Geolocation, and Ambiguity Resolution Using Single-Channel Synthetic Aperture Radar.* AFIT/GE/ENG/07-13. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNAS.

JONES, DAVID A., *Portable Diode Pumped Femtosecond Lasers.* AFIT/GAP/ENP/07-04. Faculty Advisor: LtCol Matthew J. Bohn. Sponsor: AFRL/SN.

KNOWLAN, GARRET, see ABBOTT, LAIRD

KOPERSKI, CHOYONG G., *Multi-Robot FastSLAM for Large Domains*. AFIT/GCE/ENG/07-06. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/SNRN.

LEAVER, MICHAEL D., *Signal Coexistence Study on the GPS L2 Civil Signal Broadcast From the Block IIR-M Class Satellites*. AFIT/GE/ENG/07-14. Faculty Advisor: Dr. Stewart L. DeVilbiss. Sponsor: AFRL/SNZW.

MAJUMDER, UTTAM K., *Point Spread Function Characterization of a Radially Displaced Scatterer Using Circular Synthetic Aperture Radar*. AFIT/GE/ENG/07-26. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNAS.

MAYHEW, OSCAR C., *RADAR System Characterization Extended to Hardware-in-the-Loop Simulation for the Lab-Volt System.* AFIT/GE/ENG/07-29. Faculty Advisor: Maj Michael A. Saville. Sponsor: AFRL/SN.

MEDLEY, DOUGLAS P., *Virtualization Technology Applied to Rootkit Defense*. AFIT/GCE/ENG/07-08. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SN.

MONTIMINY, MYRNA B., *Passive Geolocation of Low-Power Emitters in Urban Environments Using TDOA*. AFIT/GE/ENG/07-16. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/SNRW.

MOTT, STEPHEN D., *Hardware-Based Primitives to Enhance Parallel Security Monitoring in a Novel Computing Architecture*. AFIT/GE/ENG/07-17. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SNTA.

NERENBERG, DANIEL D., *A Study of Rootkit Stealth Techniques and Associated Detection Methods*. AFIT/GCE/ENG/07-10. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SNTA.

PATTERSON, CHRISTOPHER A., *Multi-Objective Optimization for Speed and Stability of a Sony AIBO Gait.* AFIT/GCS/ENG/07-17. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/SNRN.

PAUL, JASON V., *Anti-Tamper Method for Field Programmable Gate Arrays Through Temporal Decoy Circuits*. AFIT/GE/ENG/07-18. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/SNTA.

PEREZ, SERGIO P., *Amplitude Comparison Method to Determine Direction of Arrival for RF Communication*. AFIT/GE/ENG/07-27. Faculty Advisor: LtCol Juan R. Vasquez. Sponsor: AFRL/SNAT.

PHILLIPS, CRAIG, see ABBOTT, LAIRD

SEAL, MICHAEL D., *Nonlinear Time-Variant Response in an Avalanche Photodiode Array Based Laser Detection and Ranging System*. AFIT/GEO/ENG/07-03. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/SNJM.

SHELL, SCOTT A., *Optical Parametric Oscillation in Orientation-Patterned Gallium Arsenide*. AFIT/GMS/ENP/07-01. Faculty Advisor: LtCol Thomas G. Alley. Sponsor: AFRL/SN.

SILVA, RYAN J., *Implementation and Optimization of the Advanced Encryption Standard Algorithm on an 8-Bit Field Programmable Gate Array Hardware Platform*. AFIT/GE/ENG/07-21. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/SNTA.

SPANGLER, BRETT R., *Characterizing the Solar Wind Using DMSP Ion Drift Data.* AFIT/GAP/ENP/07-J01. Faculty Advisor: LtCol Christopher G. Smithtro. Sponsor: AFRL/SN.

STILLINGS, CHRISTIAN, see ABBOTT, LAIRD

TODD, ADAM D., *Network Intrusion Detection System Evasion*. AFIT/GIA/ENG/07-04. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SN.

VELOTTA, JAMIE S., *Navigation Using Orthogonal Frequency Division Multiplexed Signals of Opportunity*. AFIT/GE/ENG/07-31. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/SNRN.

WOOLLEY, BRIAN G., *Unified Behavior Framework for Reactive Control in Real-Time Systems*. AFIT/GCS/ENG/07-11. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/SNRN.

AFRL: REQUIREMENTS DIRECTORATE

ROMERO, MICHAEL A., *Identifying and Assessing Effective Mechanisms for Technology Transfer*. AFIT/GRD/ENV/07-M6. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFRL/XR.

AFRL: SPACE VEHICLES DIRECTORATE

EASLEY, SHAUN M., *Anisotropy in the South Atlantic Anomaly*. AFIT/GAP/ENP/07-02. Faculty Advisor: LtCol Christopher G. Smithtro. Sponsor: AFRL/VS.

GARGASZ, MICHAEL LUKE, *Optimal Spacecraft Attitude Control Using Aerodynamic Torques*. AFIT/GA/ENY/07-M08. Faculty Advisor: LtCol Nathan A. Titus. Sponsor: AFRL/VSES.

GRAY, THOMAS E., *Investigation of Gate Current in Neutron Irradiated $Al_xGa_{1-x}N/GaN$ Heterogeneous Field Effect Transistors Using Voltage and Temperature Dependence*. AFIT/GNE/ENP/07-02. Faculty Advisor: Dr. James C. Petrosky. Sponsor: AFRL/VS and AFOSR.

MCLAUGHLIN, ANNIE, B., JESSE T. MCLAUGHLIN, JASON S. PRITCHETT, JOHN H. STONE and GREGORY K.VAN DYK. *Protection of a High-Valued Space Asset*. AFIT/GSE/ENY/07M-04. Dr. Richard Cobb. AFRL/VS.

MCLAUGHLIN, JESSE T., see MCLAUGHLIN, ANNIE B.

MONTIMINY, DAVID P., *Using Relocatable Bitstreams for Fault Tolerance*. AFIT/GCE/ENG/07-09. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/VSSE.

NAFF, JEFFREY E., *Quick-Turn Finite Element Analysis for Plug-and-Play Satellite Structures*. AFIT/GA/ENY/07-M15. Maj Eric D. Swenson. Sponsor: AFRL/VSSV.

POMAGER, JOSEPH C., *Parametric Reliability of Space-Based Field Programmable Gate Arrays*. AFIT/GE/ENG/07-19. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/VSEE.

PRICHETT, JASON S., see MCLAUGHLIN, ANNIE B.

STEENBURGH, ROBERT A., *Holes: Ionospheric Scintillation GPS and Imputation*. AFIT/GAP/ENP/07-06. Faculty Advisor: LtCol Christopher G. Smithtro. Sponsor: AFRL/VS.

STONE, JOHN H., see MCLAUGHLIN, ANNIE B.

VANDYK, GREGORY K., see MCLAUGHLIN, ANNIE B.

WERNER, JOSHUA T. *Assessment of the Impact of Various Ionospheric Models on High-Frequency Signal Raytracing*. AFIT/GAP/ENP/07-07. Faculty Advisor: LtCol Christopher G. Smithtro. AFRL/VS.

4.2.6. AIR MOBILITY COMMAND

POLOMSKY, ROBERT D., *Air Mobility Command's En Route Support Infrastructure: a Construct of Aircraft Type and Geographic Location Utilized to Assess En Route Aircraft Logistics Support*. AFIT/GIR/ENV/07-J2. Faculty Advisor: Maj Sharon G. Heilmann. Sponsor: HQ AMC/A49.

4.2.7. AIR FORCE SPACE COMMAND

MCDONALD, GAVAIN K., *Work-Home Conflict: A Study of the Impact of Role Conflict on U.S. Air Force Company Grade Officer Turnover Intentions.* AFIT/GLM/ENV/07-M4. Faculty Advisor: Maj Sharon Heilmann. Sponsor: 30 SW/CC.

RASHASH, SANDRA M., *Radar Orbit Analysis Tool Using Least Squares Estimator*. AFIT/GSS/ENY/07-S01. Faculty Advisor: Dr. William Wiesel. Sponsor: HQ AFSPC/XPY.

4.2.8. USAF FIELD OPERATING AGENCIES

AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE

FALCONE, JEFFREY T., *Using Value-Focused Thinking to Evaluate the Use of Innovative Stormwater Management Technologies on Air Force Installations*. AFIT/GEM/ENV/07-M5. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: AFCEE.

POWELL, WILLIAM C., *Development of a Screening Model for Design and Costing of an Innovative Tailored Granular Activated Carbon Technology to Treat Perchlorate-Contaminated Water*. AFIT/GEM/ENV/07-M12. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: AFCEE/TD.

SECODY, ROLAND E., *Modeling In Situ Bioremediation of Perchlorate-Contaminated Groundwater*. AFIT/GEM/ENV/07M-13. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: AFCEE/TD.

VALENCIA, VHANCE V., *A Project Manager's Personal Attributes as Predictors for Success*. AFIT/GEM/ENV/07-M16. Faculty Advisor: LtCol Daniel T. Holt. Sponsor: AFCEE.

AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

DALBY, TIMOTHY D., *Quantification of Risk for USAF Fire and Emergency Services Flights as a Result of Shortages in Manpower*. AFIT/GEM/ENS/07-02. Faculty Advisor: Maj Shane Knighton. Sponsor: AFCESA/CEXF.

DIAZ, DANIEL, JR., *Diffusion of Innovation: Factors Promoting Interest in Solar Photovoltaic Generation Systems within Air Force Installations*. AFIT/GEM/ENV/07-M3. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFCESA.

MCCOURT, MICHAEL J., *A Decision Model for Selecting Energy Efficient Technologies for Low-Sloping Roof Tops Using Value-Focused Thinking*. AFIT/GEM/ENS/07-03. Faculty Advisor: LtCol Jeffery Weir. Sponsor: AFCESA/CESC.

SPEER, BENJAMIN G., *A Value-Focused Thinking Model for the Selection of the Best Rigid Pavement, Partial-Depth Spall Repair Material*. AFIT/GEM/ENS/07-04. Faculty Advisor: Maj Shane Knighton. Sponsor: HQ/AFCESA.

AIR FORCE COMMUNICATIONS AGENCY

ALSOP, ALAN S., *Beyond Passwords: Usage and Policy Transformation,* AFIT/GIR/ENV/07-M1. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: AFCA/ECAI

BRAULT, GREGORY J., *Multi-Dimensional Range Querying Using a Modification of the Skip Graph*. AFIT/GE/ENG/07-04. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFCA/ENAN.

MACDONALD, JASON E., *Use of Tabu Search in a Solver to Map Complex Networks onto Emulab Testbeds*. AFIT/GCE/ENG/07-07. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFCA/ENAN.

ROBERTS, DANIEL K., *Performance Analysis and Comparison of Multiple Routing Protocols in a Large-Area High-Speed Mobile Node Ad Hoc Network*. AFIT/GE/ENG/07-28. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFCA/EN.

AIR FORCE COST ANALYSIS AGENCY

FUERING, JEFFERY C., *The Impact of Human Capital on the Cost of Air Force Acquisition Programs*. AFIT/GCA/ENV/07-M5. Faculty Advisor: LtCol Jeffrey S. Smith. Sponsor: AFCAA.

AIR FORCE TECHNICAL APPLICATION CENTER

HARR, LOGAN J., *Precise Calculation of Complex Radioactive Decay Chains*. AFIT/GNE/ENP/07-03. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: Air Force Technical Applications Center.

AF GEOGRAPHICAL INFORMATION SYSTEMS SUPPORT CENTER (AF GISSC)

BRYANT, SCOTT A., *Geospatial Informational Security Risks and Concerns of the U.S. Air Force GeoBase Program.* AFIT/GEM/ENV/07-M1. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: USAF GIS Support Center.

AIR FORCE TEST PILOT SCHOOL (AF TPS)

DOTTER, JASON D., *An Analysis of Aircraft Handling Quality Data Obtained from Boundary Avoidance Tracking Flight Test Techniques*. AFIT/GAE/ENY/07-M24. Faculty Advisor: Maj Paul Blue. Sponsor: USAF Test Pilot School.

4.2.9. DEPARTMENT OF DEFENSE

DEFENSE LOGISTICS AGENCY (DLA)

BUCK, JESSICA L., *Class VIIIA Materiel: What Problems were Encountered Transiting OIF Air Transshipment Nodes?* AFIT/GLM/ENS/07-02. Faculty Advisor: Dr. Alan Johnson. Sponsor: DLA/MSC.

DEFENSE THREAT REDUCTION AGENCY

CARLSON, LONNIE, *Cobalt Doping of Semiconducting Boron Carbide using Cobaltocene.* AFIT/GNE/ENP/07-01. Faculty Advisor: LtCol David LaGraffe. Sponsor: DTRA/CS.

JONES, CHRISTOPHER P., *High Resolution Mesoscale Weather Data Improvement to Spatial Effects for Dose-Rate Contour Plot Predictions*. AFIT/GNE/ENP/07-04. Faculty Advisor: LtCol Steven T. Fiorino. Sponsor: DTRA/AFIT.

KLING, JOSEPH A., *The Sensitivity of RDD Contamination Predictions to Source Term Parameters.* AFIT/GNE/ENP/07-05. Faculty Advisor: Dr. Charles J. Bridgman. Sponsor: DTRA/TD.

LUNDIN, MICHAEL A., *Passive Detection of Uranyl Compounds.* AFIT/GAP/ENP/07M-05. Faculty Advisor: LtCol Matthew J. Bohn. Sponsor: DTRA.

MAAS, MICHAEL R., *Directional Detection of Scattered Gamma Spectra by a Portable High Purity Germanium Detector.* AFIT/GNE/ENP/07-06. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: DTRA/AFIT.

HIGH ENERGY LASER JOINT TECHNOLOGY OFFICE (HELJTO)

RODGERS, LUKE P., *Collision Broadening Using Alkali-Filled, Hollow Core Fibers.* AFIT/GAP/ENP/07-S01. Faculty Advisor: Maj Timothy Russell. Sponsor: HELJTO.

OFFICE OF THE SECERETARY OF DEFENSE

ORTH, DAVID F., *An Infrared Camera Simulation for Estimating Spatial Temperature Profiles and Signal-to-Noise Ratios of an Airborne Laser-Illuminated Target.* AFIT/GEO/ENP/07-01. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: DETEC (OSD).

UNITED STATES STRATEGIC COMMAND

NYSETHER, NATHAN E., *Classifying Failing States.* AFIT/GOR/ENS/07-19. Faculty Advisor: Dr. Richard Deckro. Sponsor: USSTRATCOM /GISC.

ROBINSON II., PAUL D., *Patterns of War Termination: A Statistical Approach.* AFIT/GOR/ENS/07-23. Faculty Advisor: Dr. Richard Deckro. Sponsor: USSTRATCOM /GISC.

UNITED STATES TRANSPORTATION COMMAND

JACKSON JR., WILLIAM L., *The Viability of the Air Mobility Command Pure Pallet Program for U.S. Army Reparable Retrograde Shipments.* AFIT/GLM/ENS/07-05. Faculty Advisor: Dr. William Cunningham, III. Sponsor: USTRANSCOM J5/J4.

4.2.10. UNITED STATES ARMY

JORDAN, JEREMY D., *Updating Optimal Decisions Using Game Theory and Exploring Risk Behavior Through Response Surface Methodology.* AFIT/GOR/ENS/07-13. Faculty Advisors: Dr. Marcus Perry & Dr. Sharif Melouk. Sponsor: Department of Army.

NEWKIRK, M. C., *Process Improvements for the AH-64 Tail Rotor Vibration Analysis.* AFIT/GAE/ENY/07-J15. Faculty Advisor: Dr. Donald Kunz. Sponsor: AMRDEC.

4.2.11. UNITED STATES NAVY

HUDOCK, DAVID M., *Biofiltration as a Viable Alternative for Air Pollution Control at Department of Defense Surface Coating Facilities.* AFIT/GES/ENV/07-M3. Faculty Advisor: LtCol David A. Smith. Sponsor: CNAF.

SCURLOCK, ANTONIO J., *Strategic Planning to Conduct Joint Force Network Operations: A Content Analysis of NETOPS Organizations Strategic Plans.* AFIT/GIR/ENV/07-M18. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: DONCIO.

4.2.12. DEPARTMENT OF ENERGY

MAGALLANEZ JR., RAYMOND. *Surrogate Strategies for Computationally Expensive Optimization Problems with CPU-Time Correlated Functions.* AFIT/GOR/ENC/07-01. Faculty Advisor: LtCol Mark Abramson. Sponsor: Los Alamos National Lab.

4.2.13. OTHER FEDERAL AGENCIES

ENVIRONMENTAL PROTECTION AGENCY (EPA)

DIETZ, JOHN M., *Microbial Degradation of Fuel Oxygenates under Aerobic Conditions*.
  AFIT/GES/ENV/07-M1. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: USEPA National Risk
  Management Research Laboratory.

GRACE, STEPHEN T., *The Effect of Orthophosphate as a Copper Corrosion Control Inhibitor in High
  Alkalinity Drinking Water Systems*. AFIT/GES/ENV/07-M2. Faculty Advisor: Dr. Mark N. Goltz.
  Sponsor: USEPA Office of Research and Development.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

BRYANT, ADAM R., *Developing a Framework for Evaluating Organizational Information Assurance
  Metrics Programs*. AFIT/GIR/ENV/07-M5, Faculty Advisor: Dr. Michael R. Grimaila. Sponsor:
  NASA JPL.

NATIONAL GEOSPATIAL INTELLIGENCE AGENCY (NGA)

RICHARDS, EDWARD F., *Commercial PC Wireless for Tactical Operations*. AFIT/GSS/ENY/07-M02.
  Faculty Advisor: LtCol Kerry Hicks. Sponsor: NGA/IIG.

NATIONAL PARKS SERVICE (NPS)

KWAN, KELLY E., *Selecting Electricity Generation Sources in Remote Locations*. AFIT/GEM/ENV/07-
  M7. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: National Park Service.

NATIONAL SECURITY AGENCY

CHAPLA, ERIK A., *Statistical Machine Translation of Japanese*. AFIT/GE/ENG/07-06. Faculty
  Advisor: Dr. Steven C. Gustafson. Sponsor: NSA.

HAAG, CHARLES R., *An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm With
  Application to the Detection of Distributed Computer Network Intrusions*. AFIT/GCS/ENG/07-05.
  Faculty Advisor: Dr. Gary B. Lamont. Sponsor: NSA/NCSC.

4.3. GRADUATE RESEARCH PAPERS

Note: Students in non-thesis graduate program at AFIT may write graduate research papers.

4.3.1. HQ UNITED STATES AIR FORCE

BENNETT JR. EARL R., CARL D. HUTCHERSON and ANTHONY L. PUENTE. *Change Management Barriers and Successful Strategies for ERP Implementation in Highly Regulated Industries: A Meta-Synthesis and Field Case Study.* AFIT/ILM/ENS/07-01. Faculty Advisor: Maj Barry Brewer. Sponsor: HAF/A4IT.

FALARDEAU, LARA L., *Downsizing Triage: Do the Survivors of the Recent AF Downsizing Intend to Stay?* Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: HQ USAF/A1.

GORDON, CAROL and JEFFREY R. KRUSINSKI. *Assessing Personnel Transformation Implementation to Established Change Management Standards.* AFIT/ILM/ENS/07-03. Faculty Advisor: Dr. William Cunningham, III. Sponsor: HQ USAF/A1X.

HUTCHERSON, CARL D. See BENNETT JR. EARL R.

KRUSINSKI, JEFFREY R. See GORDON, CAROL.

PHILLIPS, IAN D., *Tactical Relay Mirror System Integration in Base Defense.* AFIT/IOA/ENS/07-02. Faculty Advisor: Dr. John Miller. Sponsor: IDA, OSD/OFT, HAF/A8X & AFSFC/FPB.

PUENTE, ANTHONY L. See BENNETT JR. EARL R.

SLAUGHTER, DWAIN A., See CORAL, CEIR.

WYLIE, ALEXANDER M., *Optimization of Rated Officer Staff Assignments.* AFIT/IOA/ENS/07-03. Faculty Advisor: Maj Shane Hall. Sponsor: HAF/A1/AFPC/DPAOS.

4.3.2. OFFICE OF THE SECRETARY OF THE AIR FORCE

BARNHART, BRADLEY W. and FREDRICK W. WAINWRIGHT. *The Current State of Biometrics to Enhance Network Information Assurance for Air Force Networks*. AFIT/IC4/ENG/07-02. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: SAF/XC.

HILL, WILLIAM R., II, MICHALE E. PHILLIPS, BRANDON J. ROBINSON and RAINIER TANGLAO. *Managing the Force Development of the AF Communications Officer into the Future.* Faculty Advisor: Col Robyn M. King. Sponsor: SAF/XC.

PHILLIPS, MICHALE E., See HILL, WILLIAM R.

ROBINSON, BRANDON J., See HILL, WILLIAM R.

TANGLAO, RAINIER, See HILL, WILLIAM R.

WAINWRIGHT, FREDRICK W. See BARNHART, BRADLEY W.

4.3.3. AIR COMBAT COMMAND

DIETRICH III, GEORGE T. M., *The Future of Cargo Airdrop Rigging: A Logistical Support Analysis*. AFIT/IMO/ENS/07-02. Faculty Advisor: Dr. James Moore. Sponsor: AEFC.

MATHES, MICHAEL N., *Concepts for Defeating Pro-Nav Air to Air Missiles*. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: NASIC.

SEIBERT, HARRY L., JR., *A-10 Realignment: Factors Affecting Future Sortie Production at Davis-Monthan Air Force Base*. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: 355th AMXS.

4.3.4. AIR EDUCATION AND TRAINING COMMAND

OLIVER, BRADLEY R., *Optimizing the Undergraduate Pilot Training Scheduling Process*. AFIT/IOA/ENS/07-01. Faculty Advisor: Maj August Roesener. Sponsor: AETC & AFPC

19TH AIR FORCE

SCHMIDT, LANCE E., *Rethinking MC-130H Pilot Training: Applying AFSO21 to Formal School Training*. AFIT/IMO/ENS/07-14. Faculty Advisor: Dr. Alan Heminger. Sponsor: 19 AF/CV.

AIR FORCE INSTITUTE OF TECHNOLOGY
NOTE: Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

BROOKS, JEFFERY L., ELBERT L. COLEMAN JR., and GLEN M. GENOVE. *Investigating Air Operations Center (AOC) Knowledge Management Requirements*. Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: N/A.

COLEMAN, ELBERT L., JR., See BROOKS, JEFFERY L.

CONNOLLY, MICHALE W., *Managing Airspace Deconfliction in a Robust Unmanned Aerial Vehicle Environment*. Faculty Advisor: Lt Col Patrick D. Kee. Sponsor: N/A.

DOWNS, ROBERT O., JON T. HANNAH, and MICHAEL J. KARDOES. *Mitigation of Residual Bias in the Missile Defense Agency Tracking System*. AFIT/IC4/ENG/07-06. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: N/A.

DUNKLEE, DAVID R., *Improving Air Force Active Network Defense Systems through an Analysis of Intrusion Detection Techniques*. AFIT/IC4/ENG/07-05. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

FAUTH, RODNEY L., JR., *Ethics in the Military: A Study of Major Themes in Recent Professional Writing*. Faculty Advisor: Dr. Kirk A. Vaughan. Sponsor: N/A.

GENOVE, GLEN M., See BROOKS, JEFFERY L.

HAYDEN, JEFFREY D. and SCOTT A. VAUGHAN. *United States Air Force Fuels Program: An Analysis of Automatic Data Collection Initial Investments*. AFIT/ILM/ENS/07-04. Faculty Advisor: Maj Barry Brewer. Sponsor: N/A.

HANNAH, JON T. See DOWNS, ROBERT O.

HOLT, JEFFREY D. and TIMOTHY M. TELEGA. *A Study of Optimal Commander Tour Length,* Faculty Advisor: Col Robyn M. King. Sponsor: N/A.

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CAMPBELL, JASON L., *A Qualitative Analysis of the Possible Effects of "The New Process-Aligned Logistics Readiness Squadron" Structure on Heavily Contracted Logistics Readiness Organizations*. Faculty Advisor: Maj Sharon G. Heilmann. Sponsor: AFMC/A4R and 88ABW, Logistics Readiness Division.

PHILLIPS, IAN D., *Tactical Relay Mirror System Integration in Base Defense*. AFIT/IOA/ENS/07-02. Faculty Advisor: Dr. John Miller. Sponsor: IDA, OSD/OFT, HQ AF/A8X & AFSFC/FPB.

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AIR FORCE RESEARCH LABORATORY

CHAVASSE, NICHOLAS H., III, MATTHEW T. FRITZ and BRIAN F. ZANE. *Evaluating of a Non-Traditional Element Detection Device*. Faculty Advisor: Maj Sonia E. Leach. Sponsor: AFRL.

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AERONAUTICAL SYSTEMS CENTER

CORAL, CEIR and DWAIN A. SLAUGHTER. *F-16 Aircraft Common Configuration Implementation Program (CCIP): A Modernization Program Effects Case Study.* AFIT/ILM/ENS/07-02. Faculty Advisor: Maj Barry Brewer. Sponsor: ASC/312 AESG/DC.

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BIERYLA, JAMES J., *Processor Requirements for a Reconfigurable Airborne Sensor Pod.* AFIT/IES/ENG/07-01. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: USAF/TPS.

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HESELTINE JR., BRUCE P., *KC-135R Fuel Savings.* AFIT/IMO/ENS/07-04. Faculty Advisor: Dr. Alan Heminger Sponsor: AMC/DA3

JULIAN, JON T., *Distinguished Visitor Airlift Defensive Systems: Applying LEAN Principles to Minimize Transloading in the USCENTCOM AOR.* AFIT/IMO/ENS/07-07. Faculty Advisor: Lt Col Donald Duckro. Sponsor: AMC A3/MA.

KNACK, JOHN T., *Determination of Fabrication Repair Capability to Enable Aircraft Maintenance Regionalization.* AFIT/IMO/ENS/07-08. Faculty Advisor: Lt Col Bradley Anderson. Sponsor: AMC/A4.

MARTIN, TIM D., *AFSO 21 and the JA/ATT System.* AFIT/IMO/ENS/07-10. Faculty Advisor: Dr. Alan Heminger. Sponsor: AMC/DA3.

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18th AIR FORCE

GITTNER, AARON W., *Intra-Theater Airlift Efficiency.* AFIT/IMO/ENS/07-03. Faculty Advisor: Dr. James Moore. Sponsor: 18 AF/CC.

SINDEL, COLIN J., *Leveraging Expeditionary Combat Support Operations: A Critical Look at Standardizing the Base Opening Concept.* AFIT/IMO/ENS/07-15. Faculty Advisor: Dr. William Cunningham, III. Sponsor: 18 AF/21 EMTF.

WILSON, CHRISTOPHER W., *KC-X Airlift Role; What Should It Be?* AFIT/IMO/ENS/07-16. Faculty Advisor: Dr. James Moore. Sponsor: 18th AF/CC.

4.3.7.   AIR FORCE SPACE COMMAND

HOLBEIN, BRIAN K., *An Analysis of the Satellite Command and Control Operator Training System.* Faculty Advisor: Dr. Michael T. Rehg. Sponsor: AFSPC.

4.3.8.   UNITED STATES AIR FORCES IN EUROPE

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4.3.9.   DEPARTMENT OF DEFENSE

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5. ACADEMIC DEPARTMENT PUBLICATIONS AND FUNDING INFORMATION

5.1. DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS

Access Phone: 937-255-3069, DSN 785-3069
Fax: 937-656-7621, DSN 986-7621
Homepage: http://www.afit.edu/en/eny/

5.1.1. DOCTORAL DISSERTATIONS

DREHER, PETER, A., *Dynamic Response of a Collidant Impacting a Low Pressure Airbag*. AFIT/DS/ENY/07-09. Faculty Advisor: Dr. Robert A. Canfield. Sponsor: N/A.

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5.1.2. MASTER'S THESES

5.1.2.1. AERONAUTICAL ENGINEERING (GAE)

ADAMS, BRANDON, J., *Structural Stability of a Joined-Wing Sensorcraft*. AFIT/GAE/ENY/07-J01. Faculty Advisor: Dr. Robert Canfield. Sponsor: AFRL

ANDERSON, WESLY S., *Design, Construction, and Validation of The AFIT Small Scale Combustion Facility and Section Model of the Ultra-Compact Combustor*. AFIT/GAE/ENY/07-M01. Faculty Advisor: Major Richard Branam. Sponsor: AFRL/PRS, and AFRL/PRTC.

ANDRUS, IONIO Q., *Comparative Analysis of a High Bypass Turbofan Using a Pulsed Detonation Combustor*. AFIT/GAE/ENY/07-M02. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/PRTA.

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BURKINSHAW, MATTHEW G., *Comparative Study of Aerodynamic Interference During Aft Dispense of Munitions*. AFIT/GAE/ENY/07-J03. Faculty Advisor: LtCol Raymond C. Maple. Sponsor: AFRL/VAAI.

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CAMERON, GREGORY J., *An Evaluation of High Velocity Wear*. AFIT/GAE/ENY/07-M06, Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFOSR/NM.

CARR, RYAN, *Quantifying Non-Equilibrium in Hypersonic Flows Using Entropy Generation*. AFIT/GAE/ENY/07-M07. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/VASD.

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DEVUONO, AMANDA J., *Flight Dynamic Response of HALE Aircraft to KC-135 Flowfield.* AFIT/GAE/ENY/07-S06. Faculty Advisor: Major Christopher Shearer. Sponsor: N/A.

DILLSAVER, MATTHEW, J., *Experimental Investigation of Oblique Wing Aerodynamics at Low Speed.* AFIT/GAE/ENY/07-M10. Faculty Advisor: Dr. Milton Franke. Sponsor: AFRL/VAAA.

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HOWELL, THOMAS G., *Catalytic Partial Oxidation Reforming of JP8 and S8.* AFIT/GAE/ENY/07-J08. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/PRPS.

KILLIAN, D. N., *The Aerodynamic Performance of the Houck Configuration Flow Guides.* AFIT/GAE/ENY/07-J09. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/VAAA.

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LAFFEY, P.D., *The Effects of Environment on the Interlaminar Shear Performance of an Oxide/OxideCeramic Matrix Composite at Elevated Temperature.* AFIT/GAE/ENY/07-J11. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/PRTC.

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MCNIEL, CHARLES M., *Demonstration of Clean Particle Seeding for Particle Image Velocimetry in a Closed Circuit Supersonic Wind Tunnel.* AFIT/GAE/ENY/07-M19. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/VAAI.

MENDOZA, L. L., JR., *Damage Considerations of a Flexible Micro Air Vehicle Wing Using 3-D Laser Vibrometry.* AFIT/GAE/ENY/07-J13. Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFRL/VASD.

MILLER, Z. R., *Final Development, Testing, and Flight Preparation of the Rigidizable Inflatable Get-Away-Special (RIGEX).* AFIT/GAE/ENY/07-J14. Faculty Advisor: Dr. Richard Cobb. Sponsor: N/A.

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O'NEAL, B. D., *Development and Testing of the Rigidizable Inflatable Get-Away-Special Experimen*t. AFIT/GAE/ENY/07-J16. Faculty Advisor: Dr. Richard Cobb. Sponsor: N/A.

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RADTKE, J. T., *Efficiency and Pressure Loss Characteristics of an Ultra-Compact Combustor with Bulk Swirl.* AFIT/GAE/ENY/07-J18. Faculty Advisor: Dr. Paul King. Sponsor: AFRL/PRTC.

RUFA, JUSTIN, R., *Development of an Experimental Platform for Testing Autonomous UAV Guidance and Control Algorithms.* AFIT/GAE/ENY/07-M20. Faculty Advisor: Maj. Paul A. Blue. Sponsor: AFRL/VAC.

SALVIA, ROBERT A., *Effects of Prior Aging at 191°C on Creep Response of IM7/BMI 5250-4.* AFIT/GAE/ENY/07-J23. Faculty Advisors: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/MLBCM and AFOSR/NL.

SCHWENDIMAN, K.A., *Critical Life Prediction Research on Boron-Enhanced Ti-6Al-4V.* AFIT/GAE/ENY/07-J24. Faculty Advisor: Dr. Shankar Mall. Sponsor: AFRL/MLLMD.

SMITH, JEREMY J., *Simulation of the Dynamically Coupled KC-135 Tanker and Refueling Boom.* AFIT/GAE/ENY/07-M21. Faculty Advisor: Dr. Donald Kunz. Sponsor: AFRL/VACD.

SOLFELT, D. A., *CFD Analysis of a T-38 Wing Fence.* AFIT/GAE/ENY/07-J19. Faculty Advisor: LtCol Raymond Maple. Sponsor: N/A.

SUTTER, DAVID, A., *Three-Dimensional Analysis of a Composite Repair and the Effect of Overply Shape Variation on Structural Efficiency.* AFIT/GAE/ENY/07-M22. Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFRL/MLBC.

SZYMCZAK, N.R., *Compressive Creep Behavior of Nexteltm 720/Alumina Ceramic Matrix Composite at 1200∘C in Air and in Steam Environment.* AFIT/GAE/ENY/07-J20. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/PRTC.

TOBIAS, A. P., *Experimental Methods to Characterize Nonlinear Vibration of Flapping Wing Micro Air Vehicles.* Faculty Advisor: AFIT/GAE/ENY/07-M23. Dr. Anthony Palazotto. Sponsor: AFRL/VASD.

UMHOLTZ, M., *A Comparison of Film Cooling Techniques in a High Speed, True Scale, Fully Cooled Turbine Vane Ring.* AFIT/GAE/ENY/07-J21. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/PRF.

VANDERHYDE, MICHAEL J., *Comparison of Thermodynamic Equilibrium and Non-Equilibrium Representation of Materials.* AFIT/GAE/ENY/07-M25. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/MNAC and AFOSR.

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5.1.2.2. ASTRONAUTICAL ENGINEERING (GA)

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BALDWIN, JASON L., *Optimal Control of a Circular Satellite Formation Subject to Gravitational Perturbations.* AFIT/GA/ENY/07-M02. Faculty Advisor: LtCol Nathan Titus. Sponsor: N/A.

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CRIDER, JEFFREY S., *Damage Detection Using Lamb Waves for Structural Health Monitoring.* AFIT/GA/ENY/07-M05. Faculty Advisor: Maj Eric D. Swenson. Sponsor: AFRL/VASA.

FRAM, BRYAN JOSHUA, *An Analysis of Operationally Responsive Space in Terms of Cost and Utility With the Use of a Hybrid Launch Vehicle.* AFIT/GA/ENY/07-M06. Faculty Advisor: Dr. Michael Heil. Sponsor: N/A.

GABRIELE, THOMAS PAUL., *Active Control of a Thin Deformable Inplane Actuated Mirror.* AFIT/GA/ENY/07-M07. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

GARGASZ, MICHAEL LUKE, *Optimal Spacecraft Attitude Control Using Aerodynamic Torques.* AFIT/GA/ENY/07-M08. Faculty Advisor: LtCol Nathan A. Titus. Sponsor: AFRL/VSES.

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GUETTLER, DAVID B., *Satellite Attitude Control Using Atmospheric Drag.* AFIT/GA/ENY/07-M10. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

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HINES, MICHAEL S., *Fuel Estimation Using Dynamic Response.* AFIT/GA/ENY/07-M12. Faculty Advisor: LtCol Nathan A. Titus. Sponsor: N/A.

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5.1.2.3. MATERIALS AND SCIENCE ENGINEERING (GMS)

BROECKERT, JOSEPH L., *Effects of Prior Aging at Elevated Temperature in Air and in Argon Environments on Creep Response of PMR15 Neat Resin.* AFIT/GMS/ENY/07-M01. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsor: AFOSR/NE.

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5.1.2.4. SPACE SYSTEMS (GSS)

BITTLE, NICOLE, M., *Estimating the Aerodynamic and Heating Properties of an Unknown Reentry Vehicle Using Least Squares Filtering.* AFIT/GSS/ENY/07-M01. LtCol Kerry D. Hicks. Sponsor: N/A.

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5.1.2.5. SYSTEMS ENGINEERING (GSE)

ABBOTT, LAIRD, GARRETT KNOWLAN, CRAIG PHILLIPS and CHRISTIAN STILLINGS. *Systems Engineering Analysis for Transition of the Fleeting Target Technology Demonstrator*. AFIT/GSE/ENY/07-M03. Faculty Advisor: Dr. Richard Cobb. Sponsor: AFRL/SN.

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BOND, MATTHEW S., JAMES A. RODRIGUEZ and HIEU T. NGUYEN. *A Systems Engineering Process for an Integrated Structural Health Monitoring System*. AFIT/GSE/ENY/07M-02. Faculty Advisor: Dr. Som R. Soni. Sponsor: N/A.

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GEMAS, DAVID L., *A Systems Engineering Approach to Analyzing Weather Input Sensitivities of the Joint Precision Air Drop System*. AFIT/GSE/ENY/07J-01. Faculty Advisor: LtCol Steven T. Fiorino.

KNOWLAN, GARRET, see ABBOTT, LAIRD

MCLAUGHLIN, ANNIE, B., JESSE T. MCLAUGHLIN, JASON S. PRITCHETT, JOHN H. STONE, GREGORY K.VAN DYK. *Protection of a High-Valued Space Asset*. AFIT/GSE/ENY/07M-04. Dr. Richard Cobb. AFRL/VS.

MCLAUGHLIN, JESSE T., see MCLAUGHLIN, ANNIE B.

PHILLIPS, CRAIG, see ABBOTT, LAIRD

PRICHETT, JASON S., see MCLAUGHLIN, ANNIE B.

STILLINGS, CHRISTIAN, see ABBOTT, LAIRD

STONE, JOHN H., see MCLAUGHLIN, ANNIE B.

VANDYK, GREGORY K., see MCLAUGHLIN, ANNIE B.

5.1.3. FUNDED RESEARCH PROJECTS

Note: Research Center affiliations are listed in [ ] if applicable.

BLUE, PAUL A., Maj,

"Planning, Guidance and Control for Multiple UAV Cooperative Operations." Sponsor: AFRL/VA.
  Funding: $30,000. [ANT]

BRANAM, RICHARD D., Maj,

"Coaxial Rocket Injection Instability." Sponsor: AFOSR. Funding: $57,020.

"Development of Continuum Onset Criteria with Direct Simulation Monte-Carlo using Boltzmann's H-
  Theory." Sponsor: AFRL/VA. Funding: $3,171.

"Error Estimation in CFD Models Based on DSMC Non-Equilibrium Modeling." Sponsor: AFRL/VA.
  Funding: $7,500.

CANFIELD, ROBERT A.,

"Continuous Sensitivity Equations and Multi-Point Approximations for Coupled Aero-Structural Systems."
  Sponsor: AFOSR. Funding: $27,306.

"Nonlinear Gust Response via Direct, Least-Squares Formulation." Sponsor: AFRL/VA. Funding:
  $19,112.

COBB, RICHARD G.,

"Element Set Generation Using a Commercial Telescope." Sponsor: NASIC. Funding: $3,000. [CSSR]

"Innovative Space Missions." Sponsor: AFRL/VS. Funding: $59,000. [CSSR/CSE]

COLOMBI, JOHN M., Lt Col,

"Human Systems Interface Research." Sponsor: AFRL/HE. Funding: $10,000. [CSE]

HAVLICEK, JEFFREY D., Maj,

"Resourcing Global Strike or Global Persistent Attack Architecture." Sponsor: ACC. Funding: $50,150.
  [CSE]

JACQUES, DAVID R.,

"Cooperative Control, Optimization and System Design for Autonomous Munitions." Sponsor: AFRL/MN.
  Funding: $25,000.

"Counter-Improvised Explosive Device (C-IED) Effort Analysis." Sponsor: ACC. Funding: $50,000.
  [CSE]

"Space Systems Engineering Case Studies." Sponsor: SAF. Funding: $60,000. [CSE]

KING, PAUL I.,

"Experimental Investigation of Pylons and Cavities for Scramjet Combustors." Sponsor: AFRL/PR.
  Funding: $7,500.

KUNZ, DONALD L.,

"Dynamics Modeling and Simulation of Automated Aerial Refueling." Sponsor: AFRL/VA. Funding: $25,000.

"Fastrope Modeling for CV-22 Special Operations." Sponsor: US ARMY RDECOM. Funding: $9,444.

"High-Fidelity Aeroelastic Analysis for Flexible-Wing MAV's." Sponsor: AFOSR. Funding: $18,576.

"Performance Prediction Tools for CSAR-X." Sponsor: ASC/SOFSG. Funding: $9,546.

MALL, SHANKAR

"Fretting Fatigue Behavior of Ti06A1-4V under Variable Contact Load." Sponsor: AFOSR. Funding: $29,039.

"Investigation into Geopolymer's Suitability for Space Based Mirrors." Sponsor: SAF. Funding: $80,419.

"Nanocomposites as Lightweight Electronic Enclosures for Satellites." Sponsor: SAF. Funding: $94,869. [CSSR]

"Thermo-mechanical Characterization of Ceramics Matrix Composites in Combustion Environments of Gas Turbine Engines." Sponsor: DAGSI. Funding: $15,997.

MAPLE, RAYMOND C., Lt Col,

"Fluid-Structure Interaction in Low Reynolds Number Flapping Flight." Sponsor: AFRL/VA. Funding: $16,595.

"Support for the Beggar Flow Solver." Sponsor: 46 SK/DKF. Funding: $14,960.

PALAZOTTO, ANTHONY N.,

"Development of a New Technique for Determining the Strain Dependent Damping and Stiffness Characteristics of Hard Coatings." Sponsor: AFRL/PR. Funding: $13,000.

"Effects of High Energy Impact." Sponsor: AFRL/MN. Funding: $12,500.

"Evaluation of Nonlinear Movement in Micro Air Vehicles." Sponsor: AFRL/VA. Funding: $18,700.

"Functionally Graded Material (FGM)." Sponsor: AFRL/VA. Funding: $15,000.

"Hypervelocity Impact Gouge Mitigation and Wear Predication." Sponsor: AFOSR. Funding: $95,000.

"Investigation of the Response of Functionally Graded Plates and Shells Subject to High-Velocity Impact Events in Extreme Environments." Sponsor: DAGSI. Funding: $20,160.

"Thermal Evaluations of Polymers." Sponsor: AFRL/ML. Funding: $5,000.

REEDER, MARK F.,

"Characterization of Flapping-Wing Micro Air Vehicle Kinematics." Sponsor: AFRL/VA. Funding: $30,000.

"Continued Investigation of 'Clean Seeding' Methods for Particle Imaging Velocimetry in Closed Circuit Wind Tunnels. Sponsor: AFRL/VA. Funding: $12,500.

"Feasibility of Using Dry Ice for Seed Particles in Closed Circuit Wind Tunnels." Sponsor: AFRL/VA. Funding: $12,500.

"Turbine Blade Heat Transfer Characteristics." Sponsor: AFRL/PR. Funding: $4,000.

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"Effect of Aging on Creep Behavior of a High-Temperature Polymer at 288° C." Sponsor: AFRL/ML. Funding: $7,000.

"Effect of Monazite Coating on Creep Behavior of Two Oxide-Oxide Ceramic Composites at Elevated Temperatures." Sponsor: AFRL/PR. Funding: $6,966.

"Effects of Physical Aging and Chemical Degradation on Mechanical Behavior of High-Temperature Polymer Matrix Composites." Sponsor: AFOSR. Funding: $32,022.

"Evaluation of Discontinuities in Functionally Graded Structures." Sponsor: AFRL/VA. Funding: $2,500.

SHEARER, CHRISTOPHER M., Maj,

"Flight Dynamics and Control of High Altitude Long Endurance Sensorcraft." Sponsor: AFRL/VA. Funding: $10,000. [ANT]

SONI, SOM R.,

"Assessment of Nondestructive Signal Responses from Damaged Materials." Sponsor: DAGSI. Funding: $20,160.

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WALTER, JOERG D., Maj,

"F-15 E/System 2 Nuclear Weapon Integration Architecture." Sponsor: F15SG. Funding: $9,898.

"Impacts of Uninhabited Operation on Long-Range Strike Aircraft." Sponsor: AFRL/VA. Funding: $15,000. [CSE]

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Note: Research Center affiliations are listed in [ ] if applicable.

WALTER, JEORG, Maj

"SENG 585NC." Sponsor: AFOTEC. Funding: $49,725. [CSE]

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BLACK, JONATHAN T.

Black, J. T., Leifer, J., DeMoss, J. A., and Walker, E. N., "Experimental and Numerical Correlation of Gravity Sag in Solar Sail Quality Membranes," *Journal of Spacecraft and Rockets*, Vol. 44, No. 3, May-June 2007, pp. 522-527.

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Ruggles-Wrenn, M. B., Musil, S. S., Mall, S. and Keller, K. A., "Creep-Rupture Behavior of Nextel^{TM}610/ Monazite/Alumina Composite at Elevated Temperatures", *Composites Science and Technology*, Vol. 66, 2089-2099, 2006.

Ruggles-Wrenn, M. B., Mall, S., Eber, C. A. and Harlan, L. B., "Effects of Steam Environment on High-Temperature Mechanical Behavior of Nextel[TM]720/ Alumina (N720/A) Continuous Fiber Ceramic Composite", *Composites Part A: Applied Science and Manufacturing*, Vol. 37, 2029-2040, 2006.

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Mall, S. and LaRochelle, K. J., "Fatigue and Stress-Rupture Behaviors of SiC/SiC Composite under Humid Environment at Elevated Temperature", *Composites Science and Technology*, Vol.66, 2925-2934, 2006.

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Kang, I., Yeo, Y. Y., Kim, J. H., Lee, J. W., Gollapudi, W., Subramaniam, S., Narasimhadevara, S., Hurd, D., Kirikera, G. R., Shanov, V., Schulz, M.J., Shi, D., Boerio, J., Mall, S. and Ruggles-Wren, M., "Introduction to Carbon Nanotube and Nanofiber Smart Materials," *Composites: Part B*, Vol. 37, 382-394, 2006.

MAPLE, RAYMOND C., LtCol,

Parker, G. H., Maple, R. C., and Beran, P. S., "Computational Aeroelastic Analysis of Store-Induced Limit-Cycle Oscillation", *Journal of Aircraft* 44(1): 48-59, Jan-Feb 07.

PALAZOTTO, ANTHONY N.

Cinnamon, J. and A. Palazotto, "Further Validation of a General Approximation for Impact Penetration Depth Considering Hypervelocity Gouging Data", *Intl Journal of Impact Engineering*, Vol 34, pp 1307-1326, 2007.

Pai, F. and A. Palazotto, " Two Dimensional Sublamination Theory for Analysis of Functionally Graded Plates", *Journal of Sound and Vibration*, Vol. 308, pp 164-189, 2007.

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Cinnamon, J. , A. Palazotto, A. Szmerekovsky and R. Pendleton, " Investigation of Scaled Hypervelocity Gouging Model and Validation of Material Constitutive Models", *AIAA Journal*, Vol.45, No.5,pp 1104-1112, 2007.

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REEDER, MARK F.

Gebbie, D., Reeder, M.F, Tyler, C., Fonov, V., and Crafton, J., 'Lift and Drag Characteristics of a Blended Wing Body Aircraft', *AIAA Journal of Aircraft*, Vol. 44, No. 5, pp. 1409-1421, September 2007.

RUGGLES-WRENN, MARINA B.

Ruggles-Wrenn, M.B., Siegert, G.T., and S. S. Baek, "Creep Behavior of Nextel™720/Alumina Ceramic Composite with ±45° Fiber Orientation at 1200 °C", *Composites Science and Technology*, in press, available on journal website 1 August 2007.

Ruggles-Wrenn, M.B., Hetrick, G., and S. S. Baek, "Effects of Frequency and Environment on Fatigue Behavior of an Oxide-Oxide Ceramic Composite at 1200 °C", *International Journal of Fatigue*, in press, available on journal website 27 April 2007.

Ruggles-Wrenn, M.B., and J. G. Balaconis, "Some Aspects of the Mechanical Response of BMI 5250-4 Neat Resin at 191ºC: Experiment and Modeling", *Journal of Applied Polymer Science*, Vol. 107, No. 3, 2008, pp. 1378-1386.

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Mehrman, J.M., Ruggles-Wrenn, M.B., and S. S. Baek, "Influence of Hold Times on the Elevated-Temperature Fatigue Behavior of an Oxide-Oxide Ceramic Composite in Air and in Steam Environment", *Composites Science and Technology*, Vol. 67, No. 7-8, 2007, pp. 1425-1438.

SHEARER, CHRISTOPHER M., Maj,

Shearer, C.M. and Cesnik, C.E.S.., "Nonlinear Flight Dynamics of Very Flexible Aircraft", *AIAA Journal of Aircraft* 44(5):1528-1545, September-October 2007.

TORVIK, PETER J.

Torvik, P. J. and B. Runyon, "Modifications to the Method of Modal Strain Energy for Improved Estimates of Loss Factors for Damped Structures," *Shock and Vibration*, Vol. 14, No. 5, pp. 339-353, September 2007.

Torvik, P. J. and B. Runyon, "Estimating the Loss Factors of Plates with Constrained Layer Damping," *AIAA Journal*, Vol. 45, No. 7, pp.-1492-1500, July 2007.

Torvik, P. J., "Analysis of Free-layer Damping Coatings," *Key Engineering Materials*, Vol. 333, pp, 195-214, 2007.

5.1.6. REFEREED CONFERENCES
Note: Research Center affiliations are listed in [ ] if applicable.

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

BLUE, PAUL A., Maj,

Burns, B., Blue, P., and M. Zollars: "Autonomous Control for Automated Aerial Refueling with Minimum-time Rendezvous", Proceedings of the AIAA Guidance, Navigation, and Control Conference, Hilton Head, SC, August 2007. [ANT]

Zollars, M., Blue, P., and B. Burns: "Optimal Wind Corrected Flight Path Planning for Micro Air Vehicles with a Dual Sensor Configuration", Proceedings of the AIAA Guidance, Navigation, and Control Conference, Hilton Head, SC, August 2007. [ANT]

COBB, RICHARD G.

Shepherd, M.J., Cobb, R.G., Palazotto, A.N. , and Baker, W. P., "Scaling Analysis for Large Membrane Optics ," IEEE Aerospace Conference, Big Sky MT, Mar 2007. [CSSR]

HICKS, KERRY D., LtCol,

Richards, E.F., Temple, M.A., and Hicks, K.D., "Commercial 802.11 Wireless Link for Tactical Air-to-Ground Military Communications," 2007 Military Communications Conference (MILCOM 2007), Orlando, FL, 29-31 October 2007.

RUGGLES-WRENN, MARINA B.

Siegert, G.T., Ruggles-Wrenn, M.B., and S.S. Baek, "Effects of Environment on Creep Behavior of an Oxide-Oxide Ceramic Composite with ±45° Fiber Orientation at 1200 °C", Proceedings of the 31st International Cocoa Beach Conference & Exposition on Advanced Ceramics & Composites, Daytona Beach FL, January 2007.

Hetrick, G., Ruggles-Wrenn, M.B., and S.S. Baek, "Effects of Frequency on Fatigue Behavior of an Oxide-Oxide Ceramic Composite at 1200 °C", Proceedings of the 31st International Cocoa Beach Conference & Exposition on Advanced Ceramics & Composites, Daytona Beach FL, January 2007.

Mehrman, J.M., Ruggles-Wrenn, M.B. and S.S. Baek, "Effect of Hold Times on Fatigue Behavior of Nextel^{TM}720/Alumina (N720/A) Ceramic Matrix Composite at 1200 °C in Air and in Steam Environment", Proceedings of the Materials Science and Technology (MS&T) 2006 Conference and Exhibition, Cincinnati, OH, October 2006, Vol. 1, pp. 17-28.

TORVIK, PETER J.

Torvik, P., R. Willson and J. Hansel, "Influence of a Viscoelastic Surface Infiltrate on the Damping Properties of Plasma Sprayed Alumina Coatings Part I: Room Temperature," *Proceedings, Materials Science & Technology 2007 Conference and Exhibit (MS&T '07)*, Detroit, September 16-20, 2007.

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CONFERENCE PAPERS ACCEPTED ON THE BASIS OF REVIEWED ABSTRACT

BLACK, JONATHAN T.

Black, J., Smith, S.W., Leifer, J., and L. Bradford, "Experimental Characterization and Modeling of Global Behavior of Semi-Rigid Thin Film Polyimide Panels," 48th AIAA/ASME/ASCE/AHS/ASC Conference on Structures, Structural Dynamics and Materials, 8th Gossamer Spacecraft Forum, Waikiki, HI, April 2007, AIAA Paper 2007-1833.

BLUE, PAUL A.,

Burns, B., Blue, P., and M. Zollars: "Simulation of a Real-time Trajectory Generator for Automated Aerial Refueling with a Required Time of Arrival", Proceedings of the AIAA Modeling and Simulation Technologies Conference, Hilton Head, SC, August 2007. [ANT]

Zollars, M., Blue, P., and B. Burns: "Wind Corrected Flight Path Planning for Autonomous Micro Air Vehicles Utilizing Optimization Techniques", Proceedings of the AIAA Atmospheric Flight Mechanics Conference, Hilton Head, SC, August 2007. [ANT]

BRANAM, RICHARD D., Maj

Carr, R., Camberos, J. and Branam, R., "Modifying the Continuum Constitutive Relations for Non-Equilibrium Using Entropy Generation," DSMC: Theory, Methods and Applications, Sante Fe, NM 30 Sep - 3 Oct, 2007.

Jantz, B., R. Branam and L. Brieda, "TacSat-2 Surface Erosion and Contamination by a 200 W Hall Effect Thruster," 54th JANNAF Propulsion Meeting, Denver, CO 14 – 18 May, 2007.

Greatting, H. and R. Branam, "Analysis and Maneuvering of a Microsatellite," 54th JANNAF Propulsion Meeting, Denver, CO 14 – 18 May, 2007.

Sailsman, J. and R. Branam, "Modeling Acoustic Effects on Coaxial Shear Injection Jet Flow using Molecular Dynamics Techniques," AIAA Aerospace Sciences Conference, Reno, NV 8-11 Jan 2007.

Tomaszewski, J. and R. Branam, "Characterization of a Hall Effect Thruster Using Thermal Imaging," AIAA Aerospace Sciences Conference, Reno, NV 8-11 Jan 2007.

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CANFIELD, ROBERT A.

Rasmussen, C., Canfield, R.A.; and Reddy, J.N. , "Least-Squares Finite Element Method Applied to Fluid-Structure Interaction Problems," AIAA Paper 2007-2407, 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Waikiki, Hawaii, April 23–26, 2007

Dreher, P., and Canfield, R. A. , "Experimental Dynamic Response of a Munition Impacting a Low Pressure Airbag," AIAA Paper AIAA-2007-2024, 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Waikiki, Hawaii, April 23–26, 2007

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Jorris, T. R. and Cobb, R.G., "2-D Trajectory Optimization Satisfying Waypoints and No-Fly Zone Constraints." AAS/AIAA Spaceflight Mechanics Conference, Sedona AZ, 28 Jan - 1 Feb 2007, AAS 07-114. [CSSR]

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In, W., Franke, M. E., Stephen, E. J., and Reeder, M. F., "Aerodynamic Ground Effects of Tailless Chevron- and Lambda-Shaped UCAV Models," Paper No. AIAA-2007-0676, 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, 8-11 January 2007.

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MALL, SHANKAR

Mall, S. and Ryba, J. L., "Fiber/Matrix Interphase Degradation in SiC/SiC Ceramic Matrix Composite under Humid Environment", Proceedings of the American Society for Composites 2006 Conference, Detroit, MI, Sept. 15-18, 2006.

Mall, S., Lee, H., Leedy, K. D., Coutu, Jr, R. A., " Interrelationship between Hardness and Resistivity of Metal Alloy Films as Contact Materials in MEMS Switches, Proceedings of STLE/ASME Joint Tribology Conference, October 23-25, 2006, San Antonio, TX

Mall, S. and Ryba, J. L., "Humidity Effects on Woven Ceramic Matrix Composites", Proceedings of International Conference on Technical Textiles, New Delhi, India, Nov. 11- 14, 2006 **(INVITED TALK)**

Yun, Y. Y., Shanov, V., Balaji, S., Tu, Y., Yarmolenko, S., Neralla, S., Sankar, J., Mall, S., Lee, H., Burggraf, L. W., Li, G., Sabelkin, V. and Schulz, M. J., "Developing a Sensor, Actuator, and Nanoskin Based on Carbon Nanotube Arrays," Proceedings of SPIE Smart Structures and NDE Conference, March 2007, San Diego, CA

Mall, S. and Lee, H., Investigation into Wear Behavior of Cu-Al Coating on Titanium alloy under Fretting Fatigue", Proceeding of AIAA/ASME/ASCE/AHS/ASC, Structures, Structural Dynamics and Material Conference, 21- 28 April 2007, Honolulu, HI.

PALAZOTTO, ANTHONY N.

Voyiadjis, G., A. Abed and A. Palazotto, Simulation of the Micromechanics of Localized Damage and Fracture in Solids at High Speed Impact", 11th International Symposium on Continuum Models and Discrete Systems, Paris, France July 28-31, 2007.

Cinnamon, J. and A. Palazotto, " Analysis and Simulation of Hypervelocity Gouging Impacts for a High Speed Sled Test", Presented at the AIAA/ASME SDM conference , Honolulu, Hawaii, April, 23-26, 2007 , paper # AIAA 2007-1999.

Pai, F. and A. Palazotto, "Two-Dimensional Sublamination Theory for the Analysis of Functionally Graded Plates", Presented at the AIAA/ASME SDM conference , Honolulu, Hawaii, April, 23-26, 2007, paper #AIAA 2007-2109.

Palazotto, A., "Research on the Consideration of Wear at Holloman AFB", AFOSR Contractor meeting, Washington, DC, August, 15, 2007, Contract monitor Dr John Schmisseur.

Reed, S. and A. Palazotto, "Strain Dependent Material Properties of Hard Coatings",.Proceedings of the 2007 ASME Intl. Mechanical Engineering Congress and Exposition, November, 7-12,2007 Seattle WA, paper # IMECE 2007-14003.

Vanderhyde, M. and A. Palazotto,"Comparison of Thermodynamic Equilibrium and Nonequilibrium Representation", ASCE 18th Engineering Mechanics Division Conference, Blacksburg, VA, June, 3-6, 2007.

Larson, R. and A. Palazotto, "Initial Wave Propagation in Functionally Graded Circular Plates", ASCE 18th Engineering Mechanics Division Conference, Blacksburg, VA, June, 3-6, 2007.

Voyiadjis, G., Abud Al-Rub and A, Palazotto, Simulation of the Micromechanics of Localized Damage and Fracture in Solids at High Speed Impact", 9th U. S. National Congress on Computational Mechanics, San Francisco, CA. July 9-15, 2007.

REEDER, MARK F.

Polanka, M., Gillaugh, T., Anthony, R., Umholtz, M. and M. Reeder , "Comparisons of Three Cooling Techniques in a High Speed, True Scale, Fully Cooled Turbine Vane Ring,", AIAA Paper 2007-5097, 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Cincinnati, OH, July 9-11, 2007.

McNiel, C.M., Peltier, D.W., Reeder, M.F., and J. W. Crafton, "Clean Particle Seeding for Particle Image Velocimetry," Proceedings of the 22nd International Congress on Instrumentation in Aerospace Simulation Facilities, June 10-14th, 2007, Asilomar Conference Center, Pacific Grove, CA.

McGaha, C. and Reeder, M. ,"Filtered Rayleigh Scattering-Based Concentration Measurements for a Horizontal Buoyant Jet,", Proceedings of the 22nd International Congress on Instrumentation in Aerospace Simulation Facilities, June 10-14th, 2007, Asilomar Conference Center, Pacific Grove, CA.

Reeder, M., Allen, W., Phillips, J., and R. Dimmick , "Wind Tunnel Measurements of the E-8C Modeled With and Without Winglets,", AIAA-2007-1633, U.S. Air Force Test and Evaluation Days, Destin, Florida, Feb. 13-15, 2007.

In, W., Franke, M. E., Stephen, E. J., and Reeder, M. F., "Aerodynamic Ground Effects of Tailless Chevron- and Lambda-Shaped UCAV Models," Paper No. AIAA-2007-0676, 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, 8-11 January 2007.

TITUS, NATHAN A., LtCol,

Baldwin, J. and Titus, N.A., "Optimal Control of a Circular Spacecraft Formation Subject to Gravitational Perturbation," AAS/AIAA Spaceflight Mechanics Conference, Sedona, AZ, January 2007.

Gargasz, M.L., and Titus, N.A., "Spacecraft Attitude Control Using Aerodynamic Torques," AAS/AIAA Spaceflight Mechanics Conference, Sedona, AZ, January 2007.

TORVIK, PETER J.

Nashif, A., P. Torvik, U. Desai , J. Hansel, and J. Henderson, " Increasing Blade Damping through Inclusion of Cavities filled with Viscoelastic Materials," AIAA-2007-5037, 43rd IAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Cincinnati, Ohio, 8-11 July 2007.

Torvik, P. J., "A Survey of the Damping Properties of Hard Coatings for Turbine Engine Blades," *Integration of Machinery Failure Prevention Technologies into System Health Management*, Society for Machine Failure Prevention Technology (MFPT), Dayton, OH, pp 485-506, 2007.

WIESEL, WILLIAM E.

Wiesel, W. E., "Earth Satellite Orbits as KAM Tori", AAS paper 07-423. Presented at the AAS/AIAA Astrodynamics Specialist Conference, Mackinac Island, MI, August 2007.

Wiesel, W. E., "KAM Orbits in an Axisymmetric Gravity Field", AAS paper 07-422. Presented at the AAS/AIAA Astrodynamics Specialist Conference, Mackinac Island, MI, August 2007.

5.1.7. BOOKS AND CHAPTERS IN BOOKS

CANFIELD, ROBERT A.

Choi, Seung-Kyum, Grandhi, Ramana V., and Canfield, Robert A. *Reliability-Based Structural Design*, London: Springer-Verlag, 2006.

5.1.8. OTHER PRESENTATIONS, PUBICATIONS AND PROFESSIONAL ACTIVITIES

BLACK, JONATHAN T.

Black, J.T., Smith, S.W., and J. Leifer, "Reduced Model Validation of Thermal-Formed Polyimide Panels," 25th International Modal Analysis Conference, Model Validation Methods Special Session, Orlando, FL, Feb. 2007.

BLUE, PAUL A., Maj,

Zollars, M. and P. Blue: "Optimal Wind Corrected Flight Path Planning", AIAA Dayton-Cincinnati Aerospace Science Symposium, Dayton, Ohio, March 2007.

Rufa, J. and P. Blue: "Development of Experimental Autonomous Target Recognition System", AIAA Dayton-Cincinnati Aerospace Science Symposium, Dayton, Ohio, March 2007.

Burns, B. and P. Blue: "Trajectory Optimization for Automated Aerial Refueling (AAR)", AIAA Dayton-Cincinnati Aerospace Science Symposium, Dayton, Ohio, March 2007.

BRANAM, RICHARD D., Maj,

Branam, R., "Dual Expander Aerospike Nozzle," NPSS Working Group Meeting at the 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Cincinnati, OH, 8-11 July, 2007.

CANFIELD, ROBERT A.

Organizing Committee, 2nd Annual ASME Dayton Engineering Sciences Symposium, 2006

Bond, Vanessa; Canfield, Robert A.; Madruga Santos Matos, Maria da Luz; Suleman, Afzul; and Blair, Maxwell, "Wind Tunnel Testing of Twisted Wing for Longitudinal Control in a Joined Wing Aircraft," 2nd Annual ASME Dayton Engineering Sciences Symposium, Dayton, Ohio, 30 October 2006

Dittmar, Josh; and Canfield, Robert A., "Integrated Conceptual Design of Joined-Wing Sensor-Craft Using Response Surface Models," 2nd Annual ASME Dayton Engineering Sciences Symposium, Dayton, Ohio, 30 October 2006

Rasmussen, Cody; and Canfield, Robert A., "The Least Squares Finite Element Method Applied to Fluid-Structure Interaction Problems," 2nd Annual ASME Dayton Engineering Sciences Symposium, Dayton, Ohio, 30 October 2006

Westfall, James; Canfield, Robert A.; Joo, James J.; and Sanders, Brian, "Multi-Disciplinary Optimization of a Distributed Actuation System in a Flexible Morphing Wing," 2nd Annual ASME Dayton Engineering Sciences Symposium, Dayton, Ohio, 30 October 2006

Bond, Vanessa L; Canfield, Robert A.; Madruga, Maria da Luz; Suleman, Afzul Suleman; and Blair, Maxwell, "Wind Tunnel Testing for Pitch Control in a Twisted Joined Wing Aircraft," AIAA Dayton-Cincinnati Aerospace Sciences Symposium, Dayton, OH, 6 March 2007

Dreher, Ronald, and Canfield, Robert A., "Dynamic Response of Low Pressure Airbags," AIAA Dayton-Cincinnati Aerospace Sciences Symposium, Dayton, OH, 6 March 2007

Rasmussen, Peter A., and Canfield, Robert A., "The Least Squares Finite Element Method Applied To Fluid Structure Interaction Problems," AIAA Dayton-Cincinnati Aerospace Sciences Symposium, Dayton, OH, 6 March 2007

Roberts, Ronald, and Canfield, Robert A., "Large Scale Optimization Using Multipoint Cubic Approximation," AIAA Dayton-Cincinnati Aerospace Sciences Symposium, Dayton, OH, 6 March 2007

COBB, RICHARD G.

Session Chair: 32nd Dayton-Cincinnati Aerospace Sciences Symposium

Technical Paper Referee: AIAA Journal and AIAA Journal of Spacecraft and Rockets

Conference Paper Referee: AIAA Structures, Structural Dynamics and Materials (SDM) Conference

KUNZ, DONALD L.

Kunz, D.L., "Coupled Equations of Motion for the KC-135 Refueling Boom," Air Force Institute of Technology, AFIT/EN/TR-07-01, December 2006.

LIEBST, BRADLEY S.

Liebst, Bradley S., "How Universities Teach About Our Shared Dependency on Space", Invited presentation and panel member for the 2007 Space Education Symposium, Montgomery, AL, 26 September 2007.

MAPLE, RAYMOND C., LtCol,

Doster, J., King, P., Gruber, M., and Maple, R., "Pylon Fuel Injector Design for a Scramjet Combustor," AIAA 2007-5404, 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Cincinnati, OH July 8-11, 2007.

Caspers, M., Maple, R.C., and Disimile, P., "CFD Investigation of Flow Past Idealized Engine Clutter," AIAA-2007-3825 18th AIAA Computational Fluid Dynamics Conference, Miami, FL, June 25-28. 2007

McClung, A., Maple, R.C., and Beren, P., "A Comparison of Overset Methods and Unstructured Remeshing for Modeling Large Rigid Body Motion," AIAA 2007-0327, 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 8-11, 2007

Caspers, M., Maple, R.C., and Disimile, P., "CFD Investigation of Flow Past Idealized Engine Clutter," presented at the 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

PALAZOTTO, ANTHONY N.

Reed, S. and Palazotto, A.N., "Material Property Extraction from a Novel Free Decay Experiment", presented at the 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

Larson, R. and Palazotto, A.N., "Analysis of Wave Propagation in Functionally Graded Circular Plates Under Impact Loading", presented at the 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007. Best Paper Award.

Cameron, G. and Palazotto, A.N., "Technique for Evaluating Hypervelocity Wear", presented at the 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

Vanderhyde, M. and Palazotto, A.N., "Comparison of Thermodynamic Equilibrium and Nonequilibrium Representations of Materials behind Shock Waves", presented at the 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

Walker, R. and Palazotto, A.N., "Analytical Solution to Nonlinear Flapping Beams for Use with Micro Air Vehicle Design", presented at the 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

Andrews, J. and Palazotto, A.N., "Lamb Wave Propagation in Varying Thermal Environments", presented at the 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

TORVIK, PETER J.

Torvik, P. J., and J., Hansel "Experimental and Analytical Determinations of the Damping of VEM Filled Blades," *Proceedings: Propulsion-Safety and Affordable Readiness (P-SAR) Program Review*, San Diego, CA, March 13-15, 2007. (Limited Distribution).

Torvik, P. J., *Material Properties of Plasma Sprayed Alumina-NiCrAlY Coatings*, AFRL WS-07-0362, Universal Technology Corporation, (28 pages), December 2006.

RUGGLES-WRENN, MARINA B.

Ruggles-Wrenn, M.B., Koutsoukos, P. and S.S. Baek, "Effects of Environment on Creep Behavior of Two Oxide-Oxide Ceramic Matrix Composites at 1200 °C", Invited Plenary Lecture presented at the Third Key Euro-USA Conference *Stretching the Endurance Boundary of Composite Materials: Pushing the Performance Limit of Composite Structures*, Madeira, Portugal, September 23-28, 2007.

WIESEL, WILLIAM E.

Secretary, Honors Society of Metropolitan Dayton. Made two presentations to area high school students, served as corporation secretary.

5.2. DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Access Phone: 937-255-2024, DSN 785-2024
Fax: 937-656-7061, DSN 986-7061
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5.2.1. DOCTORAL DISSERTATIONS

EDGE, KENNETH S., *A Framework for Analyzing and Mitigating the Vulnerabilities of Complex Systems via Attack and Protection Trees.* AFIT/DS/ENG/07-13. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SNT.

FORMWALT, BYRON P., *Modeling, Simulation, and Estimation of Optical Turbulence*, AFIT/DS/ENG/07-04. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/SNJM.

JOHNSON, PETER M., *Phase Diversity and Polarization Augmented Techniques for Active Imaging*. AFIT/DS/ENG/07-05. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/DESA.

MANN, CHRISTOPHER R., *Energy-Efficient Querying of Wireless Sensor Networks.* AFIT/DS/ENG/07-19. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/IFSC.

NGUYEN, THAO Q., *Efficient GPS Position Determination Algorithms*. AFIT/DS/ENG/07-09. Faculty Advisor: Dr. Meir Pachter. Sponsor: N/A.

OCHOA, EDWARD M., *Hybrid Micro-Electro-Mechanical Tunable Filter.* AFIT/DS/ENG/07-23. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/SNDP.

SALLBERG, SCOTT A., *Sampled-Data Kalman Filtering and Multiple Model Adaptive Estimation* for *Infinite-Dimensional Continuous-Time Systems*. AFIT/DS/ENG/07-08. Faculty Advisor: Dr. Peter S. Maybeck. Sponsor: AFRL/ISN.

SISKANINETZ, WILLIAM J., *Bipolar Cascade Vertical-Cavity Surface-Emitting Lasers for RF Photonic Link Applications.* AFIT/DS/ENG/07-22. Faculty Advisor: Lt Col James A. Fellows. Sponsor: AFRL/SNDP.

STRONG, DAVID M., *Polarimeter Blind Deconvolution Using Image Diversity*. AFIT/DS/ENG/07-23. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/DESA.

5.2.2. MASTER'S THESES

5.2.2.1. AERONAUTICAL ENGINEERING (GAE)

BARBA-SORRA, VICTOR M., *Controller Design for Accurate Antenna Pointing Onboard a Spacecraft*. AFIT/GAE/ENG/07-03. Faculty Advisor: Dr. Meir Pachter. Sponsor: SAF.

JAMES, STEVEN A., *A Small Scale Imaging Platform for Algorithm Performance Evaluation*. AFIT/GAE/ENG/07-01. Faculty Advisor: Dr. Guna S. Seetharaman. Sponsor: N/A.

ROSARIO, ROLAND A., *Optimal Sensor Threshold Control and the Weapon Operating Characteristic for Autonomous Search and Attack Munitions*. AFIT/GAE/ENG/07-02. Faculty Advisor: Dr. Meir Pachter. Sponsor: AFRL/VA.

5.2.2.2. APPLIED PHYSICS (GAP)

ROCHE, JAMES F., *Performance of Airborne Tactical High Energy Laser Arrays With Non-Redundant Autocorrelations Through Turbulence*. AFIT/GAP/ENG/07-01. Faculty Advisor: Capt Jason D. Schmidt. Sponsor: N/A.

5.2.2.3. COMPUTER ENGINEERING (GCE)

BIRRER, BOBBY D., *Metamorphic Program Fragmentation as a Software Protection*. AFIT/GCE/ENG/07-01. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SNT.

BRAKUS, BRIAN M., *A Modular Mixed-Signal VLSI Design Approach for Digital Radar Applications*. AFIT/GCE/ENG/07-02. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/SND.

CORYELL, CHRISTOPHER E., *Using Concept Maps to Efficiently Build Information Models for SAVANT*. AFIT/GCE/ENG/07-03. Faculty Advisor: Lt Col Timothy J. Halloran. Sponsor: NASIC/SC.

HART, SAMUEL A., *APHID: Anomaly Processor in Hardware for Intrusion Detection*. AFIT/GCE/ENG/07-03. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SNTA.

HUDSON, SEAN W., *Identifying Bot Infections on Air Force Networks using Advanced Methodologies*. AFIT/GCE/ENG/07-05. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: N/A.

KOPERSKI, CHOYONG G., *Multi-Robot FastSLAM for Large Domains*. AFIT/GCE/ENG/07-06. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/SNRN.

MACDONALD, JASON E., *Use of Tabu Search in a Solver to Map Complex Networks onto Emulab Testbeds*. AFIT/GCE/ENG/07-07. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFCA/ENAN.

MEDLEY, DOUGLAS P., *Virtualization Technology Applied to Rootkit Defense*. AFIT/GCE/ENG/07-08. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SN.

MONTIMINY, DAVID P., *Using Relocatable Bitstreams for Fault Tolerance*. AFIT/GCE/ENG/07-09. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/VSSE.

NERENBERG, DANIEL D., *A Study of Rootkit Stealth Techniques and Associated Detection Methods*. AFIT/GCE/ENG/07-10. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SNTA.

5.2.2.4. COMPUTER SCIENCE/COMPUTER SYSTEMS (GCS)

ABAN, EDMUND D., *Adaptive Gravitational Gossip in Monitoring the Joint Battlespace Infosphere*, AFIT/GCS/ENG/07-01. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

DEFREITAS, ADRIAN A., *Developing Parallel Ant Colony Synchronization Strategies.* AFIT/GCS/ENG/07-15. Faculty Advisor: Maj Christopher B. Mayer. Sponsor: AFRL/IFS.

DRIES, ERIK J., *Scaling Ant Colony Optimization with Hierarchical Reinforcement Learning Partitioning*. AFIT/GCS/ENG/07-16. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: N/A.

FLETCHER, JORDAN L., *Real-Time GPS-Alternative Navigation Using Commodity Hardware*. AFIT/GCS/ENG/07-02. Faculty Advisor: Maj Michael J. Veth. Sponsor: AFRL/MN.

GARNER, ROGER L., *Heuristically Driven Search Methods for Topology Control in Directional Wireless Hybrid Networks*. AFIT/GCS/ENG/07-03. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

GORSUCH, ROGER L., *Analysis of Routing Worm Propagation on an IPv4 Network*. AFIT/GCS/ENG/07-04. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A.

GRAHAM, DANIEL F., *On-Demand Key Distribution for Mobile Ad-Hoc Networks*. AFIT/GCS/ENG/07-12. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

HAAG, CHARLES R., *An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm With Application to the Detection of Distributed Computer Network Intrusions*. AFIT/GCS/ENG/07-05. Faculty Advisor: Dr. Gary B. Lamont. Sponsor: NSA/NCSC.

HAYDEN, WALTER J., *Locating Encrypted Data Hidden Among Non-Encrypted Data Using Statistical Tools*. AFIT/GCS/ENG/07-06. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/SNTA.

HYLAND, MATTHEW T., *Performance Evaluation of Ad-Hoc Routing Protocols in a Swarm of Autonomous Unmanned Aerial Vehicles*. AFIT/GCS/ENG/07-07. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A.

PARK, HEUNG SOON, *Effective Mobile Routing Through Dynamic Addressing*. AFIT/GCS/ENG/07-09. Faculty Advisor: Maj Scott R. Graham. Sponsor: AFOSR.

PATTERSON, CHRISTOPHER A., *Multi-Objective Optimization for Speed and Stability of a Sony AIBO Gait.* AFIT/GCS/ENG/07-17. Faculty Advisor: Dr. Gilbert L. Peterson Sponsor: AFRL/SNRN.

SEYBA, JASON R., *Voice and Video Capacity of a Secure Wireless System*. AFIT/GCS/ENG/07-14. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFRL/HE

SHAW, ALFRED K., *A Model for Performing Mission Impact Analysis of Network Outages*. AFIT/GCS/ENG/07-10. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 8th AF/AFNOC.

WOOLLEY, BRIAN G., *Unified Behavior Framework for Reactive Control in Real-Time Systems*. AFIT/GCS/ENG/07-11. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/SNRN.

5.2.2.5. ELECTRICAL ENGINEERING (GE)

ALBAIRAT, OUAIL, *Multi-Dimensional Classification Algorithm for Automatic Modulation Recognition*. AFIT/GE/ENG/07-01. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/SNR.

BARTON, RICHARD J., *Design and Analysis of a Compact Passive Ultra-Wideband Hexagonal Spiral Array Antenna*. AFIT/GE/ENG/07-02. Faculty Advisor: Dr. Andrew J. Terzuoli. Sponsor: AFRL/SNR.

BELLOTT, MARK M., *Microelectro-Mechanical (MEMS) Safe and Arm Device*. AFIT/GE/ENG/07-03. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/MNMF.

BRAULT, GREGORY J., *Multi-Dimensional Range Querying Using a Modification of the Skip Graph*. AFIT/GE/ENG/07-04. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFCA/ENAN.

BUSCHELMAN, ERIC A., *Material Characterization Improvement in High Temperature Rectangular Waveguide Measurements*. AFIT/GE/ENG/07-05. Faculty Advisor: Dr. Michael J. Havrilla. Sponsor: AFRL/SNS.

CHAPLA, ERIK A., *Statistical Machine Translation of Japanese*. AFIT/GE/ENG/07-06. Faculty Advisor: Dr. Steven C. Gustafson. Sponsor: NSA.

FOWLER, JOSHUA D., *Impact of Window Selection on Zero-Doppler Clutter Estimation and Subtraction for ISAR Applications*. AFIT/GE/ENG/07-07. Faculty Advisor: Dr. Michael A. Temple. Sponsor: 46 TS/OGEE.

GIMELSHTEYN, MAXIM., *Classifying Commercial Receiver Emissions Using Fisher Discriminant Analysis*. AFIT/GE/ENG/07-08. Faculty Advisor: Dr. Michael A. Temple. Sponsor: N/A.

GLAUVITZ, NATHAN E., *Toward a Flying MEMS Robot*. AFIT/GE/ENG/07-09. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/MNAV.

HAKER, MARSHALL E., *Hardware Realization of a Transform Domain Communications System*. AFIT/GE/ENG/07-10. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/SNRW.

HARMON, DUANE F., *Overcoming TCP Degradation in the Presence of Multiple Intermittent Link Failures Utilizing Intermediate Buffering*. AFIT/GE/ENG/07-11. Faculty Advisor: Maj Scott R. Graham. Sponsor: AFOSR.

HARNER, ALAN L., *Sub-Surface Navigation Using Very-Low Frequency Electromagnetic Waves*. AFIT/GE/ENG/07-12. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/SNRP.

HOLSTON, MATTHEW E., *Moving Target Focusing, Geolocation, and Ambiguity Resolution Using Single-Channel Synthetic Aperture Radar*. AFIT/GE/ENG/07-13. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNAS.

LEAVER, MICHAEL D., *Signal Coexistence Study on the GPS L2 Civil Signal Broadcast From the Block IIR-M Class Satellites*. AFIT/GE/ENG/07-14. Faculty Advisor: Dr. Stewart L. DeVilbiss. Sponsor: AFRL/SNZW.

LLEWELLYN, LARRY C., II, *Distributed Fault-Tolerant Quality of Service Routing in Hybrid Directional Wireless Networks*. AFIT/GE/ENG/07-15. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR and AFRL.

MAJUMDER, UTTAM K., *Point Spread Function Characterization of a Radially Displaced Scatterer Using Circular Synthetic Aperture Radar*. AFIT/GE/ENG/07-26. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNAS.

MAYHEW, OSCAR C., *RADAR System Characterization Extended to Hardware-in-the-Loop Simulation for the Lab-Volt System*. AFIT/GE/ENG/07-29. Faculty Advisor: Maj Michael A. Saville. Sponsor: AFRL/SN.

MILLER, VIRGINIA, *Conceptual MEMS Devices for a Redeployable Antenna*. AFIT/GE/ENG/07-30. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/MNMF.

MONTIMINY, MYRNA B., *Passive Geolocation of Low-Power Emitters in Urban Environments Using TDOA*. AFIT/GE/ENG/07-16. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/SNRW.

MOTT, STEPHEN D., *Hardware-Based Primitives to Enhance Parallel Security Monitoring in a Novel Computing Architecture*. AFIT/GE/ENG/07-17. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SNTA.

PAUL, JASON V., *Anti-Tamper Method for Field Programmable Gate Arrays Through Temporal Decoy Circuits*. AFIT/GE/ENG/07-18. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/SNTA.

PEREZ, SERGIO P., *Amplitude Comparison Method to Determine Direction of Arrival for RF Communication*. AFIT/GE/ENG/07-27. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: AFRL/SNAT.

POMAGER, JOSEPH C., *Parametric Reliability of Space-Based Field Programmable Gate Arrays*. AFIT/GE/ENG/07-19. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/VSEE.

ROBERTS, DANIEL K., *Performance Analysis and Comparison of Multiple Routing Protocols in a Large-Area High-Speed Mobile Node Ad Hoc Network*. AFIT/GE/ENG/07-28. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFCA/EN.

SCHWENN, KARL R., *Biological Cell Identification by Integrating Micro-Fluids, Electrical Impedance Spectroscopy and Stochastic Estimation*. AFIT/GE/ENG/07-20. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: AFRL/HEPB.

SILVA, RYAN J., *Implementation and Optimization of the Advanced Encryption Standard Algorithm on an 8-Bit Field Programmable Gate Array Hardware Platform*. AFIT/GE/ENG/07-21. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/SNTA.

SPENCER, JAMES H., *Optical Tracking for Relative Positioning in Automated Aerial Refueling*. AFIT/GE/ENG/07-22. Faculty Advisor: Lt Col Matthew Goda. Sponsor: AFRL/VACC.

STUCKEY, NATHAN C., *Stochastic Estimation and Control of Queues Within a Computer Network*. AFIT/GE/ENG/07-24. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: AFOSR.

VELOTTA, JAMIE S., *Navigation Using Orthogonal Frequency Division Multiplexed Signals of Opportunity*. AFIT/GE/ENG/07-31. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/SNRN.

WINNINGHAM, BRYAN W., *Characterization of Intercalated Graphite Fibers for Microelectromechanical Systems (MEMS) Applications*. AFIT/GE/ENG/07-25. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/IFTA.

5.2.2.6. ELECTRO OPTICS (GEO)

ALLARD, MARK E., *Characterization of a Polymer-Based MEMS Pyroelectric Infrared Detector*. AFIT/GEO/ENG/07-01. Faculty Advisor: Lt Col James A. Fellows. Sponsor: AFRL/MLPJF.

ELLIS, TROY R., *Airborne Laser Tracking Signal Degradation From Wave Optics Simulation of Propagation Through Computational Fluid Dynamics Models of Aero-Optics*. AFIT/GEO/ENG/07-02. Faculty Advisor: Capt Jason D. Schmidt. Sponsor: N/A.

JOHNSON, MATTHEW T., *Thermally Activated, Variable Blazed Grating for Coherent Beam Steering*. AFIT/GEO/ENG/07-04. Faculty Advisor: Dr. Guna S. Seetharaman. Sponsor: N/A.

SEAL, MICHAEL D., *Nonlinear Time-Variant Response in an Avalanche Photodiode Array Based Laser Detection and Ranging System*. AFIT/GEO/ENG/07-03. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/SNJM.

5.2.2.7. INFORMATION ASSURANCE (GIA)

BENSON, JOSHUA A., *Software Protection Against Reverse Engineering Tools*. AFIT/GIA/ENG/07-01. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/SNTA.

COATES, GREGORY M., *Collaborative, Trust-Based Security Mechanisms for a National Utility Intranet.* AFIT/GIA/ENG/07-05. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: N/A

FRANZ, TIMOTHY P., *IO Foundations to Cyberspace Operations*. AFIT/GIA/ENG/07-02. Faculty Advisor: Dr. Richard A. Raines. Sponsor: N/A.

STEVENS, MICHAEL R., *Use of Trust Vectors in Support of the CyberCraft Initiative*. AFIT/GIA/ENG/07-03. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/IFGB.

TODD, ADAM D., *Network Intrusion Detection System Evasion*. AFIT/GIA/ENG/07-04. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SN.

5.2.2.8. INFORMATION RESOURCE MANAGEMENT (GIR)

SMITH, TIFFINYS., *In Pursuit of an Aptitude Test for Potential Cyberspace Warriors*. AFIT/GIR/ENG/07-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 315 IOS/CC.

5.2.2.9. SPACE SYSTEMS (GSS)

DAINTY, BENJAMIN G., *Use of Two-Way Time Transfer Measurements to Improve Geostationary Satellite Navigation*. AFIT/GSS/ENG/07-01. Faculty Advisor: Dr. John F. Raquet. Sponsor: SAF.

5.2.3. GRADUATE RESEARCH PAPERS

5.2.3.1. COMMAND, CONTROL, COMMUNICATIONS, COMPUTER, AND INTELLIGENCE SYSTEMS (IC4)

ARWOOD, SAM., *Cyberspace as a Theater of Conflict: Federal law, National Strategy, and the Departments of Defense and Homeland Security*. AFIT/IC4/ENG/07-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: Joint Staff/J6.

BARNHART, BRADLEY W., *The Current State of Biometrics to Enhance Network Information Assurance for Air Force Networks*. AFIT/IC4/ENG/07-02. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: SAF/XC.

DOWNS, ROBERT O., *Mitigation of Residual Bias in the Missile Defense Agency Tracking System.* AFIT/IC4/ENG/07-06. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: N/A.

DUNKLEE, DAVID R., *Improving Air Force Active Network Defense Systems Through an Analysis of Intrusion Detection Techniques.* AFIT/IC4/ENG/07-05. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

HANNAH, JON T. See DOWNS, ROBERT O.

KARDOES, MICHAEL J. See DOWNS, ROBERT O.

TREAT, TIMOTHY J., *The Way Ahead for Cyberspace Operations: A JCIDS Analysis.* AFIT/IC4/ENG/07-08. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

WAINWRIGHT, FREDRICK W. See BARNHART, BRADLEY W.

5.2.3.2. <u>ELECTRICAL SCIENCE (IES)</u>

BIERYLA, JAMES J., *Processor Requirements for a Reconfigurable Airborne Sensor Pod.* AFIT/IES/ENG/07-01. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: USAF/TPS.

5.2.4. FUNDED RESEARCH PROJECTS
Note: Research Center affiliations are listed in [ ] if applicable.

CAIN, STEPHEN C.,

"3-D LADAR Resolution Enhancement." Sponsor: AFRL/SN. Funding: $6,000.

"Detection of Obscured Targets Using a FLASH LADAR System." Sponsor: AFOSR. Funding: $27,391.

"Synthetic Aperture Image Reconstruction for Next Generation Laser Imaging and Ranging Systems: Building True Synthetic Apertures." Sponsor: SAF. Funding: $34,684.

COLLINS, PETER J.,

"Technical Support: RCS Methodology." Sponsor: 746 TSS/XP. Funding: $25,000.

HAVRILLA, MICHAEL J.,

"Electromagnetic Analysis and Design of Non-Destructive Evaluation Systems." Sponsor: AFRL/ML. Funding: $140,000.

"Electromagnetic Analysis and Design of the Thiele Half-Width Leaky Wave Antenna." Sponsor: AFRL/SN. Funding: $20,000.

HOPKINSON, KENNETH M.,

"An Investigation into the Required Middleware Interface Between Net-Centric Infrastructure and its Operators." Sponsor: AFRL/IF. Funding: $50,000.

"Effective Utilization of a Hybrid Communication Network." Sponsor: SAF. Funding: $46,595.

"HPCMP Summer Intern Support." Sponsor: AFOSR. Funding: $51,020.

KURKOWSKI, STUART H., Maj,

"An Interactive Visualization Approach to Interface Network Centric Operators with Dynamic Network Infrastructure." Sponsor: AFOSR. Funding: $27,906.

"Toolkit for Visualizing Situation Scope." Sponsor: AFRL/IF. Funding: $54,810.

LAMONT, GARY B.,

"Optimal Wavelet Coefficient Determination with Genetic Algorithms." Sponsor: AFRL/IF. Funding: $25,000.

MARTIN, RICHARD K.,

"Infrastructure Cost for ANT Center: Navigation using Multicarrier Signals of Opportunity." Sponsor: AFRL/SN. Funding: $24,250. [ANT]

"Technical Support: Cognitive Radio Research." Sponsor: AFRL/SN. Funding: $10,000.

MILLS, ROBERT F.,

"Insider Threat Research Laboratory and Ongoing Research of Investigating Methods, Algorithms and Approaches to Reduce the Risk of the Insider Threat Problem." Sponsor: NSA. Funding: $10,000. [CCR]

"Technical Support, Information/Cyber Operations: Sensing Applications." Sponsor: AFIOC/IO. Funding: $15,000. [CCR]

MULLINS, BARRY E.,

"Air Force Communications Systems Modeling." Sponsor: AFCA. Funding: $64,000. [CCR]

PACHTER, MEIR,

"Cooperative Control and Estimation." Sponsor: AFOSR. Funding: $43,282.

"Feasibility Study of In-Situ Plant Dynamics Identification for a Satellite Payload System." Sponsor: SAF. Funding: $40,000.

"Planning, Guidance, and Control for Multiple UAV Cooperative Operations." Sponsor: AFRL/VA. Funding: $10,000.

PETERSON, GILBERT L.,

"Biologically Motivated Autonomous Navigation and Cooperative Control." Sponsor: DAGSI. Funding: $20,160. [ANT]

"CANIS-Related Navigation Research Projects for the ANT-Laboratory." Sponsor: AFRL/SN. Funding: $50,000. [ANT]

RAINES, RICHARD A.,

"AFIT Transformation Chair." Sponsor: SECDEF. Funding: $166,700. [CCR]

"Target Discovery, Sensor Fusion, and Mitigation Analysis." Sponsor: AFRL/SN. Funding: $225,000. [CCR/COA]

RAQUET, JOHN F.,

"ANT Center and Laboratory Support." Sponsor: AFRL/SN. Funding: $242,000. [ANT]

"Development of High Accuracy TSPI Systems." Sponsor: 746th Test Squadron. Funding: $45,900. [ANT]

"Indoor Navigation Using Signals of Opportunity Integrated with Other Sensors." Sponsor: DARPA. Funding: $68,750. [ANT]

"Overcoming Geometric Deficiencies in Pseudolite Navigation." Sponsor: AFOSR. Funding: $99,855. [ANT]

"Sub-Surface Navigation." Sponsor: AFRL/SN. Funding: $31,250. [ANT]

"Transition to Laboratory Testing of Two-Way Time Transfer Measurements for Navigation." Sponsor: SAF. Funding: $16,061. [ANT]

SAVILLE, MICHAEL, A., Capt,

"In-house Support for Program ECM Technique Generator." Sponsor: AFRL/IF. Funding: $10,000.

SCHMIDT, JASON D., Capt,

"Atmospheric Propagation of High Energy Lasers: Modeling, Simulation, Tracking, and Control." Sponsor: AFRL/DE. Funding: $19,111.

"Mitigating Atmospheric Turbulence through Robust Laser Beam Tilt Control." Sponsor: AFRL/DE. Funding: $25,000. [CDE]

SEETHARAMAN, GUNA S.,

"Image Registration and Spatio-Temporal Assimilation for Persistent Surveillance." Sponsor: AFRL/SN. Funding: $50,000.

TEMPLE, MICHAEL A.,

"Continuation Project: Detection, Characterization, Location of Spurious Receiver Emissions." Sponsor: SAF. Funding: $44,361.

"Phase II Technical Support for RF Sensor Technology." Sponsor: AFRL/SN. Funding: $15,000.

"Technical Support: RF-EW Systems." Sponsor: AFRL/SN. Funding: $100,000.

"Technical Support: RF Geolocation Systems." Sponsor: AFRL/SN. Funding: $50,000.

TERZUOLI, ANDREW J. JR.,

"ECM Against Passive Radar." Sponsor: AFRL/SN. Funding: $20,000.

"Remote Sensing and Communications for MASINT." Sponsor: NASIC. Funding: $150,000.

VASQUEZ, JUAN R., Lt Col,

"Target Tracking and Data Communication for Angel Fire." Sponsor: AFRL/SN. Funding: $89,042. [ANT]

"Target Tracking for the Missile Defense Agency." Sponsor: MDA. Funding: $50,000.

VETH, MICHAEL J., Maj,

"Synchronized Image-Inertial Data Collection and Processing System." Sponsor: NGA. Funding: $50,000. [ANT]

WILLIAMS, PAUL D., Maj,

"AFIT Support for AFRL Cybercraft Project." Sponsor: AFOSR. Funding: $40,000." [CCR]

"Development of an Air Force Cyber Warfare Realistic Training Model." Sponsor: AFRL/HE. Funding: $25,000. [CCR]

5.2.5. FUNDED EDUCATIONAL PROJECTS
Note: Research Center affiliations are listed in [ ] if applicable.

RAINES, RICHARD A.,

"Anti-Tamper Software Protection Initiative Education, Outreach, and Research." Sponsor: AFRL/SN. Funding: $75,000. [CCR]

"Development of a Federal Cyber Force at the Air Force Institute of Technology." Sponsor: NSF. Funding: $510,710. [CCR]

"Tuition and Resource Support for AFIT Center for Information Security Education and Research." Sponsor: NSA. Funding: $317,448. [CCR]

5.2.6. REFEREED JOURNAL PUBLICATIONS
Note: Research Center affiliations are listed in [ ] if applicable.

BALDWIN, RUSTY O.,

K. S. Edge, R. A. Raines, R. O. Baldwin, M. R. Grimaila, R. W. Bennington, and C. E. Reuter, "Analyzing Security Measures for Mobile Ad Hoc Networks Using Attack and Protection Trees," *Journal of Information Warfare,* August 2007, Vol. 6, No. 2, pp. 25-38. [CCR]

V. P. Hubenko, Jr., R. A. Raines, R. F. Mills, R. O. Baldwin, B. E. Mullins and M. R. Grimaila, "Improving Satellite Multicast Security Scalability by Reducing Re-keying Requirements," *IEEE Network Special Issue on Advances in Network Systems Architecture*, July/August 2007, pp. 51-56. [CCR]

G. R. Roelke, R. O. Baldwin, B. E. Mullins and Y. C. Kim, "A Cache Architecture for Extremely Unreliable Nanotechnologies," *IEEE Transactions on Reliability*, June 2007, Vol. 56, No. 2, pp. 182-197. [CCR]

S. D. Bass and R. O. Baldwin, "A Model for Managing Decision-Making Information in the GIG-Enabled Battlespace," *Air & Space Power Journal* (*ASPJ*), Summer 2007, Vol. 21, No. 2, pp. 100-108. [CCR]

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R. O. Baldwin, B. S. Peterson, and R. F. Mills, "Using Playing Cards to Estimate Interference in Frequency-Hopping Spread Spectrum Radio Networks," *Journal of Systems and Software*, December 2006, Vol. 79, No. 12, pp. 1782-1788. [CCR]

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A. Macdonald and S. Cain, "Parameterized Blind Deconvolution of Laser Radar Imagery using an Anisoplanatic OTF," *Optical Engineering*, vol. 45, no. 11, 116001, November 2006.

A. Macdonald, S. Cain and M. Oxley, "Binary Weighted Averaging of an Ensemble of Coherently Collected Image Frames," *IEEE Transactions on Image Processing,* pp. 1085-1100, April 2007.

DAVIS, NATHANIEL J. IV.,

"Mobile Host-Based Intrusion Detection and Attack Identification," Grant A. Jacoby and Nathaniel J. Davis IV, *IEEE Wireless Communications Magazine*, Volume 14, Number 4, August 2007, pp. 53-60.

GUSTAFSON, STEVEN C.,

Gustafson, S.C., Parker, D.R., and Martin, R.K., "Cardinal Interpolation," *IEEE Trans. Pattern Analysis Machine Intelligence*, Vol. 29, No. 9, pp. 1538 - 1545, September 2007.

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Giovanini, R., Hopkinson, K. M., Coury, D. V. and Thorp, J. S., "A Primary and Backup Cooperative Protection System Based on Wide Area Agents," *IEEE Transactions on Power Delivery*, 21(3):1222-1230 (2006).

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Rodriguez, B.M., and Peterson, G.L., 2007, "Steganography Detection Using Mutli-Class Classification," *Advances in Digital Forensics III*, eds. Craiger, P., and Shenoi, S., Springer Science+Business Media, New York, NY, pp. 193-204. [CCR]

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M.L. Roberts, M.A. Temple, R.A. Raines, R.F. Mills and M.E. Oxley, "Communication Waveform Design Using an Adaptive Spectrally Modulated, Spectrally Encoded (SMSE) Framework," *IEEE Journal on Selected Topics in Signal Processing*, Vol. 1, No. 1, June 2007, pp 203-213. [CCR]

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F. Bunyak, K. Palaniappan, S. Nath and G. Seetharaman, ``Flux Tensor Constrained Geodesic Active Contours with Sensor Fusion for Persistent Object Tracking," *Journal of Multimedia*, Vol. 2, No. 4, August 2007.

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STARMAN, LAVERN A., Maj

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Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Air Force Cyber Education Summit Overview," Rome, NY, May 07 [CCR]

Maj Andy Hansen, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Realistic Training in Cyberspace," Rome, NY, May 07 [CCR]

Lt Rich Dill, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Built-in 'Seeds of Destruction," Rome, NY, May 07 [CCR]

Maj Mike Mendenhall, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Cyber Kill Chain," Rome, NY, May 07 [CCR]

Lt Dan Karrels, Dr. Bert Peterson, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Architecture for Deploying Lightweight CyberCraft," Rome, NY, May 07 [CCR]

Maj Paul Williams, AFRL/IF, CyberCraft Workshop, Invited Talk, "Use of Trust Vectors for CyberCraft and the Limits of Usable Data History for Trust Vectors," Colorado Springs, CO, Apr 07 [CCR]

Maj Paul Williams, Dr. Rick Raines, Presentation to SECAF, "AFIT's Contributions to Cyber Warfare Briefing," AFIT, Mar 07 [CCR/ENG]

Maj Paul Williams, Dr. Bob Mills, Dean Thomas, "USAF Scientific Advisory Board for Cyber Defense," 8AF, Barksdale, LA, Feb 07 [CCR]

Maj Williams, Paul D., Dr. Rick Raines, Dr. Bob Mills, Consultations at AU about how to best incorporate cyber warfare into AU PME, Jan 07 [CCR]

Maj Williams, Paul D., Dr. Robert Mills, Short course, "Introduction to Cyber Warfare," Lackland AFB, TX, Nov 06 [CCR] Maj Paul Williams, NSA Cyber Defense Workshop, "CuPIDS: Parallel-based Security Architectures", Dec 06 [CCR]

Maj Paul Williams, Dr. Rick Raines, "AFIT/AFRL Research Relationship Building," Rome NY, Oct 06 [CCR]

PROFESSIONAL ACTIVITIES

BALDWIN, RUSTY O.,

Faculty Advisor: Local Chapter of Eta Kappa Nu Honor Society

Reviewer: *IEEE Computer; International Conference on Computer Communications and Networks; The Journal of Systems and Software;* and *Transactions on Mobile Computing*

CAIN, STEPHEN C.,

Session Chair for the 2006 IEEE Aerospace Conference

Session Organizer for the 2007 IEEE Aerospace Conference

COLLINS, PETER J.,

Chair: AFIT/ENG Low Observables Curriculum Committee

Reviewer: *IEEE Transactions on Antennas and Propagation*, and *IEEE Transactions on Instrumentation and Measurement*

FELLOWS, JAMES A., Lt Col

Consultant: Nanotechnology SME to "Horizons 21" Air War College study group

GUSTAFSON, STEVEN C.,

Chair: ENG Curricullum Committee

Representative: EN Curriculum Development and Requirements Committee

Technical Paper Refreee: IEE Electronics Letters, Optical Engineering

HAVRILLA, MICHAEL J.,

AFIT Electromagnetics Curriculum Chair

AFIT Faculty Search Committee, Member

AFIT/AFRL Planning Committee for Partnership in a $30M World Class Scattering Facility

Acquisition of a $250K Near Field Scanner through AFRL Materials Directorate collaborations.

Invited Session Chair, "Electromagnetic Materials," Antennas and Propagation Conference, Honolulu, Hawaii, June 2007

Reviewer for the Applied Computational Electromagnetics Society Conference, Verona, Italy, March 2007.

Invited Session Chair, "Computational Methods for NDE and Materials Characterization," Applied Computational Electromagnetics Society Conference, Verona, Italy, March 2007.

Session Chair, "Material Design, Measurement and Instrumentation", Antenna Measurement Techniques Association (AMTA) Conference, Austin, TX, October 2006.

Session Organizer, "Material Characterization" for the Antenna Measurement Techniques Association (AMTA) Conference, Austin, TX, October 2006.

Technical Review Committee, Antenna Measurement Techniques Association (AMTA) Conference, Austin, TX, October 2006.

Reviewer for IEEE Transactions on Antennas and Propagation

Reviewer for IEEE Transactions on Instrumentation and Measurement

Reviewer for Journal of Electromagnetic Waves and Applications

Member on the Scitech Publishing Editorial Board

Consultant to the Air Force Research Laboratories (AFRL) Materials and Sensors Directorates

Co-organized a "Low Observables Short Course", AFIT/AFRL, September 2006.

HOPKINSON, KENNETH M.,

Program Committee Member for the IEEE International Conference on Web Services (ICWS), Salt Lake City, Utah, July 9-13, 2007

Reviewer: AFOSR Proposal

KIM, YONG C.,

Review Committee Member: IEEE International Symposium on Circuits and Systems (ISCAS)

Reviewer: IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems; IEEE Transactions on VLSI Systems; and International Symposium on VLSI Design

KURKOWSKI, STUART H., LtCol,

Journal Referee: Mobile Computing and Communications Review (MC^{2}R).

Reviewer: International Symposium on Collaborative Technologies and Systems (CTS), International Conference on Distributed Computing Systems (ICDCS), and International Conference on AD-HOC Networks and Wireless (AdHocNow).

LAMONT, GARY B.,

Member: Executive Committee, AFIT Tau Beta Pi Executive Committee 1992 to present

Journal of Evolutionary Computation, MIT Press 2001 to present

IEEE Transactions on Evolutionary Computation, 2000 to present

MARTIN, RICHARD K.,

Technical Paper Referee: *IEEE Transactions on Signal Processing; IEEE Signal Processing Letters; IEEE Transactions on Communications; IEEE Transactions on Wireless Communications; IEEE Communications Letters; IEEE Transactions on Circuits and Systems II; European Transactions on*

Telecommunications; The 2007 IEEE Int. Conf. on Comm.; The Spring 2007 IEEE Vehicular Tech. Conf.; a chapter submitted to *Adaptive Signal Processing for Wireless Channels* (CRC Press, 2008)*; and Speech Dereverberation* (book proposal, Springer UK)

MAYBECK, PETER S.,

Member: AFIT/EN Academic Rank Promotion and Tenure Committee; AFIT/ENG Steering Committee; AFIT/ENG Faculty Search Committee; AFIT/EN Scheduling/Registration Faculty Committee; AFIT/EN Academic Support Committee; and AFIT/EN Classified Research at AFIT Committee

Chair: AFIT/ENG Academic Rank Promotion and Tenure Committee, and AFIT/ENG Guidance and Control Curriculum Committee

Representative: AFIT/EN Doctoral Council, AFIT/ENG

MAYER, CHRISTOPHER B., Maj

Reviewer: *2007 IEEE Swarm Intelligence Symposium*

Reviewer: *2007Information Resource Management Association International Conference*

McDONALD, J. TODD, Lt Col

Reviewer: *International Journal of Network Security*

MILLS, ROBERT F.,

Reviewer: *IEEE Transactions on Communications, IET Communications, Hawaii International Conference on System Sciences, International Conference on Information Warfare*

MULLINS, BARRY E.,

Technical Paper Referee: *IEE Electronics Letters; Information Sciences, Elsevier Publishers; Military Communications Conference (MILCOM).*

Proposal Reviewer: AFOSR (Software and Systems Program)

Member: Advisory Board for the Department of Electrical Engineering and Computer Science, University of Evansville.

Member: AFIT/EN Awards Committee

Chairman, GCE Program Assessment

Chairman, AFIT/ENG Computer Networks Sequence

GCE-09M Class Advisor (11 students)

GCE-08M Class Advisor (9 students)

Consultant: National Air and Space Intelligence Center (NASIC)

PACHTER, MEIR

Faculty Research Council.

DAGSI Program Coordinating Committee (Control and Signal Processing)

Associate Editor of the Journal of Optimization Theory and Applications

Session Chairman: American Control Conference, July 11-13, 2007, New York, NY.

Member of the following professional societies: IEEE, AIAA and ION; member of the IEEE committee "Engineers at Risk".

Reviewer for IEEE Transactions on Automatic Control

Reviewer for AIAA J. of Guidance, Control and Dynamics

Reviewer for International Journal of Control

AFIT liaison to AFRL/VA
Member of AFOSR Review Panel
Consultant to AFRL/VACA, AFRL/SNAT and AFRL/SNRP
Member of AFRL/VACA AFOSR *Sta*r T*ea*m
AFIT NRC Postdoctoral Advisor
Associate Fellow of the AIAA
Fellow of the IEEE

PETERSON, GILBERT L.,

Reviewer: IFIP WG 11.9 Digital Forensics; IFIP WG 11.10 Critical Infrastructure Protection ;Digital Forensic Research Workshop (DFRWS); IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS); *IEEE Transactions on Systems, Man, and Cybernetics - Part B*; *Information Sciences; IEEE Transactions on Signal Processing; IEEE Transactions on Evolutionary Computation, IEEE Transactions on Systems, Man, and Cybernetics, Information Sciences*

Session Chair: IFIP WG 11.0 Digital Forensics

Co-Chair: Special Topic on Information Hiding and Steganography at the IEEE Systems, Man, and Cybernetics Conference

Program Committee: Mobile Multimedia/Image Processing for Military and Security Applications of the SPIE Symposium on Defense and Security

RAINES, RICHARD A.,

Technical Paper Referee, *41st Hawaii International Conference on System Sciences* (3 papers)

Session Chair, *IEEE International Communications Conference (ICC 2007)*

Technical Paper Referee, *40th Hawaii International Conference on System Sciences* (3 papers), 2006

Technical Paper Referee, *IEEE Information Assurance Workshop, 2006*

Technical Paper Referee, *10th Colloquium for Information Systems Security Education (CISSE), 2006*

Member, Program Committee, 10th Colloquium for Information Systems Security Education (CISSE)

 Panel Member, Scholarship for Service Proposal Review, National Science Foundation, 2006

RAQUET, JOHN F.,

Session chair: *ION GNSS-2007, 2006 Joint Navigation Conference, 2007 ION National Technical Meeting*

Reviewer: *IEEE Transactions on Aerospace Electronics Systems; NAVIGATION, GPS Solutions*

Executive Secretary: Satellite Division of the Institute of Navigation

SAVILLE, MICHAEL A., Maj,

Reviewer: *IET Electronic Letters*

SCHMIDT, JASON D., Capt,

Session Chair for the 2007 IEEE Aerospace Conference

Session Organizer for the 2008 IEEE Aerospace Conference

Reviewer: *Journal of Directed Energy*

SEETHARAMAN, GUNA

Charter Member: Team CajunBot, a finalist in DARPA Grand Challenge, October 2005. Phase III – Urban Challenge, Nov 2007.

Member: Steering Committee and Program Committee, IEEE Eighth International Workshop on Computer Architecture for Machine Perception and Sensing (CAMPS); Second International Workshop on Realtime Applications of Distributed Sensor Networks IRADSN-07; and, IEEE SUTC08.

Reviewer for the following journals: The IEEE Transactions on Computer; Intl Journal of Distributed Parallel Computing; Photogrammetry and Remote Sensing, Journal of Supercomputing, and, Optics Express.

TEMPLE, MICHAEL A.,

Reviewer: *IEEE Journal in Selected Areas of Communications; IEEE Communications Letters; IEE Electronic Letters; and IEEE Journal in Selected Areas of Communications*

Member: AFRL Technology Review Board (TRB), Senior Member of IEEE

TERZUOLI, ANDREW J., Jr

Chair: Local Chapter, Joint IEEE Societies Antennas and Propagation Society (APS), Microwave Theory and Techniques (MTT), Geoscience and Remote Sensing (GRS)

Technical Paper Referee: *IEEE Transactions, IEE Proceedings*

Dayton Development Coalition (DDC) Sensors Task Force

Steering Committee: WPAFB MASINT Development Consortium

VASQUEZ, JUAN R., LtCol,

Co-Chair for SPIE *Signal and Data Processing of Small Targets Conference*

Co-Chair for SPIE *Acquisition, Tracking, and Pointing Conference*

VETH, MICHAEL J., Maj,

Session chair: *ION GNSS-2007, 2007 ION Annual Meeting, 2007 Joint Navigation Conference, 2007 ION National Technical Meeting*

Reviewer: *IEEE Transactions on Aerospace Electronics Systems; Journal of Embedded Systems*

Vice-President: Institute of Navigation, Dayton Chapter

5.3. DEPARTMENT OF ENGINEERING PHYSICS

Access Phone 937-255-2012, DSN 785-2012
Fax: 937-656-6000, DSN 786-6000
Homepage: http://www.afit.edu/en/enp/

5.3.1. DOCTORAL DISSERTATIONS

ADAMSON, PAUL E., *A General Quantum Mechanical Method to Predict Positron Spectroscopy.* AFIT/DS/ENP/07-04. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: AFOSR/NL.

BECK, ERIC V., *A Multireference Density Functional Approach to the Calculation of the Excited States of Uranium Ions.* AFIT/DS/ENP/07-01. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: Department of Energy, Idaho Operations Office.

DISHAW, JAMES R., *Time Dependent Discrete Ordinates Neutron Transport Using Distribution Iteration in XYZ Geometry.* AFIT/DS/ENP/07-S01. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: Air Force Technical Applications Center.

GROSS, KEVIN C., *Phenomenological Model for Infrared Emissions from High-Explosive Detonation Fireballs.* AFIT/DS/ENP/07-03. Faculty Advisor: Dr. Glen P. Perram. Sponsor: SAF and NASIC/DE.

TERRY, NATHAN B., *Raman Fiber Lasers and Amplifiers Based on Multimode Graded-Index Fibers and Their Application to Beam Cleanup.* AFIT/DS/ENP/07-02. Faculty Advisor: Lt Col Thomas G. Alley. Sponsor: AFRL/DE.

5.3.2. MASTER'S THESES

5.3.2.1. APPLIED PHYSICS (GAP)

BAIRD, C. JAMES., *Direct Diode Pumped Raman Amplified Based on a Multimode Graded Index Fiber.* AFIT/GAP/ENP/07-01. Faculty Advisor: Lt Col Thomas G. Alley. Sponsor: AFRL/DE.

EASLEY, SHAUN M., *Anisotropy in the South Atlantic Anomaly.* AFIT/GAP/ENP/07-02. Faculty Advisor: Lt Col Christopher G. Smithtro. Sponsor: AFRL/VS.

GAMBOA, OMAR., *Stimulated Brillouin Scattering Beam Cleanup and Beam Phasing Through Two Passive Channels.* AFIT/GAP/ENP/07-03. Faculty Advisor: Major Timothy H. Russell. Sponsor: AFRL/DE.

JONES, DAVID A., *Portable Diode Pumped Femtosecond Lasers.* AFIT/GAP/ENP/07-04. Faculty Advisor: Lt Col Matthew J. Bohn. Sponsor: AFRL/SN.

LUNDIN, MICHAEL A., *Passive Detection of Uranyl Compounds.* AFIT/GAP/ENP/07M-05. Faculty Advisor: Lt Col Matthew J. Bohn. Sponsor: DTRA.

RODGERS, LUKE P., *Collision Broadening Using Alkali-Filled, Hollow Core Fibers.* AFIT/GAP/ENP/07-S01. Faculty Advisor: Major Timothy Russell. Sponsor: HELJTO.

SPANGLER, BRETT R., *Characterizing the Solar Wind Using DMSP Ion Drift Data.* AFIT/GAP/ENP/07-J01. Faculty Advisor: Lt Col Christopher G. Smithtro. Sponsor: AFRL/VS.

STEENBURGH, ROBERT A., *Holes: Ionospheric Scintillation GPS and Imputation.* AFIT/GAP/ENP/07-06. Faculty Advisor: Lt Col Christopher G. Smithtro. Sponsor: AFRL/VS.

WERNER, JOSHUA T., *Assessment of the Impact of Various Ionospheric Models on High-Frequency Signal Raytracing.* AFIT/GAP/ENP/07-07. Faculty Advisor: Lt Col Christopher G. Smithtro. AFRL/VS.

5.3.2.2. ELECTRO-OPTICS (GEO)

ORTH, DAVID F., *An Infrared Camera Simulation for Estimating Spatial Temperature Profiles and Signal-to-Noise Ratios of an Airborne Laser-Illuminated Target.* AFIT/GEO/ENP/07-01. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: DETEC (OSD).

WISDOM, BRETT W., *Assessment of Optical Turbulence Profiles Derived from Probabilistic Climatology.* AFIT/GEO/ENNNP/07-02. Faculty Advisor: Lt Col Steven T. Fiorino. Sponsor: AFRL/DE.

5.3.2.3. NUCLEAR ENGINEERING (GNE)

CARLSON, LONNIE, *Cobalt Doping of Semiconducting Boron Carbide using Cobaltocene.* AFIT/GNE/ENP/07-01. Faculty Advisor: LTC David LaGraffe. Sponsor: DTRA/CS.

GRAY, THOMAS E., *Investigation of Gate Current in Neutron Irradiated $Al_xGa_{1-x}N/GaN$ Heterogeneous Field Effect Transistors Using Voltage and Temperature Dependence.* AFIT/GNE/ENP/07-02. Faculty Advisor: Dr. James C. Petrosky. Sponsor: AFRL/VS and AFOSR.

HARR, LOGAN J., *Precise Calculation of Complex Radioactive Decay Chains.* AFIT/GNE/ENP/07-03. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: Air Force Technical Applications Center.

JONES, CHRISTOPHER P., *High Resolution Mesoscale Weather Data Improvement to Spatial Effects for Dose-Rate Contour Plot Predictions.* AFIT/GNE/ENP/07-04. Faculty Advisor: Lt Col Steven T. Fiorino. Sponsor: DTRA/AFIT.

KLING, JOSEPH A. *The Sensitivity of RDD Contamination Predictions to Source Term Parameters.* AFIT/GNE/ENP/07-05. Faculty Advisor: Dr. Charles J. Bridgman. Sponsor: DTRA/TD

MAAS, MICHAEL R., *Directional Detection of Scattered Gamma Spectra by a Portable High Purity Germanium Detector.* AFIT/GNE/ENP/07-06. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: DTRA/AFIT.

5.3.2.4. ELECTRICAL ENGINEERING (GE)

HARKISS, SAMUEL I., *A Study of Bi-Directional Reflectance Distribution Functions and their Effect on Infrared Signature Models.* AFIT/GE/ENP/07-01. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/SN.

5.3.2.5. MATERIALS SCIENCES (GMS)

SHELL, SCOTT A., *Optical Parametric Oscillation in Orientation-Patterned Gallium Arsenide.* AFIT/GMS/ENP/07-01. Faculty Advisor: Lt Col Thomas G. Alley. Sponsor: AFRL/SN.

5.3.3.   FUNDED RESEARCH PROJECTS

Note: Research Center affiliations are listed in [ ] if applicable.

ALLEY, THOMAS G., Lt Col,

"Nonlinear Optical Effects in Fibers and Their Application to High Energy Lasers." Sponsor: AFRL/DE.
   Funding: $10,000.

BURRGRAF, LARRY W.,

"Role of Water in Heat Inactivation of Bacillus Anthracis Spores and Spores of Related Organisms."
   Sponsor: AFNWCA. Funding: $105,000.

CUSUMANO, SALVATORE J.,

"2007 Directed Energy Summer Intern Program: Introducing DoD DE to College Undergraduates. Sponsor:
   HELJTO. Funding: $38,922. [CDE]

"Airborne Aero-Optic Laboratory." Sponsor: HELJTO. Funding: $114,825. [CDE]

"Delivered Irradiance Assessment Tool (DIAT)." Sponsor: DETEC. Funding: $103,000. [CDE]

"High Energy Laser Modeling and Simulation Program: TAWG Product Development." Sponsor:
   AFRL/DE. Funding: $400,000. [CDE]

FIORINO, STEVEN T., Lt Col,

"Probabilistic HELEEOS Atmospheric Information for AFRL Weather Impact Analysis." Sponsor:
   AFRL/VA. Funding: $18,467 [CDE]

LaGRAFFE, DAVID A., LTC,

"DTRA-AFIT Nuclear Partnership." Sponsor: DTRA. Funding: $90,000.

MARCINIAK, MICHAEL A.,

"Time-resolved Luminescence Spectroscopy to Determine Carrier Dynamics in Mid-infrared Semiconductor
   Quantum Well Optoelectronic Devices for Air Force Applications." Sponsor: AFOSR. Funding:
   $54,563.

MATHEWS, KIRK A.,

"AFTAC/TM-AFIT/ENP Support 2007." Sponsor: AFTAC. Funding: $50,000.

NIDAY, THOMAS A., Maj,

"Modeling and Simulation of the Dynamics and Applications of Light Filaments." Sponsor: AFOSR.
   Funding: $11,391.

PERRAM, GLEN P.,

"AFOSR Center of Excellence in High Power Gas Phase Electric and Hybrid Laser Kinetics and
   Spectroscopy." Sponsor: AFOSR. Funding: $89,746. [CDE]

"Characterization of Excited Atomic Oxygen in RF and Microwave Discharges." Sponsor: AFRL/DE.
   Funding: $37,500. [CDE]

"Countering the IED Threat with Infrared Signatures." Sponsor: SAF. Funding: $100,000. [CMSR]

"Cryo-Cooled Ti-Sapphire Laser to be used in DPAL Experiments." Sponsor: AFRL/DE. Funding: $106,464. [CDE]

"High Power Diode Pumped Alkali Vapor Lasers and Analog Systems." Sponsor: HELJTO. Funding: $176,450. [CDE]

"Measure High Priority Kinetic Rates for DPALS." Sponsor: AFRL/DE. Funding $56,250. [CDE]

"Optical Diagnostics for the Production of Carbon Nanotubes from PLD." Sponsor: AFOSR. Funding: $43,205.

"Technical and Administrative Support for the AFOSR Center of Excellence in High Power Gas Phase and Electric Lasers." Sponsor: AFRL/DE. Funding: $103,000.

PETROSKY, JAMES C.,

"Analysis of Residual Memory Effects in Military Memory Systems." Sponsor: AFRL/SN. Funding: $32,240. [CMSR]

"Radiation Damage to Electronic Devices and Circuits: Point Defects in AlGaN/GaN HFETS." Sponsor: AFOSR. Funding: $27,000.

"Radiation Effects Studies on Wide Band-Gap Devices for Use in Space Borne Platforms." Sponsor: AFRL/VS. Funding: $41,000.

"Support Activities to Homeland Security: Portal Scintillation." Sponsor: DHS. Funding: $75,000.

"Support Activities to Homeland Security: Support to NTNFC." Sponsor: DHS. Funding: $92,308.

RUSSELL, TIMOTHY H., Maj,

"Stimulated Brillouin Scattering Phase Conjugation in Optical Fiber." Sponsor: HELJTO. Funding: $69,300. [CDE]

SMITHRO, CHRISTOPHER G., Maj,

"Observation and Modeling of the Mid-Latitude E- and F-Region Ionosphere During Solar X-Ray Flares." Sponsor: AFOSR. Funding: $5,470.

TUTTLE, RONALD F.,

"Establishing an Expert-Defined Protocol for Analytical Tradecraft with Career Specialization in Denial and Deception." Sponsor: NASIC. Funding: $75,000. [CMSR]

"JWICS Connectivity Support." Sponsor: NASIC. Funding: $50,000. [CMSR]

YEO, YUNG KEE,

"Magnetic Properties of Mn-Implanted P- Type GaN." Sponsor: AFOSR. Funding: $45,000.

"Magnetic Properties of TM-Implanted Dilute Magnetic Semiconductors." Sponsor: AFOSR. Funding: $34,480.

5.3.4. FUNDED EDUCATIONAL PROJECTS

Note: Research Center affiliations are listed in [ ] if applicable.

CUSUMANO, SALVATORE J.,

"2006 Directed Energy Summer Scholars Program, A Companion Program of the AFIT E2S2I Summer Internship Program". Sponsor: Directed Energy Professional Society Educational Committee. Funding: $30,000. [CDE]

PERRAM, GLEN P.,

"High Energy Laser Weapons Systems Short Course." Sponsor: DEPS Educational Committee. Funding: $17,500. [CDE]

TUTTLE, RONALD F.,

"Advanced Geospatial Intelligence Education." Sponsor: NGA. Funding: $510,000. [CMSR]

"MASINT Academic Support." Sponsor: AFRL/SN. Funding: $100,000. [CMSR]

5.3.5. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

CUSUMANO, SALVATORE J.,

Fiorino, S.T., R.J. Bartell, M.J. Krizo, and S.J. Cusumano, "Expected Worldwide, Low-Altitude Laser Performance in the Presence of Common Atmospheric Obscurants" *J. Dir Energy*, Vol 2, No. 4, 2007, pp. 363-375, 2007. [CDE]

BURGGRAF, LARRY

Li, G. and L.W. Burggraf, "Controlled patterning of polymer films using an AFM tip as a nano-hammer",Nanotechnology 18, 245302 (8pp) (2007).

FIORINO, STEVEN T., Lt Col,

Fiorino, S.T., R.J. Bartell, M.J. Krizo, and S.J. Cusumano, "Expected Worldwide, Low-Altitude Laser Performance in the Presence of Common Atmospheric Obscurants" *J. Dir Energy*, Vol 2, No. 4, 2007, pp. 363-375, 2007. [CDE]

Gravley, L.E., S.T. Fiorino, R.J. Bartell, G. P. Perram, M. J. Krizo, and K. B. Le, "Comparison of Climatological Optical Turbulence Profiles to Standard, Statistical, and Numerical Models Using HELEEOS" *J. Dir Energy*, Vol 2, No. 4, pp. 347-362**,** 2007. [CDE]

JOHN, GEORGE

B.S. Phillips,, G. John and J.S. Zabinski, "Surface chemistry of fluorine containing ionic liquids on steel substrates at elevated temperature using Mössbauer spectroscopy", Tribology Letters, Vol. 26, No. 2, May 2007

LAGRAFFE, DAVID A., LTC

Ignatov, A.Yu., L. Carlson, Ya.B. Losovyj, D. LaGraffe, J.I. Brand, and P.A. Dowben, "Pairwise Cobalt Doping of Boron Carbides using Cobaltocene," *Journal of Applied Physics 102*: 83520-83523 (2007).

Carlson, L., D. LaGraffe, Snjezana Balaz, A. Ignatov, Ya. B. Losovyj, J. Choi, P.A. Dowben, and J.I. Brand, "Doping of Boron Carbides with Cobalt, using Cobaltocene," *Applied Physics A 89*: 195-201 (2007).

HENGEHOLD, ROBERT L.

Ryu, Mee-Yi, Y. K. Yeo, and R. L. Hengehold, "Implantation damage recovery and carrier activation studies of Si-implanted $Al_{0.18}Ga_{0.82}N$ by temperature dependent Hall-effect measurements," Physica Status Solidi (c) **4**, 2613-2616 (2007).

MATHEWS, KIRK A.,

Mathews, K. and J. Dishaw, "Matrix Albedo for Discrete Ordinates Infinite-Medium Boundary Condition", Joint International Topical Meeting on Mathematics & Computation and Supercomputing in Nuclear Applications (M&C + SNA 2007). Monterey, California, April 15-19, 2007, on CD-ROM, American Nuclear Society, LaGrange Park, IL, 2007.

NIDAY, THOMAS, Maj,

Weeks, D.E., T.A.Niday, S.H.Yang (PostDoc), "Scattering Matrix Elements for the Reaction B($^2P_{1/2}$) + H_2(j = 0) $\leftrightarrow$ B($^2P_{3/2}$) + H_2(j = 0, 2, 4, 6)," J Chem Phys. 125 (2006) 164301-164315.

PERRAM, GLEN P.

Dolezal, Michael W., and Glen P. Perram, "Predissociation of Bi_2 A(0_u^+), v'=21-39", Journal of Chemical Physics 126, 084310, 1-6 (Feb 2007). [CDE]

Phelps, Charles, Carl J. Druffner, Glen P. Perram and Rand R. Biggers, "Shock Front Dynamics in the Pulsed Laser Deposition of $YBa_2Cu_3O_{7-x}$", Journal of Physics D: Applied Physics (2007). [CDE]

Gravley, L.E., S.T. Fiorino, R.J. Bartell, G. P. Perram, M. J. Krizo, and K. B. Le, "Comparison of Climatological Optical Turbulence Profiles to Standard, Statistical, and Numerical Models Using HELEEOS" *J. Dir Energy*, Vol 2, No. 4, pp. 347-362**,** 2007. [CDE]

RUSSELL, TIMOTHY H., Maj,

K. C. Brown, T. H. Russell, T. G. Alley, and W. B. Roh, "Passive combination of multiple beams in an optical fiber via stimulated Brillouin scattering," *Opt. Lett*., 32, 1047-1049, 2007. [CDE]

N. B. Terry, K. T. Engel, T. G. Alley, and T. H. Russell, "Use of a Continuous Wave Raman Fiber Laser in Graded-Index Multimode Fiber for SRS beam Combination," *Opt. Expr*., 15, 602-607, 2007. [CDE]

WEEKS, DAVID E.,

Weeks, D.E., T.A.Niday, S.H.Yang (PostDoc), "Scattering Matrix Elements for the Reaction B($^2P_{1/2}$) + H_2(j = 0) $\leftrightarrow$ B($^2P_{3/2}$) + H_2(j = 0, 2, 4, 6)," J Chem Phys. 125 (2006) 164301-164315.

YEO, YUNG KEE,

Hill, D.H., D.A. Arena, R.A. Bartynski, P. Wu, G. Saraf, Y. Lu, R. Gateau, J. Dvorak, A. Moodenbaugh, Yung Kee Yeo, "Room Temperature Ferromagnetism in Mn Ion Implanted Epitaxial ZnO Films," *Physica Status Solidi (a)*, 2006, Vol. 203, pp. 3836-3843.

Ryu, Mee-Yi, Y. K. Yeo, and R. L. Hengehold, "Implantation damage recovery and carrier activation studies of Si-implanted $Al_{0.18}Ga_{0.82}N$ by temperature dependent Hall-effect measurements," *Physica Status Solidi (c)*, 2007, Vol. 4, pp. 2613-2616.

Wu, P., G. Saraf, Y. Lu, D.H. Hill, D.A. Arena, R.A. Bartynski, F. Cosandey, J.F. Al-Sharab, L. Wielunski, R. Gateau, J. Dvorak, A. Moodenbaugh, J. A. Raley, and Yung Kee Yeo, "Magnetic Properties of Fe-implanted ZnO nanotips grown by metal-organic chemical vapor deposition, " *J. Electronic Materials*, 2007, Vol. 36, pp. 529-532.

5.3.6. REFEREED PRESENTATIONS
Note: Research Center affiliations are listed in [ ] if applicable.

BOHN, MATTHEW J., Maj,

Bohn, M.J. and M.A. Lundin, "Remote Sensing phase fluorimetry using a mercury vapor lamp," Proceedings of SPIE, Vol 6555, 27 Apr 2007. [CMSR]

CUSUMANO, SALVATORE J.

Fiorino, S.T. R.J. Bartell, M.J. Krizo, G.P. Perram, D.J. Fedyk, K.P. Moore, T.R. Harris, and S.J. Cusumano, "Worldwide Mission Planning Tool for Tactical High Energy Laser Systems Operating at Wavelengths Up to 14 μm," (Paper AIAA-2007-7569) 5th AIAA Biennial National Forum on Weapon System Effectiveness, Huntsville, AL, October 2007. [CDE]

Fiorino, S.T. R.J. Bartell, M.J. Krizo, D.J. Fedyk, K.P. Moore, T.R. Harris, S.J. Cusumano, R. Richmond, and M.J. Gebhardt, "Worldwide Uncertainty Assessments of LADAR Performance for Diverse Low Altitude Atmospheric Environments at 1.064 μm and 1.557 μm," (Paper AP02) MSS Active E-O Systems, Atlanta, GA, September 2007.[CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355 μm to 10.6 μm," (SPIE Paper 6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. [CDE]

FIORINO, STEVEN T., Lt Col

Fiorino, S.T. R.J. Bartell, M.J. Krizo, G.P. Perram, D.J. Fedyk, K.P. Moore, T.R. Harris, and S.J. Cusumano, "Worldwide Mission Planning Tool for Tactical High Energy Laser Systems Operating at Wavelengths Up to 14 μm," (Paper AIAA-2007-7569) 5th AIAA Biennial National Forum on Weapon System Effectiveness, Huntsville, AL, October 2007. [CDE]

Fiorino, S.T. R.J. Bartell, M.J. Krizo, D.J. Fedyk, K.P. Moore, T.R. Harris, S.J. Cusumano, R. Richmond, and M.J. Gebhardt, "Worldwide Uncertainty Assessments of LADAR Performance for Diverse Low Altitude Atmospheric Environments at 1.064 μm and 1.557 μm," (Paper AP02) MSS Active E-O Systems, Atlanta, GA, September 2007.

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355 μm to 10.6 μm," (SPIE Paper 6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. [CDE]

HENGEHOLD, ROBERT L.

Ryu, Mee-Yi, E. A. Moore, Y. K. Yeo, and R. L. Hengehold. "Implantation Damage Studies of Si-implanted $Al_xGa_{1-x}N$," Presented at the International Workshop on Nitride Semiconductors held on 22-27 October 2006 in Kyoto, Japan.

Ryu, Mee-Yi, E. A. Moore, Y. K. Yeo, and R. L. Hengehold. "Activation Studies of Si-Implanted $Al_xGa_{1-x}N$," Presented at the Korean Physical Society 2007 Spring Meeting held on 19-20 April 2007 in Peongchang, Kangwondo, Korea.

Yuldashev, Sh.U., P.K. Khabibullaev, R.A. Nusretov, I.V. Khvan, Y.K.Yeo, R.L. Hengehold, and T.W. Kang, "Electroluminescence of n-$Zn_{1-x}Mg_xO$/ZnO/p- $Zn_{1-x}Mg_xO$ Heterostructures Grown on Si Substrates," the 13th International Conference on II-VI Compounds, Jeju, Korea, 10-14 September 2007.

LAGRAFFE, DAVID A., LTC,

LaGraffe, D., and J. Petrosky, "Developing a Professional Science Masters Degree Program in Combating Weapons of Mass Destruction." Presented at the 2007 American Society of Engineering Education Conference, 25 Jun 2007.

PERRAM, GLEN P.

Fiorino, S.T. R.J. Bartell, M.J. Krizo, G.P. Perram, D.J. Fedyk, K.P. Moore, T.R. Harris, and S.J. Cusumano, "Worldwide Mission Planning Tool for Tactical High Energy Laser Systems Operating at Wavelengths Up to 14 μm," (Paper AIAA-2007-7569) 5th AIAA Biennial National Forum on Weapon System Effectiveness, Huntsville, AL, October 2007. [CDE]

Essenhigh, Katherine and Glen Perram, "2-D Temperature and Pressure Maps by Planar Laser Induced Fluorescence of a Low Pressure Mach 2 Supersonic Nozzle Flow: Comparisons for Different Back Pressures found in Gas Dynamic Lasers" (Paper AIAA-2007-3875) 38th AIAA Plasmadynamics and Lasers Conference, Miami, FL June 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355 μm to 10.6 μm," (SPIE Paper 6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. [CDE]

Gallagher, Jeffrey E., Glen P. Perram, and Skip Williams, "Ultrasensitive Absorption Measurements of Metastable Species: Pressure Broadening of the $b^1\Sigma g \rightarrow a^1\Delta g$ (1,0) Band in Oxygen Using Off-Axis Integrated-Cavity Output Spectroscopy", 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 8-11, 2007. Proceedings of the AIAA, AIAA-2007-1359 (2007). [CDE]

Fiorino, S.T., Richard J. Bartell, Glen P. Perram, Matthew J. Krizo, Daniel J. Fedyk, and Salvatore J. Cusumano "Worldwide Estimates & Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 24 km and Below at Wavelengths 0.355 to 14 μm" SPIE Defense & Security Symposium, Atmospheric Propagation IV,Orlando, FL, April 2007. SPIE Proceedings Vol. 6551 (2007).

Gross, Kevin C., Joseph Wymann, and Glen P. Perram, "Phenomenological Fireball Model for Remote Identification of High-Explosives" SPIE Defense & Security Symposium, Orlando, FL, April 2007. SPIE Proceedings Vol. 6551 (2007) [CMSR]

Hawks, Michael, and Glen P. Perram, "Passive Ranging of Boost Phase Missiles" SPIE Defense & Security Symposium, Acquisition, Tracking, Pointing, and Laser Systems Technologies XXI, Orlando, FL, April 2007. SPIE Proceedings Vol. 6569 (2007). [CDE]

PETROSKY, JAMES C.

Grey, T. Petrosky, J. McClory, J. "Trap Assisted Tunneling Induced Currents In Neutron Irradiated $Al_xGa_{1-x}N$ /GaN HFETs" IEEE Paper 2007-500. Presented at the 2007, NSREC Poster Session, Waikiki, Hawaii, July 2007.

McClory, J. Petrosky, J. Sattler J. Jarzen T., "Temperature Dependent Electrical Characteristics of Neutron Irradiated AlxGa1-xN/GaN HFETs" IEEE Paper 2007-501. Presented at the 2007, NSREC Poster Session, Waikiki, Hawaii, July 2007.

McClory, J. Petrosky J. "An Analysis of the Effects of Low-Energy Electron Radiation On AlxGa1-xN/GaN HFETs." IEEE Paper 2007-502. Presented at the 2007, NSREC Poster Session, Waikiki, Hawaii, July 2007.

YEO, YUNG KEE,

Ryu, Mee-Yi, E. A. Moore, Y. K. Yeo, and R. L. Hengehold, "Implantation Damage Studies of Si-implanted $Al_xGa_{1-x}N$," the International Workshop on Nitride Semiconductors, Kyoto, Japan, 22-27 October 2006.

Ryu, Mee-Yi, E. A. Moore, Y. K. Yeo, and R. L. Hengehold, "Activation Studies of Si-Implanted $Al_xGa_{1-x}N$," the Korean Physical Society 2007 Spring Meeting, Peongchang, Kangwondo, Korea, 19-20 April 2007.

Yuldashev, Sh.U., P.K. Khabibullaev, R.A. Nusretov, I.V. Khvan, Y.K.Yeo, R.L. Hengehold, and T.W. Kang, "Electroluminescence of n-$Zn_{1-x}Mg_xO$/ZnO/p- $Zn_{1-x}Mg_xO$ Heterostructures Grown on Si Substrates," the 13th International Conference on II-VI Compounds, Jeju, Korea, 10-14 September 2007.

5.3.7. SUBSTANTIAL CONSULTATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

BURGGRAF, LARRY W.

Facilitated Positron Annihilation Lifetime Spectroscopy (PALS) technology transfer to AFRL/MNMER; students assembled PALS system at Eglin AFB.

FIORINO, STEVEN T., Lt Col

Fiorino, Steven T., "Cloud Free Line of Sight Analysis" for Dr James Horkovich and Raytheon RMS Systems Engineering, Tucson, AZ, April 2007. [CDE]

Fiorino, Steven T., "Atmsopheric Effects on Low-Altitude Laser Performance Analysis" for the National Academy of Science, Board on Army Science and Technology, Washington DC, May - August 2007. [CDE]

MATHEWS, KIRK A.,

Analysis and modeling of nuclear event radiation, including source, transport, detection and data analysis of radiations that include the full spectrum of electromagnetic and nuclear radiation, with Air Force Technical Applications Command, AFTAC/TH, Patrick AFB, FL.

Analysis and modeling of nuclear fuels and fuel cycle processes, with Air Force Technical Applications Command, AFTAC/TM, Patrick AFB, FL.

MARCINIAK. MICHAEL A.

Cusumano, S.J., M.A. Marciniak, W.F. Bailey, and J.E. McCrae, "Delivered Irradiance Assessment Tool (DIAT)," Directed Energy Test and Evaluation Capability, Oct 2006-Sep 2007. [CDE]

Marciniak, M.A., "Infrared optical signature measurement research," Signature Division, Sensors Directorate, Air Force Research Laboratory (AFRL/SNS), Oct 2006-Sep 2007. [CDE]

Marciniak, M.A., "Infrared counter-countermeasure research," Sensor Materials Branch, Survivability and Sensor Materials Division, Materials and Manufacturing Directorate, AFRL (AFRL/MLPJ), Oct 2006-Sep 2007. [CDE]

Marciniak, M.A., "Time-resolved luminescence spectroscopy to determine carrier dynamics in mid-infrared semiconductor quantum well optoelectronic devices for Air Force applications," Air Force Office of Scientific Research, Oct 2006-Sep 2007.

PETROSKY, JAMES C.

Petrosky, James C., Chairman, QASPR Review Panel, NNSA, Jan-Dec 2007

Petrosky, James C., Member HEMP Review Panel, DTRA, Aug-Dec 2007.

5.3.8. OTHER PRESENTATIONS PUBLICATIONS AND PROFESSIONAL ACTIVITIES
Note: Research Center affiliations are listed in [ ] if applicable.

OTHER PUBLICATIONS AND PRESENTATIONS

ALLEY, THOMAS G., Lt Col,

Terry, N.B., K. Engel, T. G. Alley, T. H. Russell, and W. B. Roh, "Forward and Backward Seeded Continuous-Wave Raman Fiber Amplifiers Based on Multimode Fibers", Presented at Photonics West, 2007. San Jose, California. [CDE]

Terry, N.B., B. Flusche, K. Engel, T. G. Alley, T. H. Russell, and W. B. Roh, "Beam Cleanup and Beam Combination in Raman Fiber Amplifiers and Lasers based on Multimode Fibers", Presented at the Directed Energy Symposium, 2006. Los Angeles, California. [CDE]

BOHN, MATTHEW J., Maj,

Bohn, M.J. and M.A. Lundin, "Passive Remote Sensing of Uranyl Compounds," Advanced Signatures Technology Symposium, 18 -20 Sep 2007, NPS, Monterey, CA [CMSR]

Bohn, M.J. and M.A. Lundin, "Passive Remote Sensing of Uranyl Compounds," Advanced Signatures Technology Symposium, AFIT, Nov 2006. [CMSR]

BURGGRAF, LARRY,

Completed AU Air Force GS-15 Leadership Seminar, 25-29 Sept 2006.

Explored teaching and research collaborations with University of Cincinnati nuclear engineering faculty and students by video conference, joint with Dr. Petrosky.

CUSUMANO, SALVATORE J.,

Wisdom, B.W., S.T. Fiorino, R.J. Bartell, M.J. Krizo, and S.J. Cusumano, "Assessment of Optical Turbulence Profiles Derived from Probabilistic Climatology," 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. 9CDE)

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, M.J., J.E. McCrae, and S.J. Cusumano, "Assessment of High Energy Laser Delivered Irradiance Derived from Off-Axis Atmospheric Scatter," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Uncertainty Assessments of Ship Defense High Energy Laser Performance in Various Worldwide Maritime Environments at Wavelengths of 1.045 μm, 1.625 μm, and 2.141 μm," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Bartell, R.J., S.T. Fiorino, G.P. Perram, M.J. Krizo, T.P. Huster, J.P. Cheney, Cusumano S.J., E.P. Magee, M.R. Whiteley, and A. Ngwele "Comparison of Peak Irradiance and Power-in-the-Bucket Predictions Among Several Scaling Law Models and WaveOptics Codes Over Diverse Low Altitude Operating Regimes" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

Fiorino, S.T., R.J. Bartell, J.D. Eckel, M.J. Krizo, S.J. Cusumano, "Application and Impacts of Ground-to-Space Cloud Free Line of Sight Probabilities to Air-to-Ground High Energy Laser Engagement Scenarios" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

FIORINO, STEVEN T., Lt Col

Wisdom, B.W., S.T. Fiorino, R.J. Bartell, M.J. Krizo, and S.J. Cusumano, "Assessment of Optical Turbulence Profiles Derived from Probabilistic Climatology," 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

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Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Uncertainty Assessments of Ship Defense High Energy Laser Performance in Various Worldwide Maritime Environments at Wavelengths of 1.045 μm, 1.625 μm, and 2.141 μm," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Bartell, R.J., S.T. Fiorino, G.P. Perram, M.J. Krizo, T.P. Huster, J.P. Cheney, Cusumano S.J., E.P. Magee, M.R. Whiteley, and A. Ngwele "Comparison of Peak Irradiance and Power-in-the-Bucket Predictions Among Several Scaling Law Models and WaveOptics Codes Over Diverse Low Altitude Operating Regimes" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

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Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, L.E. Gravley, T.P. Huster, J.P. Cheney, and K.B. Le, "Expected Worldwide Laser Performance in Spectrally Diverse Near Earth Scenarios in the Presence of Common Atmospheric Obscurants" Military Sensing Symposia Active E-O System Symposium, Monterey CA, 26-28 Sep 2006. [CDE]

HENGEHOLD, ROBERT L.

Moore, E.A., Mee-Yi Ryu, Y. K. Yeo, and R. L. Hengehold. "Electrical Properties of Si-Implanted $Al_xGa_{1-x}N$ with High Al Mole Fraction," Presented at the March 2007 Meeting of the American Physical Society held on 5-9 March 2007 in Denver, Colorado.

LAGRAFFE, DAVID A., LTC,

LaGraffe, D., J. Petrosky, and P. Coomber, "Combating Weapons of Mass Destruction Educational Programs at the Air Force Institute of Techynology," *Cbt WMD Journal* **1** 11 (2007).

LaGraffe, D., "Combating Weapons of Mass Destruction Educational Programs at the Air Force Institute of Technology," at *Combating Weapons of Mass Destruction: Educating Future National Security Leaders Conference*, 3 – 4 Oct 2007, National Defense University (invited).

MARCINIAK, MICHAEL A.

Harkiss, S.I. and M.A. Marciniak, "AFIT's large commercial aircraft infrared signature tool," 2006 Advanced Signatures Technology Symposium, Wright-Patterson AFB OH, 7-9 November 2006. [CDE]

Orth, D.F., M.A. Marciniak, S.J. Cusumano and R.L. Beauchamp, "An infrared camera simulation estimating the signal-to-noise ration and spatial temperature profile of an ABL-illuminated target," 2007 Directed Energy Test & Evaluation Conference, Albuquerque, NM, 7-9 August 2007. [CDE]

Krizo, M.J., R.J. Bartell, E.P. Magee, S.T. Fiorino, R.L. Beauchamp, M.A. Marciniak, W.F. Bailey and S.J. Cusumano, "High Fidelity Simulation of a Bi-Static Measurement of Delivered Irradiance on Target," 2007 Directed Energy Test & Evaluation Conference, Albuquerque, NM, 7-9 August 2007. [CDE]

Whiteley, M., M.A. Marciniak and S.J. Cusumano, "Algorithm for the Estimation of Delivered Irradiance on Target," 2007 Directed Energy Test & Evaluation Conference, Albuquerque, NM, 7-9 August 2007. [CDE]

Cusumano, S.J., M.A. Marciniak, W.F. Bailey, S.T. Fiorino, M. Whiteley, M.J. Krizo, R.L. Beauchamp, E.P. Magee, R.J. Bartell, K.C. Gross and D.F. Orth, "Delivered Irradiance Assessment Tool," Final Report (2007). [CDE]

MATHEWS, KIRK A.,

Harr, L. and Mathews, K. A., "Precise Calculation of Complex Radioactive Decay Chains", *AFTAC Sensors and Systems Meeting*, Air Force Technical Applications Command, Patrick AFB, FL, 1 May 2007.

NIDAY, THOMAS A., Maj,

Weeks, D.E. and T.A. Niday, "Feshbach Resonances in the Inelastic Collision B ($^2P_{1/2}$) + H_2 (j) $\leftrightarrow$ B($^2P_{3/2}$) + H_2 (j')", APS March Meeting, Denver, CO, March 5-9, 2007.

Niday, T., Paul Muller, and Amy Robinson, "Collapse and Instability of Nanosecond UV filaments/Evaluation of Absorbing Boundary Conditions with the Channel Packet Method**",** Presentation at AFOSR Nonlinear Optics Workshop, Tucson, AZ, 17 October 2006.

Weeks, D.E. and T.A. Niday, "Scattering matrix elements for the inelastic collision B ($^2P_{1/2}$) + H_2 (j=0) $\leftrightarrow$ B ($^2P_{3/2}$) + H_2 (j')", Physics Department, Miami University, Oxford OH, 2007.

PERRAM, GLEN P.

Bartell, Richard, Steven Fiorino, Matthew Krizo, Glen Perram, Todd Huster, Justin Cheney, Eric Magee, Matthew Whiteley, and Amy Ngwele, "Comparison of Peak Irradiance and Power in the Bucket Predictions Among Several Scaling Law Models and Wave Optics Codes Over Diverse Low Altitude Operating Regimes", Ninth Annual Directed Energy Symposium, Albuquerque, NM, Nov 2006. [CDE]

Essenhigh, Katherine and Glen Perram, "Planar Laser Induced Fluorescence for Supersonic Flow Visualization" Ninth Annual Directed Energy Symposium, Albuquerque, NM, Nov 2006. [CDE]

William, Skip, Jeffrey Gallagher and Glen Perram, "Collisional broadening coefficients of singlet ($a^1\Delta_g$) oxygen with helium", 59th Annual Gaseous Electronics Conference, Columbus, OH, Oct 2006. [CDE]

Gross, Kevin C. and Glen P. Perram, "Developing a Phenomenological Model of Infrared Emissions from Detonation Fireballs for Explosive Identification" 8th Workshop on Infrared Remote Sensing Applications, Mont Sainte-Anne, Quebec, Canada, Oct 2006.
[CMSR]

Gross, Kevin C., Glen P. Perram, Ronald F. Tuttle, "Using fireball signatures and phenomenology to distinguish high explosives" 2nd Annual Advanced Signatures Technology Symposium, Air Force Institute of Technology, Wright Patterson Air Force Base, OH, 7-9 Nov 2006. [CMSR]

PETROSKY, JAMES C.

LaGraffe, D., J. Petrosky, and P. Coomber, "Combating Weapons of Mass Destruction Educational Programs at the Air Force Institute of Technology," NBC Report, Spring 2007.

RUSSELL, TIMOTHY H., Maj,

Terry, N.B., K. Engel, T. G. Alley, T. H. Russell, and W. B. Roh, "Forward and Backward Seeded Continuous-Wave Raman Fiber Amplifiers Based on Multimode Fibers", Presented at Photonics West, 2007. San Jose, California. [CDE]

Terry, N.B., B. Flusche, K. Engel, T. G. Alley, T. H. Russell, and W. B. Roh, "Beam Cleanup and Beam Combination in Raman Fiber Amplifiers and Lasers based on Multimode Fibers", Presented at the Directed Energy Symposium, 2006. Los Angeles, California. [CDE]

SMITHTRO, CHRISTOPHER G., Maj,

Smithtro, C., "Energy Deposition in the Upper Atmosphere During Extreme Solar Flares", invited colloquium, Utah State University, Logan, CO, 20 March 2007.

Smithtro, C. and S. Solomon, "An improved parameterization of thermal electron heating by photoelectrons, with application to an X17 flare", presented at the Space Weather Workshop, Boulder, CO, 26 April 2007.

Steenburgh, R. and C. Smithtro, "Ionospheric Scintillation Effects on GPS", presented at the Space Weather Workshop, Boulder, CO, 25 April 2007.

Smithtro, Christopher G., Scientific Advisor to NASA's Community Coordinated Modeling Center (CCMC) Steering Group, August 2005 – present.

Smithtro, Christopher G., Member of the Extreme-ultraviolet Variability Experiment (EVE) Science Team, 2002 – present.

WEEKS, DAVID E.,

Weeks, D.E. and T.A.Niday, "Feshbach Resonances in the Inelastic Collision B($^2P_{1/2}$) + H_2(j = 0)$\leftrightarrow$B($^2P_{3/2}$) + H_2(j')," APS March Meeting, Denver, CO, March 5-9, 2007.

Weeks, D.E. and T.A.Niday, "Scattering Matrix Elements for the Inelastic Collision B($^2P_{1/2}$) + H_2(j = 0)$\leftrightarrow$B($^2P_{3/2}$) + H_2(j')," Physics Department, Miami University, Oxford OH (2007).

YEO, YUNG KEE,

Moore, E. A., Mee-Yi Ryu, Y. K. Yeo, and R. L. Hengehold, "Electrical Properties of Si-Implanted $Al_xGa_{1-x}N$ with High Al Mole Fraction," the March 2007 Meeting of the American Physical Society, Denver, Colorado, 5-9 March 2007.

PROFESSIONAL ACTIVITIES

BURGGRAF, LARRY W.,

Subject Matter Expert: Evaluated DTRA Contractor Plans and Performance, June 2007.

HENGEHOLD, ROBERT L.,

Chair, Honors and Awards Committee, Ohio Region Section, American Physical Society

MATHEWS, KIRK A.,

Member: Satellite Sensor Review Panel, Air Force Technical Applications Center

Founding Member: NPP Senior Advisory Panel, Air Force Technical Applications Center

President, AFIT Doctoral Council

MARCINIAK, MICHAEL A.,

Department Instructor of the Quarter, Spring 2007 (AFIT Student Association)

PETROSKY, JAMES,

Chairman, QASPR Review Panel, NNSA, Jan-Dec 2007

Member HEMP Review Panel, DTRA, Aug-Dec 2007

RIES, HEIDI R.,

Member of OBOR Research Officers' Council, Technology Transfer Officers' Council.

Chair and primary author of advisory board report for Norfolk State University's NASA CREAM project Advisory Board (April 2007.)

Member, ASEE Engineering Research Council Strategic Plan Work Group.

Member, EMTEC Technical Steering Committee.

Consultant-Evaluator and member of the Accreditation Review Council for the Higher Learning Commission of the North Central Association.

Member, Board of Trustees, Engineering & Science Foundation of Dayton.

Laboratory Program Representative, National Research Council Research Associateship program.

5.4. DEPARTMENT OF MATHEMATICS AND STATISTICS

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5.4.1. FUNDED RESEARCH PROJECTS

ABRAMSON, MARK A., LtCol,

"Algorithms for Blackbox Optimizations Using Surrogate Functions." Sponsor: AFOSR. Funding: $8,201.

BULUTOGLU, DURSUN A.,

"Algorithmic Tools for Finding Efficient Designs and Test Suites for Test and Evaluation." Sponsor: AFOSR. Funding: $45,774.

THORSEN, STEVEN N., Maj,

"Analysis of the Performance of Classification and Information Fusion." Sponsor: AFOSR. Funding: $15,004.

5.4.2. REFEREED JOURNAL PUBLICATIONS
Note: Research Center affiliations are listed in [ ] if applicable.

ABRAMSON, MARK A., Lt Col

Abramson, Mark A., Charles Audet, and J. E. Dennis, Jr., "Filter pattern search algorithms for mixed variable constrained optimization problems", *Pacific Journal of Optimization 3*, No 3. (2007), 477-500.

BULUTOGLU, DURSUN A.

Ryan, K. J. and D. A. Bulutoglu, "E(s2)-optimal Supersaturated Designs with Good Minimax Properties", *Journal of Statistical Planning and Inference* 137, No. 7 (2007), 2250-2262.

Bulutoglu, D. A., "Cyclically Generated Supersaturated Designs", *Journal of Statistical Planning and Inference* 137, No. 7 (2007), 2413-2428.

Roelke, G., R. Baldwin and D. A. Bulutoglu, "Analytical Models for the Performance of Von Neumann Multiplexing", *IEEE Transactions on Nanotechnology* 6, No. 1 (2007), 75-89.

LAIR, ALAN V.

Lair, A. V., "Large Solutions of Semilinear Elliptic Equations under the Keller-Osserman Condition", *Journal of Mathematical Analysis and Applications* 328 (2007), 1247-1254.

NOVAK, KYLE A., Maj

Jin, S. and K. Novak, "A Semiclassical Transport Model for Two-Dimensional Thin Quantum Barriers", *Journal of Computational Physics* 226 (2007), 1623-1644.

Jin, S. and K. Novak, "A Semiclassical Transport Model for Thin Quantum Barriers", *Multiscale Modeling and Simulation* 5, No. 4 (2006), 1063-1086.

OXLEY, MARK E.

Thorsen, S. N, and Mark E. Oxley, "A Description of Competing Fusion Systems", *International Journal of Information Fusion* 7 (2006), 347-360.

Clutz, T. C., K. W. Bauer, Jr. and M. E. Oxley, "Fault Detection Subsystem Optimization", *Journal of Operations and Logistics* 1, Issue 1 (2007), IV.1-IV.11.

Luminati, J. E., T. B. Hale, M. A. Temple, M. J. Havrilla and M. E. Oxley, "Doppler Aliasing Reduction in SAR Imagery using Stepped-frequency Waveforms", *IEEE Transactions on Aerospace and Electronic Systems* 43, Issue 1 (2007), 163-175.

Roberts, M. L., M. A. Temple, R. A. Raines, R. F. Mills and M. E. Oxley, "Communication Waveform Design Using an Adaptive Spectrally Modulated, Spectrally Encoded (SMSE) Framework", *IEEE Journal on Selected Topics in Signal Processing* 1, No. 1 (2007), 203-213. [CCR]

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THORSEN, STEVEN N., Maj

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BAKER, WILLIAM P.

Shepherd, M. J., R. G. Cobb, A. N. Palazotto, and W. P. Baker, "Scaling Analysis for Large Membrane Optics," *IEEE Aerospace Conference*, Big Sky, MT, Mar 2007. [CSSR]

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BULUTOGLU, DURSUN A.

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BUSH, BRETT A., Maj

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DUCKRO, DONALD E., Lt Col

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Bush, Brett A. and Robert E. Neher, Jr., "Analysis of the Compatibility of the T-11 parachute and C-17 Aircraft", Aeronautical Systems Center, WPAFB, OH, 2007.

5.4.5.   OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

ABRAMSON, MARK A., Lt Col

Referee, *Society for Industrial and Applied Mathematics (SIAM) Journal on Optimization*

Referee, *Global Optimization*

Abramson, M. A., T. J. Asaki, J. E. Dennis, Jr., K. R. O'Reilly and R. L. Pingel, "Quantitative object reconstruction tomography by mixed variable optimization", *INFORMS Midwest Regional Conference*, Northwestern University, Evanston, Illinois, August 24-25, 2007.

Abramson, M. A., T. J. Asaki, J. E. Dennis, Jr., K. R. O'Reilly and R. L. Pingel, "Quantitative object reconstruction via x-ray tomography, Abel transforms, and mixed variable optimization", *Second International Conference on Continuous Optimization (ICCOPT-II)*, McMaster University, Hamilton, Ontario, Canada, August 13-16, 2007.

Abramson, M. A., "Special Topics in Optimization", Invited lecturer, *Data Sciences Summer School*, Los Alamos National Laboratory, Los Alamos, New Mexico, July 17-19, 2007.

Walston, J., J. W. Chrissis, and M. A. Abramson, "Search techniques for multi-objective optimization of mixed-variable systems having stochastic responses", *22nd European Conference on Operational Research*, Prague, Czech Republic, July 8-11, 2007.

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Magallanez, R., M. A. Abramson, T. J. Asaki, J. E. Dennis, Jr., and M. Sottile, "Surrogate strategies for computationally expensive optimization problems with CPU time-correlated functions", Los Alamos National Laboratory, Los Alamos, New Mexico, April 5, 2007.

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DUCKRO, DONALD E., Lt Col

Judge, National Defense Science and Engineering Graduate (NDSEG) Fellowships, February, 2007

FICKUS, MATTHEW C.

Referee, *Applied and Computational Harmonic Analysis*

Referee, *Advances in Computational Mathematics*

Fickus, M., "Maximally equiangular frames and finite Wigner distributions", *Annual Meeting of the AMS,* Special Session on "Frames and Wavelets in Harmonic Analysis, Geometry, and Applications", New Orleans, January 7, 2007.

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NEHER, ROBERT E. JR., Lt Col

Referee, *IEEE Transactions on Reliability*

NOVAK, KYLE A., Maj

Referee, *Communications in Mathematical Sciences*

OXLEY, MARK E.

Member, SPIE Conference Program Committee for *Intelligent Computing: Theory and Applications VI,* Orlando, FL, April 2007.

Reviewer, *10th International Conference on Information Fusion* (FUSION 2007), Quebec City, Quebec, Canada

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WHITE, EDWARD D., III

Editor, *Journal of Cost Analysis and Management*

Technical Paper Referee, *Journal of Cost Analysis and Management*

WOOD, AIHUA W.

Referee, *Institute for Electronic Technologies, Communications on Pure and Applied Mathematics, Boundary Value Problems,* and *IEEE Transactions on Antennas and Propagation*.

Established the Aihua Mathematics Scholarship at the Ocean University of China, Qingdao, China.

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5.5. DEPARTMENT OF OPERATIONAL SCIENCES

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5.5.1. DOCTORAL DISSERTATIONS

CORDEIRO JR., JAMES D., *Unreliable Retrial Queues in a Random Environment*. AFIT/DS/ENS/07-03. Faculty Advisor: Dr. Jeffrey P. Kharoufeh. Sponsor: AFOSR.

SMETEK, TIMOTHY E., *Hyperspectral Imagery Target Detection Using Improved Anomaly Detection and Signature Matching Methods*. AFIT/DS/ENS/07-07. Faculty Advisor: Dr. Kenneth W. Bauer. Sponsor: SAF.

WALSTON, JENNIFER G., *Search Techniques for Multi-Objective Optimization of Mixed-Variable Systems Having Stochastic Responses*. AFIT/DS/ENS/07-06. Faculty Advisor: Dr. James W. Chrissis. Sponsor: AFRL/VASD & The National Academy of Sciences.

5.5.2. MASTER'S THESES

5.5.2.1. LOGISTICS MANAGEMENT (GLM)

BECKLY, CHRISTOPHER M., *Sizing Mobility Readiness Spares Packages for Today's Warfighting Units*. AFIT/GLM/ENS/07-01. Faculty Advisor: Lt Col Bradley Anderson. Sponsor: AFMC/A8S.

BUCK, JESSICA L., *Class VIIIA Materiel: What Problems were Encountered Transiting OIF Air Transshipment Nodes?* AFIT/GLM/ENS/07-02. Faculty Advisor: Dr. Alan Johnson. Sponsor: DLA/MSC.

BYNUM, ARNOLD R., *An Analysis of Delivering Persistent Real Time Imagery Intelligence to Combatant Commanders*. AFIT/GLM/ENV/07-M1. Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

COLACICCO, JOSEPH M., *Analysis of Army Transformation and the Effects on Customer Ordering Behavior*. AFIT/GLM/ENS/07-03. Faculty Advisor: Dr. William Cunningham, III. Sponsor: N/A.

COLE III, GEORGE P., *Feasibility Study of Variance Reduction in the Logistics Composite Model*. AFIT/GLM/ENS/07-04. Faculty Advisor: Dr. Alan Johnson. Sponsor: ASC/ENMS.

CROW, SHIRLEY D., *An Evaluation of Organizational and Experience Factors Affecting the Perceived Transfer of U.S. Air Force Basic Combat Skills Training*. AFIT/GLM/ENV/07-M2. Faculty Advisor: Maj Sharon Heilmann. Sponsor: N/A.

ELKINS, JOSEPH S., *Internal Versus External Acquisition for Small Weapons Systems*. AFIT/GLM/ENV/07-M3. Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

HENNETTE, JAY C., *AFSO 21: A Comparison of Private Sector and Air Force Practices*. AFIT/GLM/ENV/07-09. Faculty Advisor: Dr. David Vaughan. Sponsor: AF/A3.

JACKSON JR., WILLIAM L., *The Viability of the Air Mobility Command Pure Pallet Program for U.S. Army Reparable Retrograde Shipments*. AFIT/GLM/ENS/07-05. Faculty Advisor: Dr. William Cunningham, III. Sponsor: USTRANSCOM J5/J4.

JOHNSON, JOHN P., *Balanced Scorecard: Aggregating Aircraft Mission Capable Rates*. AFIT/GLM/ENS/07-06. Faculty Advisor: Dr. Alan Johnson. Sponsor: AF/A4ID.

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MICHALSKI, SYDNEY C., *Determining Logistics Ground Support Manpower Requirements for a Reusable Military Launch Vehicle.* AFIT/GLM/ENS/07-09. Faculty Advisor: Dr. Alan Johnson. Sponsor: AFRL/VACD.

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TOWER, PAUL K., *An Analysis of Robust Workforce Scheduling Models for a Nurse Rostering Problem.* AFIT/GLM/ENS/07-12. Faculty Advisor: Maj Shane Knighton. Sponsor: N/A.

WALKER, S. DAVID., *The Effects of Career Broadening on Leadership Development.* AFIT/GLM/ENV/07-M6. Faculty Advisor: Lt Col Kent Halverson. Sponsor: USAF/A1DD.

WARD, CHARLES W., *Commander and User Perceptions of the Army's ITV Architecture.* AFIT/GLM/ENS/07-13. Faculty Advisor: Dr. William Cunningham, III. Sponsor: N/A.

WOLFF, JASON B., *The Perceived Effectiveness of Mentoring by Company Grade Officers in the United States Air Force*. AFIT/GLM/ENV/07-M7. Faculty Advisor: Maj Sharon Heilmann. Sponsor: N/A.

5.5.2.2. OPERATIONS RESEARCH (GOR)

BELLUCCI, JOSEPH P., *Improved Hyperspectral Image Testing Using Synthetic Imagery and Factorial Designed Experiments.* AFIT/GOR/ENS/07-01. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

CAULK, RYAN F., *Outlier Detection in Hyperspectral Imaging Using Closest Distance to Center with Ellipsoidal Multivariate Trimming.* AFIT/GOR/ENS/07-02. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

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CHO, NAM-SUK, *Critical Infrastructure Rebuild Prioritization Using Simulation Optimization*. AFIT/GOR/ENS/07-04. Faculty Advisor: Dr. Sharif Melouk. Sponsor: N/A.

CRAWFORD, BRIAN P., *Approximate Analysis of an Unreliable M/M/2 Retrial Queues*. AFIT/GOR/ENS/07-05. Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: SAF.

FENSTERER, GERALD D., *Planning and Assessing Stability Operations: A Proposed Value-Focused Thinking Approach.* AFIT/GOR/ENS/07-06. Faculty Advisor: Maj Gary Kinney. Sponsor: AFRL/IFSE.

GEFFRE, JENNIFER L., *A Layered Social and Operational Network Analysis.* AFIT/GOR/ENS/07-07. Faculty Advisor: Dr. Richard Deckro. Sponsor: NASIC/FCEB & AFRL/HECS.

GENTIL, KATHRINE J., *Developing Advanced Academic Degree Educational Profiles for Career Fields*. AFIT/GOR/ENS/07-08. Faculty Advisor: Maj Shane Knighton. Sponsor: USAF/A1XX.

HARRELL, RYAN M., *A Multivariate Magnitude Robust Control Chart for Mean Shift Detection and Change Point Estimation*. AFIT/GOR/ENS/07-09. Faculty Advisor: Dr. Marcus Perry. Sponsor: N/A.

HARTLAGE, ROBERT B., *An Efficient Metaheuristic for Dynamic Network Design and Message Routing*. AFIT/GOR/ENS/07-10. Faculty Advisor: Maj Gary Kinney. Sponsor: N/A.

HERBRANSON, TRAVIS J., *Isolating Key Players in Clandestine Networks*. AFIT/GOR/ENS/07-11. Faculty Advisor: Dr. Richard Deckro. Sponsor: N/A.

JORDAN, JEREMY D., *Updating Optimal Decisions Using Game Theory and Exploring Risk Behavior Through Response Surface Methodology*. AFIT/GOR/ENS/07-13. Faculty Advisors: Dr. Marcus Perry & Dr. Sharif Melouk. Sponsor: Department of Army

KALLEMYN, BENJAMIN S., *Prioritizing Satellite Payload Selection via Optimization*. AFIT/GOR/ENS/07-14. Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: SAF.

KERNS, DAVID A., *Automatic Target Recognition User Interface Tool*. AFIT/GOR/ENS/07-15. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

KOO, ROBERT., *Feature Extraction Using Principal and Independent Component Analysis for Hyperspectral Imagery*. AFIT/GOR/ENS/07-16. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

MAGALLANEZ JR., RAYMOND, *Surrogate Strategies for Computationally Expensive Optimization Problems with CPU-Time Correlated Functions*. AFIT/GOR/ENC/07-01. Faculty Advisor: Lt Col Mark Abramson. Sponsor: Los Alamos National Lab.

NEWLON, THOMAS M., *Mathematical Programming Model for Fighter Training Squadron Pilot Scheduling*. AFIT/GOR/ENS/07-17. Faculty Advisor: Dr. James Moore. Sponsor: AFOSR/NM.

NORSKY, PETER C., *A Technology Investment Value Model For The Air Force Research Laboratory Focused Long Term Challenges*. AFIT/GOR/ENS/07-18. Faculty Advisor: Dr. Richard Deckro. Sponsor: N/A.

NYSETHER, NATHAN E., *Classifying Failing States*. AFIT/GOR/ENS/07-19. Faculty Advisor: Dr. Richard Deckro. Sponsor: USSTRATCOM /GISC.

PARK, SEUNG-BAE, *A Multi-Objective Decision-Making Model for Resources Allocation in Humanitarian Relief*. AFIT/GOR/ENS/07-20. Faculty Advisor: Maj Gary Kinney. Sponsor: N/A.

PATRASCU, ADRIAN C., *Optimizing Distributed Sensor Placement for Border Patrol Interdiction Using Microsoft Excel*. AFIT/GOR/ENS/07-21. Faculty Advisor: Dr. James Moore. Sponsor: N/A.

REYES, KEVIN B., *HSI: Outlier Detection Methods in Hyperspectral Imagery*. AFIT/GOR/ENS/0722-. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

ROBINSON II., PAUL D., *Patterns of War Termination: A Statistical Approach*. AFIT/GOR/ENS/07-23. Faculty Advisor: Dr. Richard Deckro. Sponsor: USSTRATCOM /GISC.

SEDER, JOSHUA S., *Examining Clandestine Social Networks for the Presence of Non-Random Structure*. AFIT/GOR/ENS/07-24. Faculty Advisor: Dr. Marcus Perry. Sponsor: AFRL/HECS & NASIC/FCEB.

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WILKEN, BRIAN A., *Change-Point Methods for Overdispersed Count Data.* AFIT/GOR/ENS/07-26. Faculty Advisor: Dr. Marcus Perry. Sponsor: N/A.

WILLIAMS, JASON P., *Robustness of Multiple Clustering Algorithms on Hyperspectral Images*. AFIT/GOR/ENS/07-27. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

5.5.2.3.   RESEARCH AND DEVELOPMENT MANAGEMENT (GRD)

HEUCK JR., WILLIAM D., *A Future-Based Risk Assessment for the Survivability of Long Range Strike Systems.* AFIT/GRD/ENS/07-01. Faculty Advisor: Maj Gary Kinney. Sponsor: AFRL/AOT.

5.5.2.4.   ENGINEERING MANAGEMENT (GEM)

AFTANAS, JASON M., *Optimizing the Prioritization of Natural Disaster Recovery Projects.* AFIT/GEM/ENS/07-01. Faculty Advisor: Maj Shane Knighton. Sponsor: ACC/A7-2.

MCCOURT, MICHAEL J., *A Decision Model for Selecting Energy Efficient Technologies for Low-Sloping Roof Tops Using Value-Focused Thinking.* AFIT/GEM/ENS/07-03. Faculty Advisor: Lt Col Jeffery Weir. Sponsor: AFCESA/CESC.

SPEER, BENJAMIN G., *A Value-Focused Thinking Model for the Selection of the Best Rigid Pavement, Partial-Depth Spall Repair Material.* AFIT/GEM/ENS/07-04. Faculty Advisor: Maj Shane Knighton. Sponsor: HQ/AFCESA.

DALBY, TIMOTHY D., *Quantification of Risk for USAF Fire and Emergency Services Flights as a Result of Shortages in Manpower.* AFIT/GEM/ENS/07-02. Faculty Advisor: Maj Shane Knighton. Sponsor: AFCESA/CEXF.

5.5.2.5.   INFORMATION RESOURCE MANAGEMENT (GIR)

BLOOD, DEBORA L., *Predicting the Benefits, Barriers, and Bridges for USAF Expeditionary Combat Support System Implementation*. AFIT/GIR/ENS/07-01. Faculty Advisor: Maj Barry Brewer. Sponsor: AF/A4IT.

5.5.3. GRADUATE RESEARCH PAPERS

5.5.3.1. GRADUATE LOGISTICS MANAGEMENT (ILM)

BENNETT JR. EARL R., CARL D. HUTCHERSON and ANTHONY L. PUENTE. *Change Management Barriers and Successful Strategies for ERP Implementation in Highly Regulated Industries: A Meta-Synthesis and Field Case Study.* AFIT/ILM/ENS/07-01. Faculty Advisor: Maj Barry Brewer. Sponsor: AF/A4IT.

CORAL, CEIR and DWAIN A. SLAUGHTER. *F-16 Aircraft Common Configuration Implementation Program (CCIP): A Modernization Program Effects Case Study.* AFIT/ILM/ENS/07-02. Faculty Advisor: Maj Barry Brewer. Sponsor: 312 AESG/DC.

GORDON, CAROL and JEFFREY R. KRUSINSKI. *Assessing Personnel Transformation Implementation to Established Change Management Standards.* AFIT/ILM/ENS/07-03. Faculty Advisor: Dr. William Cunningham, III. Sponsor: HQ USAF/A1X.

HAYDEN, JEFFREY D., and SCOTT A. VAUGHAN. *United States Air Force Fuels Program: An Analysis of Automatic Data Collection Initial Investments.* AFIT/ILM/ENS/07-04. Faculty Advisor: Maj Barry Brewer. Sponsor: N/A.

HUTCHERSON, CARL D. See BENNETT JR. EARL R.

KRUSINSKI, JEFFREY R. See GORDON, CAROL.

PUENTE, ANTHONY L. See BENNETT JR. EARL R.

SLAUGHTER, DWAIN A. See CORAL, CEIR.

VAUGHAN, SCOTT A. See HAYDEN, JEFFREY D

5.5.3.2. GRADUATE OPERATIONS ANALYSIS (IOA)

OLIVER, BRADLEY R., *Optimizing the Undergraduate Pilot Training Scheduling Process.* AFIT/IOA/ENS/07-01. Faculty Advisor: Maj August Roesener. Sponsor: AETC & AFPC.

PHILLIPS, IAN D., *Tactical Relay Mirror System Integration in Base Defense.* AFIT/IOA/ENS/07-02. Faculty Advisor: Dr. John Miller. Sponsor: IDA, OSD/OFT, HQ AF/A8X & AFSFC/FPB.

WYLIE, ALEXANDER M., *Optimization of Rated Officer Staff Assignments.* AFIT/IOA/ENS/07-03. Faculty Advisor: Maj Shane Hall. Sponsor: AFPC/DPAOS.

5.5.3.3. GRADUATE MOBILITY OPERATIONS (IMO)

BUSCHUR, WILLIAM C., *An Analysis of the C-17 Two Expeditionary Airlift Squadron System.* AFIT/IMO/ENS/07-01. Faculty Advisor: Dr. James Moore. Sponsor: 437 OG/CD

DIETRICH III, GEORGE T.M., *The Future of Cargo Airdrop Rigging: A Logistical Support Analysis.* AFIT/IMO/ENS/07-02. Faculty Advisor: Dr. James Moore. Sponsor: AFEC MOS/MORA.

GITTNER, AARON W., *Intra-Theater Airlift Efficiency.* AFIT/IMO/ENS/07-03. Faculty Advisor: Dr. James Moore. Sponsor: 18 AF/CC.

HESELTINE JR., BRUCE P., *KC-135R Fuel Savings.* AFIT/IMO/ENS/07-04. Faculty Advisor: Dr. Alan Heminger Sponsor: AMC/DA3

HILEMAN, BRANDON R., *Joint Task Force-Port Opening: Matching Capabilities to Requirements.* AFIT/IMO/ENS/07E-05. Faculty Advisor: Dr. William Cunningham, III. Sponsor: USTRANSCOM/J5J4

HUISS, RANDALL S., *The Impact of Closing the C-17 Production Line on the C-17 Supplier Base.* AFIT/IMO/ENS/07-06. Faculty Advisor: Dr. Alan Johnson. Sponsor: N/A.

JULIAN, JON T., *Distinguished Visitor Airlift Defensive Systems: Applying LEAN Principles to Minimize Transloading in the USCENTCOM AOR.* AFIT/IMO/ENS/07-07. Faculty Advisor: Lt Col Donald Duckro. Sponsor: AMC A3/MA.

KNACK, JOHN T., *Determination of Fabrication Repair Capability to Enable Aircraft Maintenance Regionalization.* AFIT/IMO/ENS/07-08. Faculty Advisor: Lt Col Bradley Anderson. Sponsor: AMC/A4

LAMBERT, CHRISTOPHER L., *Transforming Mobility Airlift Forces: Analysis of Air Mobility Platform Requirements for United States Air Forces in Europe.* AFIT/IMO/ENS/07-09. Faculty Advisor: Dr. James Moore. Sponsor: USAFE/A5/8/9.

MARTIN, TIM D., *AFSO 21 and the JA/ATT System.* AFIT/IMO/ENS/07-10. Faculty Advisor: Dr. Alan Heminger. Sponsor: AMC/DA3.

MCCRAY, GERALD R., *Implementation of Centralized Maintenance Management for Air Mobility Command Aircraft.* AFIT/IMO/ENS/07-11. Faculty Advisor: Dr. Alan Heminger. Sponsor: AMC/DA3.

PETERSON, EDWARD H., *Cargo Command and Control: Refining Mode Selection and Cross-Docking in the Military Air Cargo Distribution System.* AFIT/IMO/ENS/07-12. Faculty Advisor: Dr. William Cunningham, III. Sponsor: HQ AMC/A4.

SCHLICHENMEYER, PATRICK L., *Air Force Manpower Reduction Analysis.* AFIT/IMO/ENS/07-13. Faculty Advisor: Dr. Michael Hicks. Sponsor: AMC/A9

SCHMIDT, LANCE E., *Rethinking MC-130H Pilot Training: Applying AFSO21 to Formal School Training.* AFIT/IMO/ENS/07-14. Faculty Advisor: Dr. Alan Heminger. Sponsor: 19 AF/CV

SINDEL, COLIN J., *Leveraging Expeditionary Combat Support Operations: A Critical Look at Standardizing the Base Opening Concept.* AFIT/IMO/ENS/07-15. Faculty Advisor: Dr. William Cunningham, III. Sponsor: 21 EMTF/CC.

WILSON, CHRISTOPHER W., *KC-X Airlift Role; What Should It Be?* AFIT/IMO/ENS/07-16. Faculty Advisor: Dr. James Moore. Sponsor: 18th AF/CC.

5.5.4. FUNDED RESEARCH PROJECTS
Note: Research Center affiliations are listed in [ ] if applicable.

BAUER, KENNETH W. Jr.,

"Sensor Fusion for Automatic Target Recognition." Sponsor: AFOSR. Funding: $51,390. [COA]

"Sensor Fusion for Automatic Target Recognition." Sponsor: ACC. Funding: $32,000. [COA]

DECKRO, RICHARD F.,

"AFIT/ENS and AFRL/HE Human Effectiveness Directorate MOA." Sponsor: AFRL/HE. Funding $25,000. [COA]

"Commander's Predictive Environment Program: Contributors to Instability." Sponsor: AFRL/IF. Funding: $15,000.

"Operations Research Methodologies in Support of NSA." Sponsor: NSA. Funding: $20,000.

"Social Network Analysis Tool and Behavior Modeling." Sponsor: AFRL/HE. Funding: $30,000.

JOHNSON, ALAN W.,

"Reusable Space Vehicle Ground Operations." Sponsor: AFRL/VA. Funding: $35,000. [COA]

KINNEY, GARY W. Jr., Maj,

"Effects-Based Operations Research." Sponsor: AFRL/IF. Funding: $15,420.

KNIGHTON, SHANE A., Maj,

"Effects-Based Operations Research." Sponsor: AFRL/IF. Funding: $15,000.

MELOUK, SHARIF H.,

"AFIT Modeling and Simulation Support for Air Vehicles Directorate." Sponsor: AFRL/VA. Funding: $30,015. [COA]

MILLER, JOHN O.,

"Air Force Standard Analysis Toolkit (AFSAT) Support." Sponsor: SAF. Funding: $65,000. [COA]

MOORE, JAMES T.,

"Application of Metaheuristics to Air Force Problems." Sponsor: AFOSR. Funding: $50,000. [COA]

PERRY, MARCUS B.,

"Sensor Location Study and Data Analysis Plan." Sponsor: AFRL/PR. Funding: $5,000.

5.5.5. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

BAUER, KENNETH W. Jr.,

Bednar, E.M., Bauer, K.W., and J.O. Miller, "Use of Control Variates in a Large-Scale Aggregated Combat Model", Journal of Defense Modeling and Simulation, Vol 4, Number 1, Jan 2007, pages 29 - 41. [COA]

Clutz, T. C., Bauer, K. W., and M. E. Oxley," Fault Detection Subsystem Optimization", Journal of Operations and Logistics, Issue 1, Volume 1, 2006. [COA]

Miller, J.O., Bauer, K.W. Jr., Faas, P., Pawling, C.R., and Sterling, S.E., "Multivariate Analysis of a Simulated Prognostics and Health Management System", International Journal of Logistics: Research and Applications , Vol. 10, No.1, March 2007, 1-10. [COA]

COCHRAN, JEFFERY K.,

Cochran, J.K. and Roche, K.T., "A Queuing-Based Methodology for Hospital Inpatient Bed Planning", Journal of the Operational Research Society, Sep 07.

Cochran, J.K. and Ramanujam, B., "Carrier-Mode Logistics Optimization of Inbound Supply Chains for Electronics Manufacturing", International Journal of Production Economics 103, Oct 06. pp. 826-840.

COOPER. MARTHA C.,

Henrique Correa, Lisa Ellram, Annibal Scavarda, and Martha Cooper, "An Operations Management View of the Services and Goods Product Mix," International Journal of Operations and Production Management, Vol. 21, Iss. 5, 2007.

Griffis, Stanley E., Thomas J. Goldsby, Martha C. Cooper, and David J. Closs (2007), "Aligning Logistics Performance Measures to the Information Needs of the Firm," Journal of Business Logistics, Vol. 28, No. 2, pp 35-56.

DECKRO, RICHARD F.,

Edwin J. Offutt, Jeffrey P. Kharoufeh, and Richard F. Deckro, "Distorted Risk Measures with Application to Military Capability Shortfalls," Military Operations Research, Vol. 11, No. 4, (2006), pp. 25 - 39.

Richard K. Bullock and Richard F. Deckro, "Foundations for System Measurement", Measurement, Vol. 39, No. 8, (2006), pp. 701-709.

J. Todd Hamill, Richard F. Deckro, Victor D. Wiley, and Robert S. Renfro, II, "Gains, Losses, and Thresholds of Influence in Social Networks", International Journal of Operational Research, Vol. 2, No. 4, (2007), pp. 357 - 379.

Bullock, R. K., R. F. Deckro, and J. D. Weir, "Methodology for Competitive Strategy Development", Computers & Operations Research, available online 13 November 2006.

GRIFFIS, STANLEY E., Lt Col

Griffis, Stanley E., Thomas J. Goldsby, Martha C. Cooper, and David J. Closs (2007), "Aligning Logistics Performance Measures to the Information Needs of the Firm," Journal of Business Logistics, Vol. 28, No. 2, pp 35-56.

Griffis, Stanley E., Thomas J. Goldsby (2007), "Transportation Management Systems: An Exploration of Progress and Future Prospects" Journal of Transportation Management, Vol. 18, No.1, pp 18-32.

JOHNSON, ALAN W.,

Moore, T., Johnson, A., Rehg, M., and Hicks, M., 2007, "Quality Assurance Staffing Impacts in Military Aircraft Maintenance Units", Journal of Quality in Maintenance Engineering 13(1): 33-48. [COA]

Ford, C., J. Howe, A. Johnson, and J. Bell, 2006, "Automatic Test Systems: Unique versus Common Management", Defense Acquisition Review Journal Dec 06-Mar 07: 170-185. [COA]

KHAROUFEH, JEFFREY P.,

Offutt, E., Kharoufeh, J.P., and R.F. Deckro. Distorted risk measures with application to military capability shortfalls. Military Operations Research, 11 (4), 25-39, December 2006.

Sherman, N.P. and J.P. Kharoufeh. An M/M/1 retrial queue with unreliable server. Operations Research Letters, 34 (6), 697-705, November 2006.

MATTIODA, DANIEL D., Maj

Mattioda, Daniel D., Chen, Haozhe, and Patricia J. Daugherty (2007), "Firm-Wide Integration and Firm Performance," International Journal of Logistics Management, Vol. 18, No. 1, pp. 5-21.

Mattioda, Daniel D., Sabath, Robert, Patricia J. Daugherty, and Haozhe Chen (2007) "Who—and What—is Profitable?," Supply Chain Management Review, Vol. 11, No. 5, pp. 44-50.

MILLER, J. O.,

Bednar, Earl M., Bauer, K.W. Jr, and Miller, J.O. "Use of Control Variates in a Large-Scale Aggregated Combat Model," The Journal of Defense Modeling and Simulation: Applications, Methodology, Technology, Vol 4 No. 1, pp. 29-41, January 2007. [COA]

Long, Scott N., Miller, J.O., Brigantic, R.T., and Goda, M.E. "Using Defocus to Improve Peak Irradiance for Air-to-Ground High-Energy Chemical-Oxygen Iodine Laser (COIL) Weapons," Journal of Directed Energy, Vol 2, pp. 189-209, Spring 2007. [COA and CDE]

Miller, J.O., Bauer, K.W. Jr., Faas, P., Pawling, C.R., and Sterling, S.E. "Multivariate Analysis of a Simulated Prognostics and Health Management System," International Journal of Logistics: Research and Applications, Volume 10, No. 1, pp. 1-10, Mar 2007. [COA]

OGDEN, JEFFREY A.,

Ogden, J. A., Rossetti, C. L., and Hendrick, T. E. (2007) "An Exploratory Cross-Country Comparison of Strategic Purchasing" Journal of Purchasing and Supply Management, Vol. 13, No. 1, 2-16.

Petersen, K. J., Ogden, J. A., and Carter, P. L. (2007) "B2B E-marketplaces: An Empirical Investigation of Functionality" International Journal of Physical Distribution and Logistics Management, Vol. 37, No. 1, 4-18.

Ogden, J. A. (2006) "Critical Success Factors of Supply Base Reduction Efforts," Journal of Supply Chain Management, Vol. 42, No. 4, 30-40.

PERRY, MARCUS B.,

Perry, M. B., Pignatiello, J. J., Jr. and Simpson, J. R. (2007), "Estimation of the Change Point of the Process Fraction Nonconforming with a Monotonic Change Disturbance in SPC". Quality and Reliability Engineering International 23 :(3), pp. 327-339.

Perry, M. B., Pignatiello, J. J., Jr. and Simpson, J. R. (2007), "Change Point Estimation for Monotonically Changing Poisson Rates in SPC". International Journal of Production Research 45 (8), pp. 1791-1813.

Perry, M. B., Pignatiello, J. J., Jr. and Simpson, J. R. (2007), "A Magnitude-Robust Control Chart for Monitoring and Estimating Step Changes in a Poisson Rate Parameter," International Journal of Reliability, Quality and Safety Engineering, 14:(1), pp. 1-20.

WEIR, JEFFERY D., Lt Col

Bullock, R. K., R. F. Deckro, and J. D. Weir, "Methodology for Competitive Strategy Development", forthcoming in Computers & Operations Research (Available online 13 November 2006). [COA]

Braziel, C., Thal, A.E. and Weir, J.D., "Evaluating the Effectiveness of Utility Privatization Efforts", Journal of Facility Management 5:2, pp 86 - 102 (2007). [COA]

5.5.6. REFEREED PRESENTATIONS
Note: Research Center affiliations are listed in [ ] if applicable.

BAUER, KENNETH W. Jr.,

Smetek, T.E., K.W. Bauer, "Finding Hyperspectral Anomalies Using Multivariate Outlier Detection," Proceedings of the 2007 IEEE Aerospace Conference, March 2007. [COA]

Friend, M. A. and K.W. Bauer, "ROC Trajectory Measures for Classifier Accuracy and Robustness, "Proceedings of the Artificial Neural Networks in Engineering Conference (ANNIE 2006), Editors: C. Dagli, D. Enke, A. Buczak, M. Embrechts, O. Ersoy, , St. Louis, MO, 5-8 November 2006. [COA]

BREWER, BARRY L., Maj

Brewer, B. "Examining the Drivers of Procurement Outsourcing." 18th Annual North American Research & Teaching Symposium on Purchasing and Supply Chain Management, March 29-31, 2007, Tempe, AZ.

Brewer, B. and Carter, P. "Taxonomy of Procurement Outsourcing." 37th Annual Meeting of the Decision Sciences Institute, November 21-23, 2006, San Antonio, TX.

CHRISSIS, JAMES W.,

Jennifer Walston, James W. Chrissis, and Mark A. Abramson, "Search Techniques for Multi-Objective Optimization of Mixed-Variable Systems Having Stochastic Responses", 22nd European Conference on Operational Research, Prague, Czech Republic, July 8-11, 2007.

Maj J. Todd Hamill, Richard F. Deckro, James W. Chrissis and Robert F. Mills, "An Interpersonal Influence Representation in Social Network Flow Modeling", INFORMS Pittsburgh, November 2006.

COCHRAN, JEFFERY K.,

Burdick, T.L., Cochran, J.K., Kisiel, S., and Modena, C., "Banner Health / Arizona State University Partnership in Redesigning Emergency Department Care Delivery Focusing on Patient Safety", 19th Annual IIE Society for Health Systems Conference, 8 pages on CD-ROM, New Orleans, LA (Feb 07).

Broyles, J.R. and Cochran, J.K., "Estimating Business Loss to a Hospital Emergency Department from Patient Reneging by Queuing-Based Regression", IIE Industrial Engineering Research Conference, 6 pages on CD-ROM, Memphis, TN (May 07).

Roche, K.T. and Cochran, J.K., "Improving Patient Safety by Maximizing Fast-Track Benefits in the ED – A Queuing Network Approach", IIE Industrial Engineering Research Conference, 6 pages on CD-ROM, Memphis, TN (May 07).

COOPER. MARTHA C.,

Francois Charvet, Martha Cooper, and John Gardner. "Empirical Study of the Relationship Between Production and Operations Management and Supply Chain Management Literatures", 2007 POMS Conference, May 4 -7, 2007, Dallas, Texas.

Henrique Luiz Corrêa, Lisa M. Ellram, Annibal José Scavarda, and Martha C. Cooper. "An Operations Management View of the Services and Goods Offering Mix", 2007 POMS Conference, May 4 -7, 2007, Dallas, Texas, CD-ROM.

CUNNINGHAM, WILLIAM A. III,

William Jackson, William Cunningham, and Alan Johnson, "Pure Pallet Program Viability for Military Retrograde Shipments," 18th Annual Production and Operations Management Society Annual Meeting, Dallas, TX, June 2007.

Jackson, W., Cunningham, W., and Johnson, A., "Pure Pallet Program Viability for Military Retrograde Shipments", POM 18th Annual Conference, Dallas, May 4-7 2007.

DECKRO, RICHARD F.,

James A. Leinart, Richard F. Deckro, Marcus B. Perry, "Unrevealed Elements of Network Systems", INFORMS Midwest Regional Conference, Northwestern University, Evanston, IL, 24-25 August 2007.

Maj. Michael J Artelli , Dr Richard F Deckro, Dr Marcus B Perry and Col. Daniel J Zalewski, "Public Resolve: The Casualty of the "Long War", Presented in WG 8 and WG 32, 75th Military Operations Research Society Symposium, June 2007.

Capt. Jennifer L Geffre, Dr Richard F Deckro and Maj. Shane Knighton, USAF, "Risk Analysis: Critical Components in Terrorist Attacks", Presented in WG 8, 75th Military Operations Research Society Symposium, June 2007.

Capt. Gerald Fensterer, Maj Gary Kinney, and Dr. Richard F. Deckro, "Planning and Assessing Stability Operations: A Value Focused Thinking Approach", Presented in WG 3, WG 24 and WG28 75th Military Operations Research Society Symposium, June 2007.

Richard F. Deckro, Marcus B. Perry, Capt Jennifer L. Geffre, Capt Travis J. Herbranson and Capt Joshua S. Seder, "Social Network Analysis Research at AFIT", Adversary Behavioral Modeling: Available Tools and Applications for the Warfighter Conference, Air War College, Maxwell AFB, March 2007.

Maj J. Todd Hamill, Richard F. Deckro, James W. Chrissis and Robert F. Mills, "An Interpersonal Influence Representation in Social Network Flow Modeling", INFORMS Pittsburgh, November 2006.

Maj Michael Artelli & Richard F. Deckro, "Modeling the Lanchester Laws", Air Force Operations Research Symposium, Kirkland AFB, October 2006.

DONOVAN, PAMELA, Lt Col

Lt Col Pamela Donovan and Dr. Philip Evers, "A Joint Replenishment Inventory Model with Transportation Costs: A Study in the Retail Grocery Industry", Production and Operations Management Society Annual Conference, Dallas Texas, 4 May 2007.

HALL, SHANE N., Maj

Hall, S.N., Roesener, A.G., 2007, "A Survey of Heuristic Methods," 75th Military Operations Research Society Symposium, United States Naval Academy, Annapolis, MD, June 11-14, 2007.

Jacobson, S.H., Nikolaev, A., Hall, S.N., 2007, "An Analysis of Finding Near-Optimal Solutions Using Local Search Algorithms," INFORMS Computing Society Meeting, Coral Gables, FL, January 3-5, 2007.

Hall, S.N., Jacobson, S.H., Sewell, E.C., 2006, "Optimizing Pediatric Vaccine Formularies," INFORMS Annual Meeting, Pittsburg, PA, November 5-8, 2006.

JOHNSON, ALAN W.,

Cole, G. and Johnson, A.W., "Logistics Composite Model Variance Reduction". INFORMS National Meeting, Pittsburgh, November 4-8 2006. [COA]

Jackson, W., Cunningham, W., and Johnson, A., "Pure Pallet Program Viability for Military Retrograde Shipments", POM 18th Annual Conference, Dallas, May 4-7 2007. [COA]

Michalski, S. and Johnson, A.W., "Ground Support Staffing for Reusable Launch Vehicle Generation." 42nd Annual SOLE International Logistics Conference and Exhibition, 19-23 August 2007, Pittsburgh. [COA]

Michalski, S. and Johnson, A.W., "Logistics Personnel Requirements for Ground Support of a Reusable Military Launch Vehicle", Proceedings of the American Institute of Aeronautics and Astronautics Space 2007 Conference, Long Beach CA, AIAA-2007-6273. [COA]

Michalski, S. and Johnson, A.W., "Manpower Requirements for Reusable Military Launch Vehicle Regeneration", 75th MORS Symposium, Annapolis, 12-14 June 2007. [COA]

KHAROUFEH, JEFFREY P.,

Cordeiro, J.D. and J.P. Kharoufeh (2007). Analysis of an unreliable retrial queue in a random environment. Proceedings of the 2007 Industrial Engineering Research Conference, Nashville, TN, May 19-23, 2007.

Crawford, B. and J.P. Kharoufeh (2007). Approximate analysis of an unreliable multiserver retrial queue. Proceedings of the 2007 Industrial Engineering Research Conference, Nashville, TN, May 19-23, 2007.

Kharoufeh, J.P. (2007), Analysis and optimal control of unreliable retrial queueing systems. Air Force Office of Scientific Research, Optimization and Discrete Mathematics Program Review, Arlington, VA, May 7-9, 2007.

Kharoufeh, J.P. (2006), Maximizing the availability of a periodically inspected system with hidden failures. Invited Seminar. Cincinnati-Dayton Chapter of INFORMS Business Meeting, Wright State University, November 16, 2006.

Kharoufeh, J.P. (2006), Degradation-based prognostics via phase-type approximations. Invited session, INFORMS Annual Meeting, Pittsburgh, PA, November 5-8, 2006.

Flory, J.A. and J.P. Kharoufeh (2006), Satellite payloads for inclusion on a satellite bus. Air Force Operations Research Symposium, Albuquerque, NM, October 17-20, 2006.

KINNEY, GARY W. Jr., Maj

Capt. Gerald Fensterer, Maj Gary Kinney, and Dr. Richard F. Deckro, "Planning and Assessing Stability Operations: A Value Focused Thinking Approach", Presented in WG 3, WG 24 and WG28 75th Military Operations Research Society Symposium, June 2007.

KNIGHTON, SHANE A., Maj

Gentil, Kathy and Shane A. Knighton, "Developing Advanced Academic Degree Educational Profiles for Career Fields", INFORMS International, Puerto Rico, July 2007. [COA]

Knighton, Shane. "Network Flow Model for Optimizong Fighter Squadron Selection", Royal Military Academy, Kingston, Ontario, June 07. [COA]

Capt. Jennifer L Geffre, Dr Richard F Deckro and Maj. Shane Knighton, USAF, "Risk Analysis: Critical Components in Terrorist Attacks", Presented in WG 8, 75th Military Operations Research Society Symposium, June 2007. [COA]

Gentil, Kathy and Shane A. Knighton, "Developing Advanced Academic Degree Educational Profiles for Career Fields", Decision Analysis Affinity Group, Stanford, CA, March 07. [COA]

MATTIODA, DANIEL D., Maj

Barman, Samir, Daniel D. Mattioda, and Warren F. Fisher (2006), "Effects of Controlled Release of Jobs in a Hybrid of Job and Flow Shops," Decision Science Institute Annual Conference, San Antonio, TX .

MELOUK, SHARIF H.,

Melouk, S. and P. Damodaran. (2007), "Analysis of the Passenger Security Screening Process using Simulation Optimization". Proceedings of the Sixteenth Industrial Engineering Research Conference, Nashville, TN, May 19-23. [COA]

Melouk, S. and K. Cavallaro (2007), "Analyzing the Interdiction of Sea-Borne Threats Using Simulation Optimization". Proceedings of the Sixteenth Industrial Engineering Research Conference, Nashville, TN, May 19-23. [COA]

Melouk, S., M. Perry, and M. Carras. (2006). BDA Enhancement Methodology using Situational Parameter Adjustments. INFORMS Conference, Pittsburgh, PA. November 5-8. [COA]

MILLER, J. O.,

Honabarger, Jason B. and Miller, J.O. "Modeling and Measuring Network Centric Warfare (NCW) With the System Effectiveness Analysis Simulation (SEAS)," 11th International Command and Control Research Technology Symposium, Cambridge, UK, 26-28 Sep 2006. [COA]

MOORE, JAMES T.,

Burks, Robert E. and James T. Moore, "Solving the Theater Distribution Problem with Tabu Search, Military Operations Research Society Symposium, Annapolis, MD, 12-14 Jun 2007. [COA]

Moore, James T., "Application of Metaheuristics to Air Force Problems", AFOSR Optimization and Discrete Mathematics Program Review, Arlington, VA 7-9 May 2007. [COA]

Burks, Robert E. and James T. Moore, "An Adaptive Tabu Search Heuristic for the LPDLTW with a Theater Distribution Application", Institute for Operations Research and the Management Sciences (INFORMS) Conference, Pittsburgh, PA, 5-8 Nov 2006. [COA]

Burks, Robert E. and James T. Moore, "An Adaptive Tabu Search Heuristic for the Theater Distribution Problem", Air Force Operations Research Society Symposium, Albuquerque, NM, 18-20 Oct 2006. [COA]

OGDEN, JEFFREY A.,

Ogden, J. A., Lowry, P. B., Petersen, K. J. and Carter, P. L. (2007) "E-marketplace Survival: An Empirical Investigation from a Supply Management Viewpoint" published as a full paper and presented at the 18th Annual North American Research/Teaching Symposium on Purchasing and Supply Chain Management, Tempe, Arizona, March 2007.

PERRY, MARCUS B.,

James A. Leinart, Richard F. Deckro, Marcus B. Perry, "Unrevealed Elements of Network Systems", INFORMS Midwest Regional Conference, Northwestern University, Evanston, IL, 24-25 August 2007.

Maj. Michael J Artelli , Dr Richard F Deckro, Dr Marcus B Perry and Col. Daniel J Zalewski, "Public Resolve: The Casualty of the "Long War", Presented in WG 8 and WG 32, 75th Military Operations Research Society Symposium, June 2007.

Perry, M. B. (2007), ''Identifying the Time of Step Change in the Mean of a MA(1) Process,"Proceedings of the 2007 Industrial Engineering Research Conference, Nashville, TN, 19-23 May.

Richard F. Deckro, Marcus B. Perry, Capt Jennifer L. Geffre, Capt Travis J. Herbranson and Capt Joshua S. Seder, "Social Network Analysis Research at AFIT", Adversary Behavioral Modeling: Available Tools and Applications for the Warfighter Conference, Air War College, Maxwell AFB, March 2007.

Perry, M. B. (2007), ''Identifying the Time of Step Change in the Mean of MA(q) Processes," Invited Talk. Industrial Engineering Research Conference, 2007.

Perry, M. B. (2006). ''A Change Point Model for the Exponential Family". INFORMS Annual Meeting, Pittsburgh, PA, November 5-8.

Melouk, S. H. and Perry, M. B. (2006). ''BDA Enhancement Methodology Using Situational Parameter Adjustments". INFORMS Annual Meeting, Pittsburgh, PA, November 5-8.

ROESENER, AUGUST G., Maj

Hall, S. N., and Roesener, A.G., "A Survey of Heuristics," 75th Military Operations Research Society Symposium, United States Naval Academy, Annapolis, MD, June 11-14, 2007.

ZALEWSKI, DANIEL J., Col,

Maj. Michael J Artelli , Dr Richard F Deckro, Dr Marcus B Perry and Col. Daniel J Zalewski, "Public Resolve: The Casualty of the "Long War", Presented in WG 8 and WG 32, 75th Military Operations Research Society Symposium, June 2007. [COA]

5.5.7. SUBSTANTIAL CONSULTATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

ANDERSON, BRADLEY E., Lt Col

Advisor to Army Joint Logistics Education & Development Forum, May 2007. [COA]

CUNNINGHAM, WILLIAM A. III,

Conducted study for AFLMA on transportation data needs for new Air Force ERP system (ECSS).

DECKRO, RICHARD F.,

Information Operations Joint Munitions Effectiveness Manual (PSYOP) Functional Area Meeting, John Hopkins University Applied Physics Lab, 26-27 September, 2007.

Behavioral Influences Analysis Center (BIAC) Conference, Montgomery, AL, 18 -19 September, 2007.

Attended Human Factors Integrated Process Team Quarterly Meeting, BAE Systems Herndon VA, 2-3 September 2007.

Dick Deckro, "Operational Military Operations Research", AFIT- Canadian Forces Bi-Lateral Operations Research Meeting, 19-22 June, 2007, The Royal Military College of Canada/Land Capability Development, Kingston Ont.

Invited participant in Psychological Operations (PSYOP) Community of Knowledge and Practice (CKAP) Conference on Joint PSYOP Education and Training requirements and opportunities in support of the development of CJCS' Joint PSYOP Transformation Plan at Naval Information Operations Center Norfolk, VA, 3- 5 April, 2007.

Invited participant in first Information Operations Threat Analysis Working Group (IO TAWG), hosted by the 57 ATG and the 57 Information Aggressor Squadron (57 IAS) at Nellis AFB, NV, 27-29 March, 2007.

Deckro, R. F., Perry, M. B., Herbranson, T. and Geffre, J. (2007). ''Social Network Analysis Research at AFIT". Adversarial Behavioral Modeling Conference, U.S. Air Force, Maxwell AFB, AL, March 08-09.

Participant MORS Workshop, Warrior Analysts: How Can We Be Better Combat Multipliers?, 30 January - 1 February 2007, Booz Allen Hamilton, McLean, Virginia.

Dick Deckro, "Combining Operations Research and Behavioral Analysis", Behavioral Influences Analysis Mini-Elective, Air War College, October 2006.

Attended Human Factors Integrated Process Team Quarterly Meeting, U. S. Central Command, MacDill AFB, 2-3 August 2006. Member, HF-IPT Technology Committee.

JOHNSON, ALAN W.,

1FW, 1AMXS, Langley AFB VA, 30 May – 1 June 2007, F-22 Sortie generation modeling. [COA]

Johnson, A.W., Royal Military College, Kingston Ontario, 19 June 2007, "AFIT Logistics-Focused Analysis." [COA]

KNIGHTON, SHANE A., Maj

"Course of Action Selection and Assessment**",** AFRL Rome Laboratory, March & September 2007. [COA]

MILLER, J. O.,

AF/A9: ongoing discussions on modeling and simulation and analyst career development. [COA]

AFRL/VA: ongoing discussions on Combat Modeling with SEAS and FLAMES. [COA]

C17 SPO: ongoing discussions concerning Strategic Brigade Airdrop. [COA]

Miller, J.O. "Selected COA Research," Canadian Royal Military College and Canadian Forces Land OR Group Visit, Kingston, ON Canada, 19 Jun 2007. [COA]

PERRY, MARCUS B.,

Perry, M. B. (2007), ''A Change Point Model for the Location Parameter of Exponential Family Densities". Research Seminar, Department of Industrial and Systems Engineering, Florida International University, Miami, FL.

5.5.8.   BOOKS AND CHAPTERS IN BOOKS
Note: Research Center affiliations are listed in [ ] if applicable.

JOHNSON, ALAN W.,

Johnson, A., Brigantic, R., and Mahan, J., 2007, "Strategic Mobility and Deployment", Methods for Conducting Military Operational Analysis: Best Practices in Use Throughout the Department of Defense, L. Rainey and A. Loerch, Editors, Military Operations Research Society, Publishers, pp 281-315. [COA]

5.5.9.   OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES
Note: This section includes Refereed Presentations based on Abstract Review and Invited Presentations.
Note: Research Center affiliations are listed in [ ] if applicable.

ANDERSON, BRADLEY E., Lt Col [COA]

Reviewer: Decision Sciences Institute (DSI) Journal & Journal of Applied Mathematics and Decision Sciences (JAMDS).

BAUER, KENNETH W. Jr., [COA]

QWEST member: Dr. Steve Rogers, Chief Scientist for Sensor Fusion and ATR at AFRL/SN has formed a QWEST advisory board to develop a new way to approach pattern recognition problems. The members are Dr. Rogers, Dr Matt Kabrisky (AFIT EE emeritus professor), Dr. Oxley (Mathematic Dept.), and Dr. Bauer (Operational Sciences Dept.)

CHRISSIS, JAMES W.,

Reviewer: Papers for the MDO sessions at the January 2007 AIAA Aerospace Sciences Meeting in Reno, NV; April 2007 AIAA SDM Conference/MDO Specialist Conference in Hawaii; and Military Operations Research.

Session Chair: January 2007 AIAA Aerospace Sciences Meeting in Reno, NV.

Member: MDO/TC Education Subcommittee

COCHRAN, JEFFERY K.,

Editorial Board, Computers in Industry, Journal of Design and Manufacturing Automation, International Journal of Simulation and Process Modeling, International Journal of Industrial and Systems Engineering.

Program Committee, IASTED International Conference on Modeling and Simulation.

Director, Health and Human Systems Laboratory, Ira A. Fulton School of Engineering.

Faculty Advisor and Co-Founder, ASU INFORMS Student Chapter and Omega Rho, Operations Research Honor Society Student Chapter, ASU.

Faculty Associate, Arizona Center of Integrative Modeling and Simulation.

COOPER. MARTHA C.,

"Logistics Ph.D. Hiring Survey," Martha C. Cooper and John Santosa, distributed at the Logistics Educators Conference, and at the doctoral consortium; 2006 survey distributed at San Antonio meeting and provided on Ohio State Fisher College web site: http://www.fisher.osu.edu/logistics/survey/academic/survey.pdf

 "The Intellectual Structure of Supply Chain Management: A Bibliometric Approach," Martha Cooper, Francois Charvet, and John Gardner, Helsinki School of Economics, December 19, 2006, presentation.

"SCM As An Innovation In Business Management: Yes or No and Where Is It Going?" Martha C. Cooper, Francois F. Charvet, and John T. Gardner, SIMPOI-POMS Brazil, Rio de Janeiro, August 8-10, 2007, one of three keynote speakers. Presentation posted on SIMPOI web site.

"Future Trends Affecting SCM," part of educator panel at Procter and Gamble Supply Chain Leadership Summit, March 6, 2007, presentation.

"Future Trends of SCM and Logistics Research," Martha Cooper, Anthony Roath, Judith Whipple, 3rd Annual Supply Chain Doctoral Symposium, University of Maryland, College Park, MD, March 10, 2007.

"Women in Logistics 2006," Martha Cooper, Linda Coley, and Susan Dexter, Council of Supply Chain Management Professionals Annual Meeting, San Antonio, October 15-18, 2006, presentation.

"2006 Career Patterns of Women in Logistics," Martha C. Cooper, John Santosa, and Angela Lewis, Council of Supply Chain Management Professionals Annual Conference. Results posted on CSCMP web site: http://www.cscmp.org/Downloads/Career/06CareerPatternsWomen.pdf

Elected Vice President Education, SOLE – The International Society of Logistics, Dallas, August 2006, two-year term.

Associate Editor, Journal of Supply Chain Management.

Editorial Review Board for the Journal of Business Logistics, Journal of Operations Management, Journal of Physical Distribution and Logistics Management, Supply Chain Forum: An International Journal, and Journal of Transportation Management.

Editorial Advisory Board for the Supply Chain Management Review and Journal of Marketing Channels.

Paper Reviewer for: The Journal of Business Logistics, Supply Chain Forum: An International Journal, European Journal of Operations Research, International Journal of Operations and Production Management, International Journal of Physical Distribution and Logistics Management, Journal of Operations Management, CSCMP Educators' Conference, and American Marketing Association Educators' winter conference.

Reviewer for SCRMC 2006 Doctoral Dissertation Award.

Breakout session leader, College of Supply Chain Management, Austin TX, May 2007.

Co-Chair Ohio State University Campus Campaign, FAES, 2005-2007.

Outside dissertation reviewer and opponent for Helsinki School of Economics, Finland (defense December 2006).

Professional Association Membership: American Marketing Association, Association for Consumer Research, The Classification Society of North America, The Institute of Management Sciences (now INFORMS), The Council of Supply Chain Management Professionals (formerly the Council of Logistics Management), SOLE – The International Society of Logistics [Engineers] (Senior Member), and Warehouse Education and Research Council.

CUNNINGHAM, WILLIAM A. III,

Editorial Review Board for Journal of Transportation Management and Air Force Journal of Logistics.

Reviewer for Transportation, 6th ed. By Coyle, Bardi and Novack, Southwestern Publishing.

Examiner for American Society of Transportation and Logistics professional certification (CTL) exam, responsible for developing exam and study materials for the Transportation and Economics module.

DECKRO, RICHARD F.,

Judge, Decision Analysis Track, Cadet Capstone Conference, United States Military Academy, West Point, 3 May 2007.

Participant MORS Workshop, Warrior Analysts: How Can We Be Better Combat Multipliers?, 30 January - 1 February 2007, Booz Allen Hamilton, McLean, Virginia.

Editor, Military Operations Research.

Immediate Past President, Military Applications Society, INFORMS (from November 2006).

Area Editor, Service Systems, Computers & Industrial Engineering.

Member: MORS Publication Committee, Peacekeeping and Stability Operations Institute Academic Consortium, Advisory Group on Applications, GMU/CMU MURI "Computational Modeling of Cultural Dimensions in Adversary Modeling", and PSYOP CKAP & IO CKAP.

Reviewer: Computers & Industrial Engineering, Computers & Operations Research, Journal of Business and Management, Journal of Defense Modeling and Simulation, OMEGA, and John Wiley & Sons.

DONOVAN, PAMELA, Lt Col,

Reviewer: Council of Supply Chain Management Professionals Student Papers and The Transportation Journal.

HALL, SHANE N., Maj

Reviewer: Military Operations Research Journal.

JOHNSON, ALAN W., [COA]

Session Chair, Air Force Supply Chain Analysis, INFORMS National Meeting, November 5-8, 2006, Pittsburgh.

Sessions Chair, Air Force Supply Chain Analysis, Defense Logistics Analysis, INFORMS National Meeting, November 4-7, 2007, Seattle.

Vice Chair, Space Logistics Technical Committee, American Institute of Aeronautics and Astronautics.

Council Member, Military Applications Society, INFORMS.

Member: Military Operations Research Society (MORS)/ Production and Operations Management Society (POMS).

Manuscript Reviewer: European Journal of Operational Research and Military Operations Research Journal.

KHAROUFEH, JEFFREY P.,

Associate Editor: Encyclopedia of Operations Research, by Wiley & Sons, IEEE Transactions on Reliability, and Operations Research Letters.

Elected to the Board of Directors, Operations Research Division, Institute of Industrial Engineers (IIE).

Reviewer for: Operations Research, IIE Transactions, Naval Research Logistics, Military Operations Research, and Industrial Engineering Research Conference 2007.

Session Chair: "Theory and Applications of Stochastic Processes." Operations Research Track, Industrial Engineering Research Conference, May 19-23, 2007, Nashville, TN.

Kharoufeh, J.P. (2007), A stochastic service system with disruptions and retrials. Invited Seminar. Department of Decision Sciences, Drexel University, January 26, 2007.

Kharoufeh, J.P. (2007), A mathematical framework for condition-based reliability. Invited Seminar. Department of Mechanical and Industrial Engineering, Northeastern University, January 12, 2007.

Kharoufeh, J.P. (2006), Maximizing the availability of a periodically inspected system with hidden failures. Invited Seminar. Department of Mechanical and Industrial Engineering, University of Iowa, October 19, 2006.

KNIGHTON, SHANE A., Maj, [COA]

Member, Institute for Industrial Engineers and INFORMS.

MELOUK, SHARIF H., [COA]

Dayton Area Graduate Studies Institute (DAGSI) Representative.

Special Session Organizer & co-Chair, Flexible Automation and Intelligent Manufacturing Conference, Philadelphia, PA. June 18-20, 2007.

Session Organizer & Chair, Industrial Engineering Research Conference, Nashville, TN. May 19-23, 2007.

Treasurer, INFORMS Cincinnati/Dayton Chapter, 2006-07.

Membership Committee Member, INFORMS Simulation Society, 2006-07.

Referee for: European Journal of Operational Research, International Journal of Production Economics, Proceedings of 2007, and Industrial Engineering Research Conference.

MILLER, J. O., [COA]

INFORMS Simulation Society Council Representative (elected position).

Judge for MORS Rist Prize 2006 & 2007.

Associate Editor for International Journal of Operations Research.

Journal Referee: Military Operations Research, International Journal of Logistics: Research and Applications, and The Journal of Defense Modeling and Simulation.

Member AF Modeling and Simulation Workforce Development Working Group.

MOORE, JAMES T., [COA]

Advisor to Student INFORMS chapter, MORS student chapter, and Omega Rho international operations research society.

Associate Editor for journal Military Operations Research.

Member of Editorial Board for International Journal of Operational Research.

Military Operations Research Society (MORS) Working Group 18 (Mobility and Transport of Forces) Chair.

MAS Cluster Chair and a MAS session chair for INFORMS 2007 conference.

Judge for student competition at the 2007 MORS Education Colloquium and Professional Development Conference.

Member: MORS, INFORMS, Tau Beta Phi, Omega Rho, and Phi Beta Kappa.

Referee for: IIE Transactions, Omega, and European Journal of Operational Research.

OGDEN, JEFFREY A.,

Reviewer for: Journal of Business Logistics, International Journal of Operations & Production Management, Journal of Operations Management, and Journal of Supply Chain Management.

Member: Institute for Supply Management (ISM), Decision Sciences Institute, and Council of Logistics Management.

PERRY, MARCUS B.,

Cluster Co-chair for Military Applications Track, INFORMS International, 08-11 July 2007, Puerto Rico.

 Invited Editor representing Quality Engineering: Tutorial session on publishing engineering management research, 2007 Industrial Engineering Research Conference, 19-23 May, Nashville, TN.

Editorial Board Member, Quality Engineering.

Reviewer for: Military Operations Research, Computers & Industrial Engineering, International Journal of Production Research, European Journal of Operational Research, and Quality Engineering.

ROESENER, AUGUST G., Maj

Member: Military Operations Research Society and Air Force Operations Research Society.

5.6. DEPARTMENT OF SYSTEMS AND ENGINEERING MANAGEMENT

Access Phone: 937-255-2998, DSN 785-2998
Fax: 937-656-4699, DSN 986-4699
Homepage: http://www.afit.edu/en/env/

5.6.1. MASTER'S THESES

5.6.1.1. COST ANALYSIS (GCA)

BROAS, TINA M., *The Effect of Downsizing on Attrition Rates in the Department of Defense (DoD)*. AFIT/GCA/ENV/07-M1, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

BRYANT, MICHAEL, *Forecasting the KC-135 Cost Per Flying Hour: A Panel Data Analysis* AFIT/GCA/ENV/07-M2, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

BURRELL, DERREN.P., *An Analysis of the Military Retirement System: How Does Retirement Return Influence Retention?* AFIT/GCA/ENV/07-M3. Faculty Advisor: Lt Col Jeffrey S. Smith. Sponsor: N/A.

COLLUP, JUSTIN W., *Forecasting Demand for Civilian Pilots: A Cost Savings Approach to Managing Air Force Pilot Resources*. AFIT/GCA/ENV/07-M4. Faculty Advisor: Lt Col Jeffery S. Smith. Sponsor: N/A.

FUERING, JEFFERY C., *The Impact of Human Capital on the Cost of Air Force Acquisition Programs*. AFIT/GCA/ENV/07-M5. Faculty Advisor: Lt Col Jeffrey S. Smith. Sponsor: AFCAA.

GIACOMAZZI, MICHAEL P., II, *An Analysis of the Impact of Defense Acquisition Reforms and External Factors on Schedule Growth of Defense Weapon Systems*. AFIT/GCA/ENV/07-M6. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

RUTER, PHILIP E., II, *Cost Growth in Weapons Systems: Re-Examining Rubber Baselines and Economic Factors*. AFIT/GCA/ENV/07-M9. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

STELLY, JOHN M., *Price Vs. Performance: The Value Of Next Generation Fighter Aircraft*. AFIT/ENV/GCA/07-M10. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

5.6.1.2. ENGINEERING MANAGEMENT (GEM)

AFTANAS, JASON M., *Optimizing the Prioritization of Natural Disaster Recovery Projects*. AFIT/GEM/ENS/07-01. Faculty Advisor: Maj. Shane A. Knighton. Sponsor: ACC/A7-2 (CE).

BRYANT, SCOTT A., *Geospatial Informational Security Risks and Concerns of the U.S. Air Force GeoBase Program.* AFIT/GEM/ENV/07-M1. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: USAF GIS Support Center.

CHOI, PETER M., *The Effects of Social Network Centrality on Group Satisfaction*. AFIT/GEM/ENV/07-M2. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.

DALBY, TIMOTHY D., *Quantification of Risk for USAF Fire and Emergency Services Flights as a Result of Shortages in Manpower*. AFIT/GEM/ENS/07-02. Faculty Advisor: Maj Shane A. Knighton. Sponsor: AFCESA/CE.

DIAZ, DANIEL, JR., *Diffusion of Innovation: Factors Promoting Interest in Solar Photovoltaic Generation Systems within Air Force Installations*. AFIT/GEM/ENV/07-M3. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFCESA.

DUNCAN, DAVID J., *Rapid Runway Repair (RRR): an Optimization for Minimum Operating Strip (MOS) Selection.* AFIT/GEM/ENV/07-M4. Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A.

FALCONE, JEFFREY T., *Using Value-Focused Thinking to Evaluate the Use of Innovative Stormwater Management Technologies on Air Force Installations*. AFIT/GEM/ENV/07-M5. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: AFCEE.

KWAN, KELLY E., *Selecting Electricity Generation Sources in Remote Locations*. AFIT/GEM/ENV/07-M7. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: National Park Service.

LOW, BRIAN R., *Mapping Change Management: A Co-citation Analysis*. AFIT/GEM/ENV/07-M8. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

MAIORANO, ERIKA E., *Decision Analysis with Value Focused Thinking as a Methodology to Select Buildings for Deconstruction*. AFIT/GEM/ENV/07-M9. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: WPAFB, Env. Mgt. (AFMC).

MCCOURT, MICHAEL J., *A Decision Model for Selecting Energy Efficient Technologies for Low-Sloping Roof Tops using Value-Focused Thinking*. AFIT/GEM/ENS/07-03. Faculty Advisor: Lt Col Jeffery D. Weir. Sponsor: AFCESA/CE.

POWELL, WILLIAM C., *Development of a Screening Model for Design and Costing of an Innovative Tailored Granular Activated Carbon Technology to Treat Perchlorate-Contaminated Water*. AFIT/GEM/ENV/07-M12. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: AFCEE/TD.

SECODY, ROLAND E., *Modeling In Situ Bioremediation of Perchlorate-Contaminated Groundwater*. AFIT/GEM/ENV/07M-13. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: AFCEE/TD.

SPEER, BENJAMIN G., *A Value-Focused Thinking Model for the Selection of the Best Rigid Pavement Partial-Depth Spall Repair Material*. AFIT/GEM/ENS/07-04. Faculty Advisor: Maj Shane A. Knighton. Sponsor: HQ AFCESA.

THEONY, CLIFFORD M., *The Net Effects of Social Network Density and Organizational Citizenship Behavior on Performance*. AFIT/GEM/ENV/07-M14. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.

TONEY, ROBERT P., *Management Versus Non-Management Knowledge Transfer From Training To Real Work Environments: A Meta-Analysis*. AFIT/GEM/ENV/07-M15. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.

VALENCIA, VHANCE V., *A Project Manager's Personal Attributes as Predictors for Success*. AFIT/GEM/ENV/07-M16. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: AFCEE.

WALDRON, JAMES M., *Characterization of Chlorinated Ethene Degradation in a Vertical Flow Constructed Wetland*. AFIT/GEM/ENV/07-M17. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.

5.6.1.3. <u>ENVIRONMENTAL ENGINEERING AND SCIENCE (GES)</u>

DIETZ, JOHN M., *Microbial Degradation of Fuel Oxygenates under Aerobic Conditions*. AFIT/GES/ENV/07-M1. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: USEPA National Risk Management Research Laboratory.

GRACE, STEPHEN T., *The Effect of Orthophosphate as a Copper Corrosion Control Inhibitor in High Alkalinity Drinking Water Systems*. AFIT/GES/ENV/07-M2. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: USEPA Office of Research and Development.

HUDOCK, DAVID M., *Biofiltration as a Viable Alternative for Air Pollution Control at Department of Defense Surface Coating Facilities*. AFIT/GES/ENV/07-M3. Faculty Advisor: Lt Col David A. Smith. Sponsor: CNAF.

TY, ANTHONY R., *Aerosolization and TaqMan PCR Detection/Quantification of Bradyrhizobium japonicum USDA 110 as a Biowarfare Simulant.* AFIT/GES/ENV/07-M4. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.

5.6.1.4. INFORMATION RESOURCE MANAGEMENT (GIR)

ALSOP, ALAN S., *Beyond Passwords: Usage and Policy Transformation,* AFIT/GIR/ENV/07-M1. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: AFCA/ECAI.

BAILEY, LANDON C., *Refinement of an Instrument to Assess Readiness for Knowledge Management.* AFIT/GIR/ENV/07-M2, Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

BLAIR, AARON M., A*ssessing Perceptions of Knowledge Management Maturity/Capabilities: A Case Study of SAF/FM.* AFIT/GIR/ENV/07-M3, Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: SAF/FMP.

BOYD, EDWARD K., *Professionalism in the USAF: A Comparative Analysis of Commissioned Officers with Non-Commissioned Officers.* AFIT/GIR/ENV/07-M4, Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: AETC.

BLOOD, DEBORA L., *Predicting the Benefits, Barriers, and Bridges for USAF Expeditionary Combat Support System Implementation*. AFIT/GIR/ENS/07-01. Faculty Advisor: Lt Col Barry L. Brewer. Sponsor: HQ AF/A4IT.

BRYANT, ADAM R., *Developing a Framework for Evaluating Organizational Information Assurance Metrics Programs.* AFIT/GIR/ENV/07-M5, Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: NASA JPL.

CAIRO, LUIS N., *An Analysis of the Deployment of System Oriented Architecture Environments in Air Force Combined Air Operations Centers*. AFIT/GIR/ENV/07-M6. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: 46TS/OGEA (AFMC).

CATES, MICHAEL S., *Corporate Entrepreneurship Assessment Instrument (CEAI): Refinement and Validation of a Survey Measure.* AFIT/GIR/ENV/07-M7. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

CZUMAK, MICHAEL N., III, *Recommendations for a Standardized Program Management Office (PMO) Time Compliance Network Order (TCNO) Patching Process*. AFIT/GIR/ENV/07-M8. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFNOC/DET1 (8AF).

FOREMAN, JAMES D., *Predicting the Effect of Longitudinal Variables on Cost and Schedule Performance.* AFIT/GIR/ENC/07M-01. Faculty Advisor: Dr. Edward D. White, III. Sponsor: N/A.

FORTSON, LARRY W., JR., *Towards the Development of a Defensive Cyber Damage and Mission Impact Methodology*. AFIT/GIR/ENV-M9. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFRL/HEX (AFMC).

HEATH VAN HORN, MATHEW J., *An Analysis of the Balance of Management, Technical and Leadership Progression through the Three USAF Officer Tiers*. AFIT/GIR/ENV/07-M10. Faculty Advisor: Dr. Alan Heminger. Sponsor: SOC/DEO/SOS (AETC).

LUNAS, FREDERIC W., *Triangulating Social Capital Measurement for Turnover Research: Applications to the U.S. Military*. AFIT/GIR/ENV/07-M11. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

MARSHALL, TOMMY V., II, *A Comparative Assessment of Knowledge Management Leadership Approaches within the Department of Defense*. AFIT/GIR/ENV/07-M12. Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: N/A.

POLOMSKY, ROBERT D., *Air Mobility Command's En Route Support Infrastructure: a Construct of Aircraft Type and Geographic Location Utilized to Assess En Route Aircraft Logistics Support*. AFIT/GIR/ENV/07-J2. Faculty Advisor: Maj Sharon G. Heilmann. Sponsor: HQ AMC/A49.

ROEHL, JOHN M., *Internet Protocol Geolocation: Development of a Delay-Based Hybrid Methodology for Locating the Geographic Location of a Network Node*. AFIT/GIR/ENV/07-M15. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: N/A.

SCURLOCK, ANTONIO J., *Strategic Planning to Conduct Joint Force Network Operations: A Content Analysis of NETOPS Organizations Strategic Plans*. AFIT/GIR/ENV/07-M18. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: DONCIO.

SIMMERS, DOUGLAS M., *Identifying Knowledge, Skill, and Ability Requirements for 33S Officers in Deployed Environments*. AFIT/GIR/ENV/07-M16. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: ACC/A6OO (ACC).

SMITH, TIFFINY S., *In Pursuit of an Aptitude Test for Potential Cyberspace Warriors*, AFIT/GIR/ENG/07-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 315 IOS (8th Air Force).

SPRINGS, ANITA C., *Assessing the Impact of the Work Environment on Training Transfer: An Investigation of the Air Force Acquisition Management Course*. AFIT/GIR/ENV/07-J4. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.

WRIGHT, GARY L., *A Comparative Assessment of Knowledge Management Education Across the United States Department of Defense*. AFIT/GIR/ENV/07-M17. Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: SAF/XC.

5.6.1.5. **RESEARCH AND DEVELOPMENT MANAGEMENT (GRD)**

HEUK, WILLIAM D., *A Future-Based Risk Assessment for the Survivability of Long Range Strike Systems*. AFIT/GRD/ENS/07-01. Faculty Advisor: Maj Gary W. Kinney. Sponsor: AFRL/VA

MITCHELL, ROBERT H., JR., *Real Options as a Strategic Management Framework: A Case Study of the Operationally Responsive Space Initiative*. AFIT/GRD/ENV/07-M2. Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A

PARRISH, MICHAEL R., *A Meta-Analysis of Questionnaire Response Rates in Military Samples*. AFIT/GRD/ENV/07-M4. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.

ROMERO, MICHAEL A., *Identifying and Assessing Effective Mechanisms for Technology Transfer*. AFIT/GRD/ENV/07-M6. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFRL/XR

5.6.2. GRADUATE RESEARCH PAPERS

5.6.2.1. <u>STRATEGIC LEADERSHIP (ISL)</u>

BROOKS, JEFFERY L., ELBERT L. COLEMAN JR. and GLEN M. GENOVE, *Investigating Air Operations Center (AOC) Knowledge Management Requirements.* Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: N/A.

CAMPBELL, JASON L., *A Qualitative Analysis of the Possible Effects of "The New Process-Aligned Logistics Readiness Squadron' Structure on Heavily Contracted Logistics Readiness Organizations.* Faculty Advisor: Maj Sharon G. Heilmann. Sponsor: AFMC/A4R and 88ABW, Logistics Readiness Division.

CHAVASSE, NICHOLAS H., III, MATTHEW T. FRITZ and BRIAN F. ZANE, *Evaluating of a Non-Traditional Element Detection Device.* Faculty Advisor: Maj Sonia E. Leach. Sponsor: AFRL.

COLEMAN, ELBERT L. JR., See BROOKS, JEFFERY L.

CONNOLLY, MICHALE W., FREDERICK A. HUNT JR. and RICHARD T. KOCH, *Managing Airspace Deconfliction in a Robust Unmanned Aerial Vehicle Environment.* Faculty Advisor: Lt Col Patrick D. Kee. Sponsor: N/A.

FALARDEAU, LARA L., *Downsizing Triage: Do the Survivors of the Recent AF Downsizing Intend to Stay?* Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: HQ Air Staff A-1.

FAUTH, RODNEY L, JR., *Ethics in the Military: A Study of Major Themes in Recent Professional Writing.* Faculty Advisor: Dr. Kirk A. Vaughan. Sponsor: N/A.

FRITZ, MATTHEW T., See CHAVASSE, NICHOLAS H., III.

GENOVE, GLEN M., See BROOKS, JEFFERY L.

HILL, WILLIAM R., II, Managing the Force Development of the AF Communications Officer into the Future. Faculty Advisor: Col Robyn M. King. Sponsor: SAF/XC

HOLBEIN, BRIAN K., *An Analysis of the Satellite Command and Control Operator Training System.* Faculty Advisor: Dr. Michael T. Rehg. Sponsor: 50th Satellite Operations Group.

HOLT JEFFREY D., *A Study of Optimal Commander Tour Length,* Faculty Advisor: Col Robyn M. King. Sponsor: N/A.

HUNT, FREDERICK A., JR., See CONNOLLY, MICHALE W.

HURST, BRITT K. and MARK D. ORIELLY, *Comparing the Combat Readiness of the Objective Wing and Combat Wing Organizational Structures.* Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.

JONES, ROY A., III, *Validation of Air Force Change Education and Management Processes.* Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: AFMC/A8C.

KOCH, RICHARD T., See CONNOLLY, MICHALE W.

KOTKIN, JEREMY S., *A Historical Analysis of Western Intervention in the Middle East to Provide a Way Ahead for the Iraq War and Middle Eastern Policy.* Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

MATHES, MICHAEL N., *Concepts for Defeating Pro-Nav Air to Air Missiles.* Faculty Advisor: Dr. Alan R. Heminger. Sponsor: NASIC.

ORIELLY, MARK D., See HURST, BRITT K.

PHILLIPS, MICHALE E., See HILL, WILLIAM R., II.

POLLOCK, PETER M., *Relationship Between Duty History and Selection for In-residence PME (IDE Specific).* Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

ROBINSON, BRANDON J., See HILL, WILLIAM R., II.

SEIBERT, HARRY L., JR., *A-10 Realignment: Factors Affecting Future Sortie Production at Davis-Monthan Air Force Base*. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: 355th AMXS.

TANGLAO, RAINIER, See HILL, WILLIAM R., II.

TELEGA, TIMOTHY M., *A Study of Optimal Commander Tour Length*. Faculty Advisor: Col Robyn M. King. Sponsor: N/A.

VILLELLA, MATTHEW C., *The Attributes of Appropriate Close Air Support Ordinance*. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

WALKER, RANDAL D., *Validation of Air Force Change Education and Management Processes*. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: AFMC/A8C.

WOLLARD, JASON Z., *Inferences Concerning Junior Officers' Abilities and Traits Based on United States Air Force Officer Evaluation Reports*. Faculty Advisor: Daniel T. Holt. Sponsor: N/A.

ZANE, BRIAN F., See CHAVASSE, NICHOLAS H., III.

5.6.3. FUNDED RESEARCH PROJECTS

Note: Research Center affiliation is listed in [ ] if applicable.

BADIRU, ADEDEJI B.,

"Development of a Technology Based Medical Triage and Situational Awareness Tool for Use in a CBRN Contingency/Deployed Environment." Sponsor: SAF/SG. Funding: $335,341.

BARELKA, ALEXANDER J., Maj,

"The Influence of Pop-Culture IT."   Sponsor: AFRL/HE. Funding: $80,000.

GOLTZ, MARK N.,

"An Evaluation of Current Mass Flux Measurement Practices and Guidelines for Their Performance." Sponsor: EPA. Funding" $24,749.

"Reducing Ion Exchange Treatment Costs by up to 40% using Tailored Activated Carbon." Sponsor: Environmental Security Technology Certification Program. Funding: $55,800.

GRIMAILA, MICHAEL R.,

"Internet Protocol Geolocation: The Determination of a Geographic Location within a Metropolitan Area." Sponsor: NASIC. Funding: $10,000.

"A Sensitivity Analysis of Delay-Based Internet Protocol Geolocation Methodologies." Sponsor: NASIC. Funding: $21,987. [CCR]

"Towards Real-Time Cyber Incident Mission Impact Assessment." Sponsor: AFRL/HE. Funding: $40,000. [CCR]

HICKS, MICHAEL J.,

"Cost Analysis Funding." Sponsor: AFCAA. Funding: $20,000.

REHG, MICHAEL T.,

"Effectiveness of the International Military Education and Training Program." Sponsor: DISAM. Funding: $23,000.

SHELLEY, MICHAEL L.,

"Bioremediation of Chlorinated Ethenes in Constructed Wetlands." Sponsor: 88ABW/CE. Funding: $3,000.

STROUBLE, DENNIS D.,

"Air Force Center for Systems Engineering A-10 Systems Engineering Case Study." Sponsor: AFIT/SY. Funding: $31,000.

5.6.4. REFEREED JOURNAL PUBLICATIONS
Note: Research Center affiliation is listed in [ ] if applicable.

BADIRU, ADEDEJI B.,

Thal, Alfred E.; A. B. Badiru; and R. Sawhney, "Distributed Project Management for New Product Development," *International Journal of Electronic Business Management,* Vol. 5, No. 2, 2007, pp. 93-104.

Omitaomu, Olufemi A. and Adedeji B. Badiru, "Fuzzy Present Value Analysis Model for Evaluating Information System Projects," *Engineering Economist*, Vol. 52, 2007, pp. 157-178.

Olufemi A. Omitaomu, Myong K. Jeong, Adedeji B. Badiru, and J. Wesley Hines (2007). "On-Line Support Vector Regression for Machine Condition Monitoring with Applications to Motor Shaft Misalignment Prediction." *IEEE Transactions on Systems, Man, and Cybernetics: Part C*, 37(5), 2007 962-970.

BLECKMANN, CHARLES A.

Wagner, A. J. , C.A. Bleckmann, R. C. Murdock, A.M. Schrand, J.J. Schlager, S. M. Hussain. 2007. "Cellular Interactions of Different Forms of Aluminum Nanoparticles in Rat Alveolar Macrophages." *Journal of Physical Chemistry B.* 111:7353-7359.

GOLTZ, MARK N.,

Goltz, M.N., S. Kim, H. Yoon, J. Park, "Review of Groundwater Contaminant Mass Flux Measurement." *Environmental Engineering Research, 12*(4):176-193, 2007.

Wood, R.C., J. Huang, M.N. Goltz, "Modeling Chlorinated Solvent Bioremediation Using Hydrogen Release Compound (HRC)." *Bioremediation Journal, 10*(3):129-141, 2006.

GRIMAILA, MICHAEL R.,

V. P. Hubenko, R. A. Raines, R. O. Baldwin, B. E. Mullins, R. F. Mills, and M. R. Grimaila, "Improving Satellite Multicast Security Scalability by Reducing Re-Keying Requirements," *IEEE Network*, vol. 21, no. 4, pp. 51-56, 2007 [CCR].

M.R. Grimaila, "RFID Security Concerns," *The Information System Security Association (ISSA) Journal*, pp. 30-35, Feb. 2007 [CCR].

T. Bailey and M.R. Grimaila, "Information Technology, Terrorism, and the Transformation of the Islamic Mass-Culture in the Arab World," *Terrorism and Political Violence Journal*, Vol. 18, No. 4, pp. 523-543, Winter 2007.

V.P. Hubenko Jr., R.A. Raines, R.F. Mills, R.O. Baldwin, B.E. Mullins, and M.R. Grimaila, "Improving Global Information Grid's Performance Through Satellite Communications Layer Enhancements", *IEEE Communications*, Nov. 2006, Vol. 44, No. 11, pp. 66-72 [CCR].

HOLT, DANIEL T., LtCol,

Holt, D. T., Bartczak, S. E., Clark, S. W., & Trent, M. R. (2007). "The development of an instrument to assess readiness for knowledge management." *Knowledge Management Research & Practice*, 5(2), 75-92.

Rutherford, M. W. & Holt, D. T. (2007). "Corporate entrepreneurship: An empirical look at the innovativeness dimension and its antecedents." *Journal of Organizational Change Management*, 20(3), 429-446.

Holt, D. T., Armenakis, A. A., Harris, S. G., & Feild, H. S. (2007). "Readiness for organizational change: The systematic development of a scale." *Journal of Applied Behavioral Science*, *43*(2), 232-255.

Holt, D. T., Rutherford, M. W., & Clohessy, G. R. (2007). "Corporate entrepreneurship: An empirical look at individual characteristics, context, and process." *Journal of Leadership & Organizational Studies*, *13*(4), 40-54.

Holt, D. T., Rehg, M. T., Lin, J. S., & Miller, J. C. (2007). "An application of the unfolding model to explain turnover in a sample of military officers." *Human Resource Management, 46*(1), 35-49.

REHG, MICHAEL T.

Moore, T. D., Johnson, A. W., Rehg, M. T., and Hicks, M. J. 2007. "Quality assurance staffing impacts in military aircraft maintenance units.", *Journal of Quality in Maintenance Engineering*, 13(1): 33-48.

Holt, D. T., Rehg, M. T., Lin, J. S., & Miller, J. C. 2007. "An application of the unfolding model to explain turnover in a sample of military officers." *Human Resource Management, 46*(1): 35-49.

SLAGLEY, JEREMY M., Maj,

Slagley, J.M., and S.E. Guffey (2007). "Effects of Cross-sectional Partitioning on Active Noise Control in Round Ducts." *Journal of Occupational and Environmental Health*. 4(10): 751-761

Slagley, J.M., and S.E. Guffey (2007). "Effects of Diameter on Active Noise Control in Rectangular and Round Ducts." *Journal of Occupational and Environmental Hygiene*, 4(7): 492-501.

SMITH, JEFFREY S., LtCol,

Smith, J., Ken Small, and H. Semih Yildrim, "Ownership Structure and Golden Parachutes: Evidence of Credible Commitment or Incentive Alignment?", *Journal of Economics and Finance*, 31:3, Fall 2007, pp 368 – 382.

Smith, J. and M. McKee, "People vs. Prairie Chickens Revisited: Stated Preference with Explicit Non-Market Tradeoffs" *Defense and Peace Economics*, 18:3, June 2007, pp 223 – 244.

THAL, ALFRED E., Jr.

Thal, A.E., Jr., A.B. Badiru, and R. Sawhney, "Distributed Project Management for New Product Development," *International Journal of Electronic Business Management*, 5(2):93-104, 2007.

Braziel[1], Carlos, Alfred E. Thal, Jr.[2], and Jeffrey D. Weir, "Evaluating the Effectiveness of Utility Privatization Efforts," *Journal of Facilities Management*, 5(2):86-102, 2007.

TURNER, JASON M., Maj

Bartczak, S. E., Turner, J. M., & England, E. C. (2008). "Challenges in developing a knowledge management strategy: A case study of the Air Force Material Command." *International Journal of Knowledge Management*, 4(1): 46-50.

5.6.5. REFEREED PRESENTATIONS

BADIRU, ADEDEJI B.

Badiru, Adedeji "OR/MS Modeling for AFSO21 Process Improvement in US Air Force," presented at INFORMS Annual Conference, Seattle, WA, Nov 7, 2007.

Thal, Al; Shahady, David; Badiru, Adedeji; and Bedingfield, John, "Incorporating Customer Values in Trade-Off Decisions," presented at INFORMS Annual Conference, Seattle, WA, Nov 7, 2007.

Badiru, Adedeji, "Communication, Cooperation, and Coordination Model for Process Improvement of C2 Projects", *Proceedings of DOD's 12th International Command and Control Research and Technology Symposium (ICCRTS)*, Newport, RI, June 18-21, 2007.

Badiru, Adedeji, Chuck Leakeas, and Sonia Leach, "MatLab-Based Modeling and Simulation of Large Project Networks," *Proceedings of 2007 Industrial Engineering Research Conference (IERC)*, Nashville, TN, May 18-21, 2007.

Badiru, Adedeji, Chuck Leakeas, and Sonia Leach, "Dynamic Cyber Systems Forecast Scenario Planning and Simulation," *Proceedings of 2007 Industrial Engineering Research Conference (IERC)*, Nashville, TN, May 18-21, 2007.

GRIMAILA, MICHAEL R.,

M.R. Grimaila, "Information Security Management: Mission Impact Assessment," Presented at the Americas Conference on Information Systems (AMCIS 2007), Keystone, CO; August 2007.

M.R. Grimaila, "Developing a Framework to Improve Information Assurance Battlespace Knowledge," Presented at the International Conference on Information Warfare and Security (ICIW 2007), Naval Postgraduate School; Monterey, CA; March 2007.

HALVERSON, KENT C., LtCol,

Halverson, K.C., Moore G., & Holt, D.T. (2007). The longitudinal effects of self-monitoring and locus of control on social network position in friendship networks. Academy of Management Annual Conference, Philadelphia, PA.

HEMINGER, ALAN R.

Budai, Kevin G., Alan R. Heminger, and Summer Bartczak, **"**Assessing a Knowledge Management (KM) Project Selection Framework", *Proceedings of the Southern Association for Information Systems* (SAIS), March 2007

Harp, D., S. Bartczak, T. Peachey, and A. Heminger, "An Assessment of Topic Areas Covered in KM Journals", *Proceedings of the Information Resource Management Association*, May 2007

Balda, D., S. Bartczak, R. A. Syler, A. R. Heminger, "A Descriptive Case Study of Electronic Records Taxonomy Development at the Central Intelligence Agency", Proceedings of the Association for Information Systems Conference of the Americas (AMCIS), August 2007

HOLT DANIEL T., LtCol,

Rehg, M. T., Holt, D. T., & Toney, R. P. (2007). A comparative study of factors affecting training transfer. Paper presented at the annual meeting of the Southern Management Association, Nashville, TN, November 7 – 10.

Heilmann, S. G., Holt, D. T., & Rilovick, C. (2007). Effects of career plateauing on turnover: A test of a model. Paper presented at the annual meeting of Midwestern Academy of Management, Kansas City, MO, October 4 – 6.

Holt, D. T., Rutherford, M. W., & Kuratko, D. F. (2007). F-PEC scale of family influence: A refinement. In *Proceedings of the Annual Meeting of the Academy of Management*, Philadelphia, PA, August 3 – 8.

Halverson, K. C., Moore, G. J., & Holt, D. T. (2007). Longitudinal effects of self-monitoring and locus of control on social network position. Paper presented at the annual meeting of the Academy of Management, Philadelphia, PA, August 3 – 8.

Rutherford, M. W., Kuratko, D. F., & Holt, D. T. (2007). The family business theory jungle: Competing theories on "familiness" and performance. Paper presented at the *Theories of the Family Enterprise* academic conference, Starkville, MS, May 16 – 18.

Holt, D. T., Rutherford, M. W., Davis, T. W., & Bartczak, S. E. (2007). Corporate Entrepreneurship Assessment Instrument (CEAI): A refinement for the Department of Defense. In *Proceedings of the Annual Meeting of the Western Academy of Management*, Missoula, MO, March 21 – 24.

PEACHY, TODD A., Maj

Peachey, T., Bartczak, S. and Hall, D., "Investigating knowledge transfer: A preliminary model to improve our understanding of the literature," Presented at the 13th Americas Conference on Information Systems 2007, Keystone CO, August 2007.

TURNER, JASON M., Maj

Turner, J. M.. *Towards a social affordances perspective of media capabilities and interface design*. Proceedings of the American Society for Information Science and Technology 2007 Annual Meeting, Milwaukee, WI, October 2007.

WEST, CHRISTOPHER, Lt.Col

West C. and Landaeta R. The Challenge of Studying Team Cognition in Control Center Environments. Conference Paper, American Society for Engineering Management Conference, Chattanooga, TN. November 2006.

5.6.6. SUBSTANTIAL CONSULTATIONS

BADIRU, ADEDEJI B.

Badiru, Adedeji B., "Getting Things done through project management," Wright State University, Center for Performance Excellence, October 10, 2007.

GRIMAILA, MICHAEL R.,

Grimaila, Michael, R., "Defense Advance Research Projects Agency (DARPA) Mission Assured Networking Workshop Review Group, Crystal City, VA., Sep. 2007.

Grimaila, Michael, R., "DoD Chief Information Officer (CIO) Networks and Information Integration (NII) Information Assurance Best Practices Study Group, Crystal City, VA., Aug. 2007-Present.

Grimaila, Michael, R., "Information Systems Audit and Control Association (ISACA) Security Metrics Project", Chicago, IL, Feb. 2007-Present.

Grimaila, Michael, R., "Air Force Material Command Inspector General Inspection Database Analysis Project", Chicago, IL, Jan. 2007-Aug.2007.

HEMINGER, ALAN R.,

"Identification and Selection of Subject Matter Experts", for the Defense Threat Reduction Agency (DTRA), December 2006

REHG, MICHAEL T.

Rehg, M. T., Effectiveness of the International Military Education and Training (IMET) Program; Analysis of Survey data for the Defense Institute of Security Assistance Management; 1 Dec 2006 – 30 Sep 2007.

Rehg, M. T. Measurement of the ASC Balanced Scorecard for Aeronautical Systems Center/XPX. December 2006.

5.6.7.   BOOKS AND CHAPTERS IN BOOKS

BADIRU, ADEDEJI B.

Badiru, Adedeji B.; Abi Badiru; Ade Badiru, *Industrial Project Management*. Boca Raton: Taylor & Francis CRC Press, 2007.

Badiru, Adedeji B. and O. A. Omitaomu, *Computational Economic Analysis for Engineering and Industry*. Boca Raton: Taylor & Francis CRC Press, 2007.

HOLT, DANIEL T., LtCol,

Holt, D. T., Armenakis, A. A., Harris, S. G., & Feild, H. S. (2007). Toward a comprehensive definition of readiness for change: A review of research and instrumentation. In W. A. Pasmore and R. W. Woodman (Eds.) *Research in Organizational Change and Development* (Vol. 16, pp. 289 – 336). Oxford, UK: Elsevier.

PEACHEY, TODD A., Maj,

Peachey, T., Hall, D., and Cegielski, C. (2007) Chapter IV: Knowledge Management Research: Are We Seeing the Whole Picture? In M. E. Jennex (Ed) *Knowledge Management in Modern Organizations* (pp. 30-50). Hershey, PA, IGI Publishing.

5.6.8. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

BADIRU, ADEDEJI B.

Badiru, Adedeji B.; "Systems Engineering Approach to Global Health Care Delivery," Keynote Address, University of Cincinnati Health Symposium, Cincinnati, OH, October 11, 2007.

Badiru, Adedeji B.; "How to Succeed in the OR/MS Academic Profession," Invited Distinguished Panelist, 2007 INFORMS Regional Conference, Northwestern University, Evanston, IL, August 24-25, 2007.

Badiru, Adedeji B., LtCol David Smith, and Major Jeremy Slagley, "Contemporary Collaborative Research for Occupational Health," Invited Seminar, College of Nursing, University of Tennessee, Knoxville, TN, April 20, 2007.

Badiru, Adedeji B., "Importance of Undergraduate Research in Science and Engineering Curriculum," Invited Keynote Address, Central State University, Wilberforce, OH, April 14, 2007.

Badiru, Adedeji B., "Engineering and Enterprise Systems Management for Operational Efficiency," Invited Seminar, Tinker Air Force Base, Oklahoma City, OK, April 12, 2007.

Badiru, Adedeji B., "OR/MS Modeling for AFSO21 Implementation," Invited Speech, Department of Industrial Engineering, University of Louisville, Kentucky, March 30, 2007.

Badiru, Adedeji B., "Technical Systems Project Management," Invited Training Seminar, NASA Glenn Research Center/Ohio Aerospace Institute, Cleveland, OH, March 27, 2007.

BARELKA, ALEXANDER J., Maj,

Awarded research grant with AFRL to investigate the influence of "new media". A project sponsored by the AFRL/HEX and funded with $105K in 07. Work will continue until the end of CY 2009 and could reach a total value of over $700K. Project currently completing data collection for the first of five stages.

BLECKMANN, CHARLES A.

Reviewer – *Environmental Engineering Science* (2)

Reviewer – National Institute of Standards and Technology (NIST) Advanced Technology Program Proposals

Reviewer – Environmental Security Technology Certification Program (ESTCP)

Technical Reviewer – USEPA National Risk Management Research Laboratory

GOLTZ, MARK N.,

Visiting Scholar, Stanford University, 2007.

Goltz, M.N. Waterborne CBRN Transport Modeling, AFIT/ENV CBRN Research Collaboration Symposium, Dayton OH, 6 September 2007.

Goltz, M.N., Application of Circulating Wells for *In Situ* Treatment of Contaminated Groundwater and Groundwater Contaminant Flux Quantification, Korea Advanced Institute for Sc ience and Technology (KAIST), 5 July 2007.

Goltz, M.N., Sustainable Operations in the U.S. DoD, Korea National Defense University, Seoul, Korea, 3 July 2007.

Goltz, M.N., Modeling and Measuring the Benefits of a Groundwater Contaminant Source Remediation, Yonsei University, Seoul, Korea, 21 June 2007.

Goltz, M.N., Modeling and Measuring the Benefits of Remediating a Groundwater Contamination Source, Hanyang University, Seoul, Korea, 20 June 2007.

Mackay, D.M., M. Einarson, P. Kaiser, M. Inoue, I. Chakraborty, M. Velasco, C. Justice, S. Goyal, M. Brooks, M. Annable, S. Rao, K. Hatfield, M. Goltz, and J. Huang, Assessing Performance of Source or Plume Remediation: Evaluation of Methods, Partners in Environmental Technology Technical Symposium and Workshop, Washington DC, 28-30 November 2006.

Henderson, T., D. Liles, T. Peschman, F. Cannon, and M.N. Goltz, Demonstration Update: Tailored Granular Activated Carbon for Wellhead Perchlorate Treatment, Partners in Environmental Technology Technical Symposium and Workshop, Washington DC, 28-30 November 2006.

Wood, A.L., M. Annable, M.C. Brooks, C. Enfield, R. Falta, M.N. Goltz, J. Jawitz, and P.S.C. Rao, Field and Laboratory Evaluation of DNAPL Remedial Performance, Partners in Environmental Technology Technical Symposium and Workshop, Washington DC, 28-30 November 2006.

Goltz, M.N., J. Huang, D.E. Wagner, and J.L. Heiderscheidt, Modeling the Benefits of Groundwater Contaminant Source Remediation, Partners in Environmental Technology Technical Symposium and Workshop, Washington DC, 28-30 November 2006.

GRIMAILA, MICHAEL R.,

M.R. Grimaila and L.W. Fortson, "Towards an Information Asset-Based Defensive Cyber Damage Assessment Process," Proceedings of the 2007 IEEE Computational Intelligence for Security and Defense Applications (CISDA 2007); Honolulu, HI; April 1-5, 2007.

A.R. Bryant and M.R. Grimaila, "Developing a Framework to Improve Information Assurance Battlespace Knowledge" Proceedings of the 2007 International Conference on Information Warfare and Security; Naval Postgraduate School, Monterey, CA; Mar. 8-9, 2007.

S.A. Bryant and M.R. Grimaila, "Security Risks in USAF Geospatial Information Sharing" Proceedings of the 2007 International Conference on Information Warfare and Security (ICIW 2007); Naval Postgraduate School, Monterey, CA; Mar. 8-9, 2007.

L.W. Fortson and M.R. Grimaila, "Development of a Defensive Cyber Damage Assessment Framework," Proceedings of the 2007 International Conference on Information Warfare and Security (ICIW 2007); Naval Postgraduate School, Monterey, CA; Mar. 8-9, 2007.

K. Edge, R. Raines, M.R. Grimaila, R. Baldwin, C. Reuter, and B. Bennington, "Analyzing Security Measures for Mobile Ad Hoc Networks Using Attack and Protection Trees," Proceedings of the 2007 International Conference on Information Warfare and Security (ICIW 2007); Naval Postgraduate School, Monterey, CA; March 8-9, 2007.

M.R. Grimaila, J. Roehl, and J. Turner, "Internet Geolocation for Cyber Attack Attribution," Proceedings of the 2007 Phoenix Challenge Conference on Information Warfare and Security (ICIW 2007); Kirtland Air Force Base; Albuquerque, NM; Feb. 28-Mar. 1, 2007.

M.E. Blomme and M.R. Grimaila, "Merging Cultures: Integrating MASINT into Air Operations," Proceedings of the 2007 Phoenix Challenge Conference on Information Warfare and Security (ICIW 2007); Kirtland Air Force Base; Albuquerque, NM; Feb. 28-Mar. 1, 2007.

T. Levoy, M.R. Grimaila, and R. Mills, "A Methodology for Customizing Security Auditing Templates for Malicious Insider Detection," Proceedings of the 8th International Symposium on System and Information Security (ISSIS 2006); Sao Jose dos Campos, Sao Paulo, Brazil; Nov. 08-10, 2006.

M.R. Grimaila, "Cyber Incident Mission Impact Assessment Research Presentation," Air Force Information Operations Center, Lackland AFB; 33-IOS; San Antonio, TX; Sept. 2007.

M.R. Grimaila, "Information System Security Association (ISSA) Journal Editorial Advisory Board," 2004-Present.

M.R. Grimaila, "International Systems Security Engineering Association (ISSEA) Metrics Working Group," Jan. 2005-Oct. 2007. Contributor to ISO/IEC CD 27004 Security Metrics Standard (ISO/IEC JTC 1/SC27 N5460).

SHELLEY, MICHAEL

Amon[1], Agrawal[2], Shelley, Opperman[3], Enright[4], Clemmer[3], Slusser[5], Lach[5], Sobolewski[3], Gruner[4], and Entingh[3], "Development of a wetland constructed for the treatment of groundwater contaminated by chlorinated ethenes", *Ecological Engineering 30* (1), pp 51-66, May 2007

McCormick-Brown, S., J.M. Slagley, and M.L. Shelley. *PBPK Model of Dermal Absorption of Aluminum Nanoparticles.* Graduate student poster presentation at the American Industrial Hygiene Conference and Exposition (AIHCE), 2-7 Jun 07, Philadelphia, PA.

SLAGLEY, JEREMY M., Maj,

McCormick-Brown, S., J.M. Slagley, and M.L. Shelley. *PBPK Model of Dermal Absorption of Aluminum Nanoparticles.* Graduate student poster presentation at the American Industrial Hygiene Conference and Exposition (AIHCE), 2-7 Jun 07, Philadelphia, PA.

Engineering Noise and Dust Controls in Underground Longwall Coal Mining National Institute for Occupational Safety and Health (NIOSH) Education and Resource Center (ERC) at University of Cincinnati (UC) Pilot Research Project (PRP) training grant

SMITH, DAVID A., LtCol,

Badiru, A.; Smith, D.; Grimaila, M.; Slagley, J.; Kee, P. and Thal, A. (2007), "IE Techniques Aid Air Force Disaster Response," Institute of Industrial Engineers, Online Digest, www.iienet.org September 18, 2007.

Smith, D. and Slagley, J. (2007). Graduate Education Opportunities at the Air Force Institute of Technology. Poster presentation at the DoD Force Health Protection Conference, 6-10 Aug, 2007, Louisville KY.

Smith, David A., Badiru A.B., Grimaila, M.R., Kee, P., Slagley, J., Thal A. Development of a Technology Based Medical triage and Situational Awareness Tool for Use in a CBRN Contingency/Deployed Environment. Funded amount: $335,341.00, FY 2007, funded through the Air Force Surgeon General's office. Role: Co-PI (grant writer) and technical/research lead.

STROUBLE, DENNIS

A-10 Case Study for AFIT Center for Systems Engingeering.

"Panel on NSA certifications" 2007 Southern Association for Information Systems, Jacksonville, FL, March, 2007.

TURNER, JASON M., Maj

Grimaila, M. R., Roehl, J., & Turner, J. (February-March 2007). *Internet Geolocation for Cyber Attack Attribution*. Proceedings of the 2007 Phoenix Challenge Information Operations Conference (PC 2007); Kirtland Air Force Base; Albuquerque, NM.

6. RESEARCH CENTER PUBLICATIONS AND FUNDING INFORMATION

The contents of this section are duplicated data, grouped by center. The information is previously listed within each project's specific department.

6.1. ADVANCED NAVIGATION TECHNOLOGY CENTER

Advanced Navigation Technology Center (ANT)
Director   255-3636 x4580
Executive Program Coordinator 255-3636 x4583
Laboratory Manager   255-3636 x4911
Homepage: http://www.afit.edu/en/ant

6.1.1. FUNDED RESEARCH PROJECTS

BLUE, PAUL A., Maj,

"Planning, Guidance and Control for Multiple UAV Cooperative Operations." Sponsor: AFRL/VA.
  Funding: $30,000. [ANT]

MARTIN, RICHARD K.,

"Infrastructure Cost for ANT Center: Navigation using Multicarrier Signals of Opportunity." Sponsor:
  AFRL/SN. Funding: $24,250. [ANT]

PETERSON, GILBERT L.,

"Biologically Motivated Autonomous Navigation and Cooperative Control." Sponsor: DAGSI. Funding:
  $20,160. [ANT]

"CANIS-Related Navigation Research Projects for the ANT-Laboratory." Sponsor: AFRL/SN. Funding:
  $50,000. [ANT]

RAQUET, JOHN F.,

"ANT Center and Laboratory Support." Sponsor: AFRL/SN. Funding: $242,000. [ANT]

"Development of High Accuracy TSPI Systems." Sponsor: 746th Test Squadron. Funding: $45,900. [ANT]

"Indoor Navigation Using Signals of Opportunity Integrated with Other Sensors." Sponsor: DARPA.
  Funding: $68,750. [ANT]

"Overcoming Geometric Deficiencies in Pseudolite Navigation." Sponsor: AFOSR. Funding: $99,855.
  [ANT]

"Sub-Surface Navigation." Sponsor: AFRL/SN. Funding: $31,250. [ANT]

"Transition to Laboratory Testing of Two-Way Time Transfer Measurements for Navigation." Sponsor:
  SAF. Funding: $16,061. [ANT]

SHEARER, CHRISTOPHER M., Maj,

"Flight Dynamics and Control of High Altitude Long Endurance Sensorcraft." Sponsor: AFRL/VA.
  Funding: $10,000. [ANT]

VASQUEZ, JUAN R., Lt Col,

"Target Tracking and Data Communication for Angel Fire." Sponsor: AFRL/SN. Funding: $89,042.
  [ANT]

"Target Tracking for the Missile Defense Agency." Sponsor: MDA. Funding: $50,000.

VETH, MICHAEL J., Maj,

"Synchronized Image-Inertial Data Collection and Processing System." Sponsor: NGA. Funding: $50,000.
  [ANT]

6.1.2. REFEREED JOURNAL PUBLICATIONS

PETERSON, GILBERT L.,

Peterson, G.L., and McBride, B.T., "Importance of Generalizability to Anomaly Detection," *Knowledge and Information Systems*. (electronic publication 24 March 2007, paper in press). [CCR]

Wardell, D.C., and Peterson, G.L., 2007, "Fuzzy State Aggregation and Policy Hill Climbing for Stochastic Environments," *International Journal of Computational Intelligence and Applications*, vol. 6:3, pp. 413-428. [ANT]

RAQUET, JOHN F.,

Veth, M. and J. Raquet, "Fusing Low-Cost Image and Inertial Sensors for Passive Navigation," *NAVIGATION: Journal of the Institute of Navigation*, Vol. 54, No. 1 (2007). [ANT]

VETH, MICHAEL J., Maj,

"Fusion of Low-Cost Inertial Systems for Precision Navigation," Veth, M.J., Raquet, J.R., *Journal of the Institute of Navigation,* Vol. 54, No. 1, pp. 11-20. [ANT]

6.1.3. REFEREED PRESENTATIONS

BLUE, PAUL A., Maj,

Burns, B., Blue, P., and M. Zollars: "Simulation of a Real-time Trajectory Generator for Automated Aerial Refueling with a Required Time of Arrival", Proceedings of the AIAA Modeling and Simulation Technologies Conference, Hilton Head, SC, August 2007. [ANT]

Zollars, M., Blue, P., and B. Burns: "Wind Corrected Flight Path Planning for Autonomous Micro Air Vehicles Utilizing Optimization Techniques", Proceedings of the AIAA Atmospheric Flight Mechanics Conference, Hilton Head, SC, August 2007. [ANT]

PETERSON, GILBERT L.

Woolley, B. and Peterson, G.L., Genetic Evolution of Hierarchical Behavior Structure, *GECCO 2007*, London, July 2007. (accepted March 2007). [ANT]

RAQUET, JOHN F.,

Dainty, B., J. Raquet, and R. Beckman, "Use of Two-Way Time Transfer Measurements to Improve Geostationary Satellite Navigation," *Proceedings of ION GNSS-2007*, Fort Worth, TX, Sep 2007. [ANT]

Raquet, J., M. Miller, and T. Nguyen, "Issues and Approaches for Navigation Using Signals of Opportunity," *Proceedings of 2007 National Technical Meeting of the Institute of Navigation*, San Diego, CA, Jan 2007. [ANT]

Amt, J. and J. Raquet, "Flight Testing of a Pseudolite Navigation System on a UAV," *Proceedings of 2007 National Technical Meeting of the Institute of Navigation*, San Diego, CA, Jan 2007. [ANT]

VETH, MICHAEL J., Maj,

Veth, M., "Fusing Imaging and Inertial Systems for Passive Navigation", presented at the *NASIC Disruptive Digital Conference*, Dayton, OH, October 2006. [ANT]

Fletcher, J. and Veth, M., "Real-Time Fusion of Image and Inertial Sensors for Navigation", presented at the *2007 ION Annual Meeting*, Cambridge, MA, April 2007. [ANT]

Veth, M. and Pachter, M., "Correspondence Search Mitigation Using Feature Space Anti-Aliasing", presented at the *2007 ION Annual Meeting*, Cambridge, MA, April 2007. [ANT]

Ebcin, S. and Veth, M., "Tightly-Coupled Image Aided Navigation Using the Unscented Kalman Filter", presented at the *2007 ION GNSS Meeting*, Ft. Worth, TX, September 2007. [ANT]

6.1.4. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

RAQUET, JOHN F.,

Raquet, J. and K. Cook, "Using Two-Way Time Transfer to Improve GPS Positioning Accuracy," presented at 2007 Joint Navigation Conference, Orlando, FL, April 2007. [ANT]

Amt, J. and J. Raquet, "High Precision Positioning Using Pseudolites at Non-GPS Frequencies," presented at 2007 Joint Navigation Conference, Orlando, FL, April 2007. [ANT]

VETH, MICHAEL J., Maj,

Fletcher, J. and Veth, M., "Real-Time Fusion of Inertial and Imaging Sensors for Navigation", presented at the *2007 Joint Navigation Conference*, Orlando, FL, April 2007. [ANT]

6.2. CENTER FOR DIRECTED ENERGY

Center for Directed Energy [CDE]
Director   255-3636 x7294
Program Coordinator   255-3636 x4706
Homepage: http://www.afit.edu/de/

6.2.1. FUNDED RESEARCH PROJECTS

CUSUMANO, SALVATORE J.,

"2007 Directed Energy Summer Intern Program: Introducing DoD DE to College Undergraduates. Sponsor: HELJTO. Funding: $38,922. [CDE]

"Airborne Aero-Optic Laboratory." Sponsor: HELJTO. Funding: $114,825. [CDE]

"Delivered Irradiance Assessment Tool (DIAT)." Sponsor: DETEC. Funding: $103,000. [CDE]

"High Energy Laser Modeling and Simulation Program: TAWG Product Development." Sponsor: AFRL/DE. Funding: $400,000. [CDE]

FIORINO, STEVEN T., Lt Col,

"Probabilistic HELEEOS Atmospheric Information for AFRL Weather Impact Analysis." Sponsor: AFRL/VA. Funding: $18,467 [CDE]

PERRAM, GLEN P.,

"AFOSR Center of Excellence in High Power Gas Phase Electric and Hybrid Laser Kinetics and Spectroscopy." Sponsor: AFOSR. Funding: $89,746. [CDE]

"Characterization of Excited Atomic Oxygen in RF and Microwave Discharges." Sponsor: AFRL/DE. Funding: $37,500. [CDE]

"Countering the IED Threat with Infrared Signatures." Sponsor: SAF. Funding: $100,000. [CMSR]

"Cryo-Cooled Ti-Sapphire Laser to be used in DPAL Experiments." Sponsor: AFRL/DE. Funding: $106,464. [CDE]

"High Power Diode Pumped Alkali Vapor Lasers and Analog Systems." Sponsor: HELJTO. Funding: $176,450. [CDE]

"Measure High Priority Kinetic Rates for DPALS." Sponsor: AFRL/DE. Funding $56,250. [CDE]

"Optical Diagnostics for the Production of Carbon Nanotubes from PLD." Sponsor: AFOSR. Funding: $43,205.

"Technical and Administrative Support for the AFOSR Center of Excellence in High Power Gas Phase and Electric Lasers." Sponsor: AFRL/DE. Funding: $103,000.

RUSSELL, TIMOTHY H., Maj,

"Stimulated Brillouin Scattering Phase Conjugation in Optical Fiber." Sponsor: HELJTO. Funding: $69,300. [CDE]

SCHMIDT, JASON D., Capt,

"Mitigating Atmospheric Turbulence through Robust Laser Beam Tilt Control." Sponsor: AFRL/DE. Funding: $25,000. [CDE]

6.2.2. FUNDED EDUCATIONAL PROJECTS

CUSUMANO, SALVATORE J.,

"2006 Directed Energy Summer Scholars Program, A Companion Program of the AFIT E2S2I Summer Internship Program". Sponsor: Directed Energy Professional Society Educational Committee. Funding: $30,000. [CDE]

PERRAM, GLEN P.,

"High Energy Laser Weapons Systems Short Course." Sponsor: DEPS Educational Committee. Funding: $17,500. [CDE]

6.2.3. REFEREED JOUNRAL PUBLICATIONS

CUSUMANO, SALVATORE J.,

Fiorino, S.T., R.J. Bartell, M.J. Krizo, and S.J. Cusumano, "Expected Worldwide, Low-Altitude Laser Performance in the Presence of Common Atmospheric Obscurants" *J. Dir Energy*, Vol 2, No. 4, 2007, pp. 363-375, 2007. [CDE]

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Gravley, L.E., S.T. Fiorino, R.J. Bartell, G. P. Perram, M. J. Krizo, and K. B. Le, "Comparison of Climatological Optical Turbulence Profiles to Standard, Statistical, and Numerical Models Using HELEEOS" *J. Dir Energy*, Vol 2, No. 4, pp. 347-362**,** 2007. [CDE]

MILLER, J. O.,

Long, Scott N., Miller, J.O., Brigantic, R.T., and Goda, M.E. "Using Defocus to Improve Peak Irradiance for Air-to-Ground High-Energy Chemical-Oxygen Iodine Laser (COIL) Weapons," Journal of Directed Energy, Vol 2, pp. 189-209, Spring 2007. [COA and CDE]

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Dolezal, Michael W., and Glen P. Perram, "Predissociation of Bi_2 $A(0_u^+)$, v'=21-39", Journal of Chemical Physics 126, 084310, 1-6 (Feb 2007). [CDE]

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RUSSELL, TIMOTHY H., Maj,

K. C. Brown, T. H. Russell, T. G. Alley, and W. B. Roh, "Passive combination of multiple beams in an optical fiber via stimulated Brillouin scattering," *Opt. Lett.*, 32, 1047-1049, 2007. [CDE]

N. B. Terry, K. T. Engel, T. G. Alley, and T. H. Russell, "Use of a Continuous Wave Raman Fiber Laser in Graded-Index Multimode Fiber for SRS beam Combination," *Opt. Expr.*, 15, 602-607, 2007. [CDE]

6.2.4. REFEREED PRESENTATIONS

CUSUMANO, SALVATORE J.,

Fiorino, S.T. R.J. Bartell, M.J. Krizo, G.P. Perram, D.J. Fedyk, K.P. Moore, T.R. Harris, and S.J. Cusumano, "Worldwide Mission Planning Tool for Tactical High Energy Laser Systems Operating at Wavelengths Up to 14 μm," (Paper AIAA-2007-7569) 5th AIAA Biennial National Forum on Weapon System Effectiveness, Huntsville, AL, October 2007. [CDE]

Fiorino, S.T. R.J. Bartell, M.J. Krizo, D.J. Fedyk, K.P. Moore, T.R. Harris, S.J. Cusumano, R. Richmond, and M.J. Gebhardt, "Worldwide Uncertainty Assessments of LADAR Performance for Diverse Low Altitude Atmospheric Environments at 1.064 μm and 1.557 μm," (Paper AP02) MSS Active E-O Systems, Atlanta, GA, September 2007.[CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355 μm to 10.6 μm," (SPIE Paper 6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. [CDE]

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Essenhigh, Katherine and Glen Perram, "2-D Temperature and Pressure Maps by Planar Laser Induced Fluorescence of a Low Pressure Mach 2 Supersonic Nozzle Flow: Comparisons for Different Back Pressures found in Gas Dynamic Lasers" (Paper AIAA-2007-3875) 38th AIAA Plasmadynamics and Lasers Conference, Miami, FL June 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355 μm to 10.6 μm," (SPIE Paper 6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. [CDE]

Gallagher, Jeffrey E., Glen P. Perram, and Skip Williams, "Ultrasensitive Absorption Measurements of Metastable Species: Pressure Broadening of the $b^1\Sigma g \rightarrow a^1\Delta g$ (1,0) Band in Oxygen Using Off-Axis Integrated-Cavity Output Spectroscopy", 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 8-11, 2007. Proceedings of the AIAA, AIAA-2007-1359 (2007). [CDE]

Fiorino, S.T., Richard J. Bartell, Glen P. Perram, Matthew J. Krizo, Daniel J. Fedyk, and Salvatore J. Cusumano "Worldwide Estimates & Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 24 km and Below at Wavelengths 0.355 to 14 μm" SPIE Defense & Security Symposium, Atmospheric Propagation IV,Orlando, FL, April 2007. SPIE Proceedings Vol. 6551 (2007).

Gross, Kevin C., Joseph Wymann, and Glen P. Perram, "Phenomenological Fireball Model for Remote Identification of High-Explosives" SPIE Defense & Security Symposium, Orlando, FL, April 2007. SPIE Proceedings Vol. 6551 (2007) [CMSR]

Hawks, Michael, and Glen P. Perram, "Passive Ranging of Boost Phase Missiles" SPIE Defense & Security Symposium, Acquisition, Tracking, Pointing, and Laser Systems Technologies XXI, Orlando, FL, April 2007. SPIE Proceedings Vol. 6569 (2007). [CDE]

6.2.5. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

CUSUMANO, SALVATORE J.,

Wisdom, B.W., S.T. Fiorino, R.J. Bartell, M.J. Krizo, and S.J. Cusumano, "Assessment of Optical Turbulence Profiles Derived from Probabilistic Climatology," 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. 9CDE)

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, M.J., J.E. McCrae, and S.J. Cusumano, "Assessment of High Energy Laser Delivered Irradiance Derived from Off-Axis Atmospheric Scatter," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Uncertainty Assessments of Ship Defense High Energy Laser Performance in Various Worldwide Maritime Environments at Wavelengths of 1.045 μm, 1.625 μm, and 2.141 μm," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Bartell, R.J., S.T. Fiorino, G.P. Perram, M.J. Krizo, T.P. Huster, J.P. Cheney, Cusumano S.J., E.P. Magee, M.R. Whiteley, and A. Ngwele "Comparison of Peak Irradiance and Power-in-the-Bucket Predictions Among Several Scaling Law Models and WaveOptics Codes Over Diverse Low Altitude Operating Regimes" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

Fiorino, S.T., R.J. Bartell, J.D. Eckel, M.J. Krizo, S.J. Cusumano, "Application and Impacts of Ground-to-Space Cloud Free Line of Sight Probabilities to Air-to-Ground High Energy Laser Engagement Scenarios" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

FIORINO, STEVEN T., Lt Col,

Wisdom, B.W., S.T. Fiorino, R.J. Bartell, M.J. Krizo, and S.J. Cusumano, "Assessment of Optical Turbulence Profiles Derived from Probabilistic Climatology," 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, M.J., J.E. McCrae, and S.J. Cusumano, "Assessment of High Energy Laser Delivered Irradiance Derived from Off-Axis Atmospheric Scatter," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

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Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, L.E. Gravley, T.P. Huster, J.P. Cheney, and K.B. Le, "Expected Worldwide Laser Performance in Spectrally Diverse Near Earth Scenarios in the Presence of Common Atmospheric Obscurants" Military Sensing Symposia Active E-O System Symposium, Monterey CA, 26-28 Sep 2006. [CDE]

MARCINIAK, MICHAEL A.,

Harkiss, S.I. and M.A. Marciniak, "AFIT's large commercial aircraft infrared signature tool," 2006 Advanced Signatures Technology Symposium, Wright-Patterson AFB OH, 7-9 November 2006. [CDE]

Orth, D.F., M.A. Marciniak, S.J. Cusumano and R.L. Beauchamp, "An infrared camera simulation estimating the signal-to-noise ration and spatial temperature profile of an ABL-illuminated target," 2007 Directed Energy Test & Evaluation Conference, Albuquerque, NM, 7-9 August 2007. [CDE]

Krizo, M.J., R.J. Bartell, E.P. Magee, S.T. Fiorino, R.L. Beauchamp, M.A. Marciniak, W.F. Bailey and S.J. Cusumano, "High Fidelity Simulation of a Bi-Static Measurement of Delivered Irradiance on Target," 2007 Directed Energy Test & Evaluation Conference, Albuquerque, NM, 7-9 August 2007. [CDE]

Whiteley, M., M.A. Marciniak and S.J. Cusumano, "Algorithm for the Estimation of Delivered Irradiance on Target," 2007 Directed Energy Test & Evaluation Conference, Albuquerque, NM, 7-9 August 2007. [CDE]

Cusumano, S.J., M.A. Marciniak, W.F. Bailey, S.T. Fiorino, M. Whiteley, M.J. Krizo, R.L. Beauchamp, E.P. Magee, R.J. Bartell, K.C. Gross and D.F. Orth, "Delivered Irradiance Assessment Tool," Final Report (2007). [CDE]

PERRAM, GLEN P.,

Bartell, Richard, Steven Fiorino, Matthew Krizo, Glen Perram, Todd Huster, Justin Cheney, Eric Magee, Matthew Whiteley, and Amy Ngwele, "Comparison of Peak Irradiance and Power in the Bucket Predictions Among Several Scaling Law Models and Wave Optics Codes Over Diverse Low Altitude Operating Regimes", Ninth Annual Directed Energy Symposium, Albuquerque, NM, Nov 2006. [CDE]

Essenhigh, Katherine and Glen Perram, "Planar Laser Induced Fluorescence for Supersonic Flow Visualization" Ninth Annual Directed Energy Symposium, Albquerque, NM, Nov 2006. [CDE]

William, Skip, Jeffrey Gallagher and Glen Perram, "Collisional broadening coefficients of singlet ($a^1\Delta_g$) oxygen with helium", 59th Annual Gaseous Electronics Conference, Columbus, OH, Oct 2006. [CDE]

Gross, Kevin C. and Glen P. Perram, "Developing a Phenomenological Model of Infrared Emissions from Detonation Fireballs for Explosive Identification" 8th Workshop on Infrared Remote Sensing Applications, Mont Sainte-Anne, Quebec, Canada, Oct 2006.
[CMSR]

Gross, Kevin C., Glen P. Perram, Ronald F. Tuttle, "Using fireball signatures and phenomenology to distinguish high explosives" 2nd Annual Advanced Signatures Technology Symposium, Air Force Institute of Technology, Wright Patterson Air Force Base, OH, 7-9 Nov 2006. [CMSR]

RUSSELL, TIMOTHY H., Maj,

Terry, N.B., K. Engel, T. G. Alley, T. H. Russell, and W. B. Roh, "Forward and Backward Seeded Continuous-Wave Raman Fiber Amplifiers Based on Multimode Fibers", Presented at Photonics West, 2007. San Jose, California. [CDE]

Terry, N.B., B. Flusche, K. Engel, T. G. Alley, T. H. Russell, and W. B. Roh, "Beam Cleanup and Beam Combination in Raman Fiber Amplifiers and Lasers based on Multimode Fibers", Presented at the Directed Energy Symposium, 2006. Los Angeles, California. [CDE]

6.2.6. SUBSTANTIAL CONSULTATIONS

FIORINO, STEVEN T., LtCol,

Fiorino, Steven T., "Cloud Free Line of Sight Analysis" for Dr James Horkovich and Raytheon RMS Systems Engineering, Tucson, AZ, April 2007. [CDE]

Fiorino, Steven T., "Atmsopheric Effects on Low-Altitude Laser Performance Analysis" for the National Academy of Science, Board on Army Science and Technology, Washington DC, May - August 2007. [CDE]

MARCINIAK. MICHAEL A.,

Cusumano, S.J., M.A. Marciniak, W.F. Bailey, and J.E. McCrae, "Delivered Irradiance Assessment Tool (DIAT)," Directed Energy Test and Evaluation Capability, Oct 2006-Sep 2007. [Center for Directed Energy] [CDE]

Marciniak, M.A., "Infrared optical signature measurement research," Signature Division, Sensors Directorate, Air Force Research Laboratory (AFRL/SNS), Oct 2006-Sep 2007. 9CDE)

Marciniak, M.A., "Infrared counter-countermeasure research," Sensor Materials Branch, Survivability and Sensor Materials Division, Materials and Manufacturing Directorate, AFRL (AFRL/MLPJ), Oct 2006-Sep 2007. [CDE]

## 6.3.	CENTER FOR CYBERSPACE RESEARCH

Center for Cyberspace Research (CCR)
Director	255-6565 x4278
Executive Program Coordinator 255-3636 x4602
Homepage: http://www.afit.edu/ccr/

6.3.1. FUNDED RESEARCH PROJECTS

MILLS, ROBERT F.,

"Insider Threat Research Laboratory and Ongoing Research of Investigating Methods, Algorithms and Approaches to Reduce the Risk of the Insider Threat Problem." Sponsor: NSA. Funding: $10,000. [CCR]

"Technical Support, Information/Cyber Operations: Sensing Applications." Sponsor: AFIOC/IO. Funding: $15,000. [CCR]

MULLINS, BARRY E.,

"Air Force Communications Systems Modeling." Sponsor: AFCA. Funding: $64,000. [CCR]

RAINES, RICHARD A.,

"AFIT Transformation Chair." Sponsor: SECDEF. Funding: $166,700. [CCR]

"Target Discovery, Sensor Fusion, and Mitigation Analysis." Sponsor: AFRL/SN. Funding: $225,000. [CCR/COA]

WILLIAMS, PAUL D., Maj,

"AFIT Support for AFRL Cybercraft Project." Sponsor: AFOSR. Funding: $40,000." [CCR]

"Development of an Air Force Cyber Warfare Realistic Training Model." Sponsor: AFRL/HE. Funding: $25,000. [CCR]

6.3.2. FUNDED EDUCATIONAL PROJECTS

RAINES, RICHARD A.,

"Anti-Tamper Software Protection Initiative Education, Outreach, and Research." Sponsor: AFRL/SN. Funding: $75,000. [CCR]

"Development of a Federal Cyber Force at the Air Force Institute of Technology." Sponsor: NSF. Funding: $510,710. [CCR]

"Tuition and Resource Support for AFIT Center for Information Security Education and Research." Sponsor: NSA. Funding: $317,448. [CCR]

6.3.3. REFEREED JOURNAL PUBLICATIONS

BALDWIN, RUSTY O.,

K. S. Edge, R. A. Raines, R. O. Baldwin, M. R. Grimaila, R. W. Bennington, and C. E. Reuter, "Analyzing Security Measures for Mobile Ad Hoc Networks Using Attack and Protection Trees," *Journal of Information Warfare,* August 2007, Vol. 6, No. 2, pp. 25-38. [CCR]

V. P. Hubenko, Jr., R. A. Raines, R. F. Mills, R. O. Baldwin, B. E. Mullins and M. R. Grimaila, "Improving Satellite Multicast Security Scalability by Reducing Re-keying Requirements," *IEEE Network Special Issue on Advances in Network Systems Architecture*, July/August 2007, pp. 51-56. [CCR]

G. R. Roelke, R. O. Baldwin, B. E. Mullins and Y. C. Kim, "A Cache Architecture for Extremely Unreliable Nanotechnologies," *IEEE Transactions on Reliability*, June 2007, Vol. 56, No. 2, pp. 182-197. [CCR]

S. D. Bass and R. O. Baldwin, "A Model for Managing Decision-Making Information in the GIG-Enabled Battlespace," *Air & Space Power Journal* (*ASPJ*), Summer 2007, Vol. 21, No. 2, pp. 100-108. [CCR]

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R. O. Baldwin, B. S. Peterson, and R. F. Mills, "Using Playing Cards to Estimate Interference in Frequency-Hopping Spread Spectrum Radio Networks," *Journal of Systems and Software*, December 2006, Vol. 79, No. 12, pp. 1782-1788. [CCR]

D. J. Chaboya, R. A. Raines, R. O. Baldwin, and B. E. Mullins, "Network Intrusion Detection: Automated and Manual Methods Prone to Attack and Evasion," *IEEE Security and Privacy*, November/December 2006, Vol. 4, No. 6, pp. 36-43. [CCR]

V. P. Hubenko, R. A. Raines, R. F. Mills, R. O. Baldwin, B. E. Mullins, and M. R. Grimaila, "Improving the Global Information Grid's Performance Through Satellite Communications Layer Enhancements," *IEEE Communications Magazine*, November 2006, Vol. 44, No. 11, pp. 66-72. [CCR]

MILLS, ROBERT F.,

Roberts, M.L., Temple, M.A., Raines, R.A., Mills, R.F., and Oxley, M.E., "Communication Waveform Design Using an Adaptive Spectrally Modulated, Spectrally Encoded (SMSE) Framework," *IEEE Journal on Selected Topics in Signal Processing*, Vol. 1, No. 1, June 2007, pp. 203-213. [CCR]

Franz. T.P., Durkin, M., Williams, P.D., Raines, R.A., and Mills, R.F., "Defining IO Forces," *Air and Space Power Journal*, Vol. XXI, No. 2, AFRP 10-1, Summer 2007, pp. 53-66. [CCR]

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Rodriguez, B.M., Peterson, G.L., and Agaian, S.S., "Steganalysis Feature Improvement Using Expectation Maximization," *In Mobile Multimedia/Image Processing for Military and Security Applications of the SPIE Symposium on Defense and Security*, Orlando, FL, 9-13 April 2007, pp. 6575030.1-6575030.6. [CCR]

Karrels, D., Peterson, G.L., and Williams, P., "Architecture for Deploying Lightweight Cybercraft," presented at the Cyber Defense Workshop, Rome, NY, April 2007. [CCR]

RAINES, RICHARD A.,

Cyberwarrior Training in Progress," *Defense Systems* interview, Sept/October 2007, pp. 12-16.

"Cyberspace Challenges: Present and Future," presented at the *AETC Symposium*, San Antonio, Texas, 6-7 September 2007.

"Education Opportunities Expand with Cyber Command," Air Force Times interview, July 16, 2007.

"Air Force Cyber Education," presented at the *Cyber Academics Thought Leadership Forum*, Omaha, Nebraska, June 2007.

"Cyber Threats and Challenges," 30 minute radio discussion presented on Clear Channel Radio, FM 93.3, Dayton, Ohio, May 20, 2007

"Cyber Threats, Challenges, and Future Technologies," presented at the *Future Technologies for the Warfighter Workshop*, Air Command and Staff College, Montgomery AL, April 2007.

"The Center for Cyberspace Research," presented to Mr. Michael J. Wynne, Secretary of the Air Force, Wright Patterson AFB OH, March 2007.

WILLIAMS, PAUL D., Maj,

Stephen Mott, Paul Williams, "Creating Hardware-based Primitives That Facilitate the Exposure of State Information Useful for Security Related Monitoring," *Proceedings of the 2007 International Conference on Information Warfare and Security*; Naval Postgraduate School, Monterey, CA; Mar. 8-9, 2007. [CCR]

Maj Paul Williams, Dr. Rick Raines, Dr Bob Mills, Dr. Mike Temple, Dr. Mike Grimaila, Dr. Barry Mullins, NSA LTS invited talk "Security Focused Computing Architectures: Hardware Primitives for Runtime Security Monitoring," Aug 07, [CCR]

Maj Paul Williams, Invited Talk to Intel Corporation, "Security Focused Computing Architectures: Hardware Primitives for Runtime Security Monitoring," Aug 07 [CCR]

Maj Paul Williams, AFOSR Software and Systems and Security Program Review, Invited Talk, "CyberCraft Support," Syracuse NY, June 07 [CCR]

Maj Paul Williams, Dr. Rick Raines, Invited talk at USSTRATCOM/Omaha Chamber of Commerce, "USAF Needs for Cyber Education," June 07, [CCR/ENG/HAF]

Maj Paul Williams, Mr. Al-Nat Tuting, AFRL/IF Cyber Defense Conference, Invited Talk, "Computing Architectures for Better Security," Rome, NY, May 07 [CCR]

Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Air Force Cyber Education Summit Overview," Rome, NY, May 07 [CCR]

Maj Andy Hansen, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Realistic Training in Cyberspace," Rome, NY, May 07 [CCR]

Lt Rich Dill, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Built-in 'Seeds of Destruction," Rome, NY, May 07 [CCR]

Maj Mike Mendenhall, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Cyber Kill Chain," Rome, NY, May 07 [CCR]

Lt Dan Karrels, Dr. Bert Peterson, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Architecture for Deploying Lightweight CyberCraft," Rome, NY, May 07 [CCR]

Maj Paul Williams, AFRL/IF, CyberCraft Workshop, Invited Talk, "Use of Trust Vectors for CyberCraft and the Limits of Usable Data History for Trust Vectors," Colorado Springs, CO, Apr 07 [CCR]

Maj Paul Williams, Dr. Rick Raines, Presentation to SECAF, "AFIT's Contributions to Cyber Warfare Briefing," AFIT, Mar 07 [CCR/ENG]

Maj Paul Williams, Dr. Bob Mills, Dean Thomas, "USAF Scientific Advisory Board for Cyber Defense," 8AF, Barksdale, LA, Feb 07 [CCR]

Maj Williams, Paul D., Dr. Rick Raines, Dr. Bob Mills, Consultations at AU about how to best incorporate cyber warfare into AU PME, Jan 07 [CCR]

Maj Williams, Paul D., Dr. Robert Mills, Short course, "Introduction to Cyber Warfare," Lackland AFB, TX, Nov 06 [CCR] Maj Paul Williams, NSA Cyber Defense Workshop, "CuPIDS: Parallel-based Security Architectures", Dec 06 [CCR]

Maj Paul Williams, Dr. Rick Raines, "AFIT/AFRL Research Relationship Building," Rome NY, Oct 06 [CCR]

6.3.6. SUBSTANTIAL CONSULTATIONS

MILLS, ROBERT F.,

Mills, R.F., Raines, R.A., Hopkinson, K.M., Grimaila, M.R., and Baldwin, R.O., "Technical Support, Information/Cyber Operations," Air Force Information Operations Center, Nov 2006-Sep 2007. [CCR]

Mills, R.F., and Peterson, G.L., "Insider Threat Research," National Security Agency, Oct 2006-Sep 2007. [CCR]

MULLINS, BARRY E.,

Mullins, B. E., "AF Communication Systems Modeling," Air Force Communications Agency, April 2007 – September 2007. [CCR]

Mullins, B. E., Baldwin, R. O. and Temple, M. A., "Technical Support: Ground Mobile Objective Gateways (GMOG)," Air Force Research Lab – Munitions Directorate, June 2006 – September 2007. [CCR]

WILLIAMS, PAUL D., Maj,

Williams, Paul D., "Cyber Force Development--Cyber Education and Training," By-name designee to develop the knowledge, skills, and ability training requirements for the future cyber warfare forces, supported HQ AF, 8AF, AFCYBER, NSA, Oct 2006-Oct 2007. [CCR]

Mills, Robert F. and Williams, Paul D., "Cyber Force Development--Cyber PME", supported Dr. Mills in developing the cyber warfare doctrine and material required for PME for all Airmen, supported AU, HQ AF, 8AF, AFCYBER, NSA, Oct 2006-Oct 2007. [CCR]

6.4. CENTER FOR MASINT STUDIES AND RESEARCH

Center for MASINT Studies and Research [CMSR]
Chair   255-3636 x4536
Executive Program Coordinator 255-7287
FAX   656-6000
Homepage: http://www.afit.edu/cmsr/

6.4.1. FUNDED RESEARCH PROJECTS

PETROSKY, JAMES C.,

"Analysis of Residual Memory Effects in Military Memory Systems." Sponsor: AFRL/SN. Funding: $32,240. [CMSR]

TUTTLE, RONALD F.,

"Establishing an Expert-Defined Protocol for Analytical Tradecraft with Career Specialization in Denail and Deception." Sponsor: NASIC. Funding: $75,000. [CMSR]

"JWICS Connectivity Support." Sponsor: NASIC. Funding: $50,000. [CMSR]

6.4.2. FUNDED EDUCATIONAL PROJECTS

TUTTLE, RONALD F.,

"Advanced Geospatial Intelligence Education." Sponsor: NGA. Funding: $510,000. [CMSR]

"MASINT Academic Support." Sponsor: AFRL/SN. Funding: $100,000. [CMSR]

6.4.3. REFEREED PRESENTATIONS

BOHN, MATTHEW J., LtCol,

Bohn, M.J. and M.A. Lundin, "Remote Sensing phase fluorimetry using a mercury vapor lamp," Proceedings of SPIE, Vol 6555, 27 Apr 2007. [CMSR]

PERRAM, GLEN P.,

Gross, Kevin C., Joseph Wymann, and Glen P. Perram, "Phenomenological Fireball Model for Remote Identification of High-Explosives" SPIE Defense & Security Symposium, Orlando, FL, April 2007. SPIE Proceedings Vol. 6551 (2007) [CMSR]

6.4.4. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

BOHN, MATTHEW J., LtCol,

Bohn, M.J. and M.A. Lundin, "Passive Remote Sensing of Uranyl Compounds," Advanced Signatures Technology Symposium, 18 -20 Sep 2007, NPS, Monterey, CA [CMSR]

Bohn, M.J. and M.A. Lundin, "Passive Remote Sensing of Uranyl Compounds," Advanced Signatures Technology Symposium, AFIT, Nov 2006. [CMSR]

PERRAM, GLEN P.

Gross, Kevin C. and Glen P. Perram, "Developing a Phenomenological Model of Infrared Emissions from Detonation Fireballs for Explosive Identification" 8th Workshop on Infrared Remote Sensing Applications, Mont Sainte-Anne, Quebec, Canada, Oct 2006. [CMSR]

Gross, Kevin C., Glen P. Perram, Ronald F. Tuttle, "Using fireball signatures and phenomenology to distinguish high explosives" 2nd Annual Advanced Signatures Technology Symposium, Air Force Institute of Technology, Wright Patterson Air Force Base, OH, 7-9 Nov 2006. [CMSR]

6.5.   CENTER FOR OPERATIONAL ANALYSIS

Center for Operational Analysis (COA)
Director   255-6565 x4326
Projects Director   255-6565 x4251
Homepage: http://www.afit.edu/coa/

6.5.1.   FUNDED RESEARCH PROJECTS

BAUER, KENNETH W. Jr.,

"Sensor Fusion for Automatic Target Recognition." Sponsor: AFOSR. Funding: $51,390. [COA]

"Sensor Fusion for Automatic Target Recognition." Sponsor: ACC. Funding: $32,000. [COA]

DECKRO, RICHARD F.,

"AFIT/ENS and AFRL/HE Human Effectiveness Directorate MOA." Sponsor: AFRL/HE. Funding $25,000. [COA]

JOHNSON, ALAN W.,

"Reusable Space Vehicle Ground Operations." Sponsor: AFRL/VA. Funding: $35,000. [COA]

MELOUK, SHARIF H.,

"AFIT Modeling and Simulation Support for Air Vehicles Directorate." Sponsor: AFRL/VA. Funding: $30,015. [COA]

MILLER, JOHN O.,

"Air Force Standard Analysis Toolkit (AFSAT) Support." Sponsor: SAF. Funding: $65,000. [COA]

MOORE, JAMES T.,

"Application of Metaheuristics to Air Force Problems." Sponsor: AFOSR. Funding: $50,000. [COA]

6.5.2.   REFEREED JOURNAL PUBLICATIONS

BAUER, KENNETH W. Jr.,

Bednar, E.M., Bauer, K.W., and J.O. Miller, "Use of Control Variates in a Large-Scale Aggregated Combat Model", Journal of Defense Modeling and Simulation, Vol 4, Number 1, Jan 2007, pages 29 - 41. [COA]

Clutz, T. C., Bauer, K. W., and M. E. Oxley," Fault Detection Subsystem Optimization", Journal of Operations and Logistics, Issue 1, Volume 1, 2006. [COA]

Miller, J.O., Bauer, K.W. Jr., Faas, P., Pawling, C.R., and Sterling, S.E., "Multivariate Analysis of a Simulated Prognostics and Health Management System", International Journal of Logistics: Research and Applications , Vol. 10, No.1, March 2007, 1-10. [COA]

JOHNSON, ALAN W.,

Moore, T., Johnson, A., Rehg, M., and Hicks, M., 2007, "Quality Assurance Staffing Impacts in Military Aircraft Maintenance Units", Journal of Quality in Maintenance Engineering 13(1): 33-48. [COA]

Ford, C., J. Howe, A. Johnson, and J. Bell, 2006, "Automatic Test Systems: Unique versus Common Management", Defense Acquisition Review Journal Dec 06-Mar 07: 170-185. [COA]

MILLER, J. O.,

Bednar, Earl M., Bauer, K.W. Jr, and Miller, J.O. "Use of Control Variates in a Large-Scale Aggregated Combat Model," The Journal of Defense Modeling and Simulation: Applications, Methodology, Technology, Vol 4 No. 1, pp. 29-41, January 2007. [COA]

Long, Scott N., Miller, J.O., Brigantic, R.T., and Goda, M.E. "Using Defocus to Improve Peak Irradiance for Air-to-Ground High-Energy Chemical-Oxygen Iodine Laser (COIL) Weapons," Journal of Directed Energy, Vol 2, pp. 189-209, Spring 2007. [COA and CDE]

Miller, J.O., Bauer, K.W. Jr., Faas, P., Pawling, C.R., and Sterling, S.E. "Multivariate Analysis of a Simulated Prognostics and Health Management System," International Journal of Logistics: Research and Applications, Volume 10, No. 1, pp. 1-10, Mar 2007. [COA]

WEIR, JEFFERY D., Lt Col,

Bullock, R. K., R. F. Deckro, and J. D. Weir, "Methodology for Competitive Strategy Development", forthcoming in Computers & Operations Research (Available online 13 November 2006). [COA]

Braziel, C., Thal, A.E. and Weir, J.D., "Evaluating the Effectiveness of Utility Privatization Efforts", Journal of Facility Management 5:2, pp 86 - 102 (2007). [COA]

6.5.3. REFEREED PRESENTATIONS

BAUER, KENNETH W. Jr.,

Smetek, T.E., K.W. Bauer, "Finding Hyperspectral Anomalies Using Multivariate Outlier Detection," Proceedings of the 2007 IEEE Aerospace Conference, March 2007. [COA]

Friend, M. A. and K.W. Bauer, "ROC Trajectory Measures for Classifier Accuracy and Robustness, "Proceedings of the Artificial Neural Networks in Engineering Conference (ANNIE 2006), Editors: C. Dagli, D. Enke, A. Buczak, M. Embrechts, O. Ersoy, , St. Louis, MO, 5-8 November 2006. [COA]

JOHNSON, ALAN W.,

Cole, G. and Johnson, A.W., "Logistics Composite Model Variance Reduction". INFORMS National Meeting, Pittsburgh, November 4-8 2006. [COA]

Jackson, W., Cunningham, W., and Johnson, A., "Pure Pallet Program Viability for Military Retrograde Shipments", POM 18th Annual Conference, Dallas, May 4-7 2007. [COA]

Michalski, S. and Johnson, A.W., "Ground Support Staffing for Reusable Launch Vehicle Generation." 42nd Annual SOLE International Logistics Conference and Exhibition, 19-23 August 2007, Pittsburgh. [COA]

Michalski, S. and Johnson, A.W., "Logistics Personnel Requirements for Ground Support of a Reusable Military Launch Vehicle", Proceedings of the American Institute of Aeronautics and Astronautics Space 2007 Conference, Long Beach CA, AIAA-2007-6273. [COA]

Michalski, S. and Johnson, A.W., "Manpower Requirements for Reusable Military Launch Vehicle Regeneration", 75th MORS Symposium, Annapolis, 12-14 June 2007. [COA]

KNIGHTON, SHANE A., Maj,

Gentil, Kathy and Shane A. Knighton, "Developing Advanced Academic Degree Educational Profiles for Career Fields", INFORMS International, Puerto Rico, July 2007. [COA]

Knighton, Shane. "Network Flow Model for Optimizong Fighter Squadron Selection", Royal Military Academy, Kingston, Ontario, June 07. [COA]

Capt. Jennifer L Geffre, Dr Richard F Deckro and Maj. Shane Knighton, USAF, "Risk Analysis: Critical Components in Terrorist Attacks", Presented in WG 8, 75th Military Operations Research Society Symposium, June 2007. [COA]

Gentil, Kathy and Shane A. Knighton, "Developing Advanced Academic Degree Educational Profiles for Career Fields", Decision Analysis Affinity Group, Stanford, CA, March 07. [COA]

MELOUK, SHARIF H.,

Melouk, S. and P. Damodaran. (2007), "Analysis of the Passenger Security Screening Process using Simulation Optimization". Proceedings of the Sixteenth Industrial Engineering Research Conference, Nashville, TN, May 19-23. [COA]

Melouk, S. and K. Cavallaro (2007), "Analyzing the Interdiction of Sea-Borne Threats Using Simulation Optimization". Proceedings of the Sixteenth Industrial Engineering Research Conference, Nashville, TN, May 19-23. [COA]

Melouk, S., M. Perry, and M. Carras. (2006). BDA Enhancement Methodology using Situational Parameter Adjustments. INFORMS Conference, Pittsburgh, PA. November 5-8. [COA]

MILLER, J. O.,

Honabarger, Jason B. and Miller, J.O. "Modeling and Measuring Network Centric Warfare (NCW) With the System Effectiveness Analysis Simulation (SEAS)," 11th International Command and Control Research Technology Symposium, Cambridge, UK, 26-28 Sep 2006. [COA]

MOORE, JAMES T.,

Burks, Robert E. and James T. Moore, "Solving the Theater Distribution Problem with Tabu Search, Military Operations Research Society Symposium, Annapolis, MD, 12-14 Jun 2007. [COA]

Moore, James T., "Application of Metaheuristics to Air Force Problems", AFOSR Optimization and Discrete Mathematics Program Review, Arlington, VA 7-9 May 2007. [COA]

Burks, Robert E. and James T. Moore, "An Adaptive Tabu Search Heuristic for the LPDLTW with a Theater Distribution Application", Institute for Operations Research and the Management Sciences (INFORMS) Conference, Pittsburgh, PA, 5-8 Nov 2006. [COA]

Burks, Robert E. and James T. Moore, "An Adaptive Tabu Search Heuristic for the Theater Distribution Problem", Air Force Operations Research Society Symposium, Albuquerque, NM, 18-20 Oct 2006. [COA]

ZALEWSKI, DANIEL J., Col,

Maj. Michael J Artelli , Dr Richard F Deckro, Dr Marcus B Perry and Col. Daniel J Zalewski, "Public Resolve: The Casualty of the "Long War", Presented in WG 8 and WG 32, 75th Military Operations Research Society Symposium, June 2007. [COA]

6.5.4. OTHER PRESENTATIONS PUBLICATIONS AND PROFESSIONAL ACTIVITIES

ANDERSON, BRADLEY E., Lt Col, [COA]

Reviewer: Decision Sciences Institute (DSI) Journal & Journal of Applied Mathematics and Decision Sciences (JAMDS).

BAUER, KENNETH W. Jr., [COA]

QWEST member: Dr. Steve Rogers, Chief Scientist for Sensor Fusion and ATR at AFRL/SN has formed a QWEST advisory board to develop a new way to approach pattern recognition problems. The members are Dr. Rogers, Dr Matt Kabrisky (AFIT EE emeritus professor), Dr. Oxley (Mathematic Dept.), and Dr. Bauer (Operational Sciences Dept.)

JOHNSON, ALAN W., [COA]

Session Chair, Air Force Supply Chain Analysis, INFORMS National Meeting, November 5-8, 2006, Pittsburgh.

Sessions Chair, Air Force Supply Chain Analysis, Defense Logistics Analysis, INFORMS National Meeting, November 4-7, 2007, Seattle.

Vice Chair, Space Logistics Technical Committee, American Institute of Aeronautics and Astronautics.

Council Member, Military Applications Society, INFORMS.

Member: Military Operations Research Society (MORS)/ Production and Operations Management Society (POMS).

Manuscript Reviewer: European Journal of Operational Research and Military Operations Research Journal.

KNIGHTON, SHANE A., Maj, [COA]

Member, Institute for Industrial Engineers and INFORMS.

MELOUK, SHARIF H., [COA]

Dayton Area Graduate Studies Institute (DAGSI) Representative.

Special Session Organizer & co-Chair, Flexible Automation and Intelligent Manufacturing Conference, Philadelphia, PA. June 18-20, 2007.

Session Organizer & Chair, Industrial Engineering Research Conference, Nashville, TN. May 19-23, 2007.

Treasurer, INFORMS Cincinnati/Dayton Chapter, 2006-07.

Membership Committee Member, INFORMS Simulation Society, 2006-07.

Referee for: European Journal of Operational Research, International Journal of Production Economics, Proceedings of 2007, and Industrial Engineering Research Conference.

MILLER, J. O., [COA]

INFORMS Simulation Society Council Representative (elected position).

Judge for MORS Rist Prize 2006 & 2007.

Associate Editor for International Journal of Operations Research.

Journal Referee: Military Operations Research, International Journal of Logistics: Research and Applications, and
The Journal of Defense Modeling and Simulation.

Member AF Modeling and Simulation Workforce Development Working Group.

MOORE, JAMES T., [COA]

Advisor to Student INFORMS chapter, MORS student chapter, and Omega Rho international operations research society.

Associate Editor for journal Military Operations Research.

Member of Editorial Board for International Journal of Operational Research.

Military Operations Research Society (MORS) Working Group 18 (Mobility and Transport of Forces) Chair.

MAS Cluster Chair and a MAS session chair for INFORMS 2007 conference.

Judge for student competition at the 2007 MORS Education Colloquium and Professional Development Conference.

Member: MORS, INFORMS, Tau Beta Phi, Omega Rho, and Phi Beta Kappa.

Referee for: IIE Transactions, Omega, and European Journal of Operational Research.

6.5.5.   SUBSTANTIAL CONSULTATIONS

ANDERSON, BRADLEY E., Lt Col,

Advisor to Army Joint Logistics Education & Development Forum, May 2007. [COA]

JOHNSON, ALAN W.,

1FW, 1AMXS, Langley AFB VA, 30 May – 1 June 2007, F-22 Sortie generation modeling. [COA]

Johnson, A.W., Royal Military College, Kingston Ontario, 19 June 2007, "AFIT Logistics-Focused Analysis." [COA]

KNIGHTON, SHANE A., Maj,

"Course of Action Selection and Assessment**",** AFRL Rome Laboratory, March & September 2007. [COA]

MILLER, J. O.,

AF/A9: ongoing discussions on modeling and simulation and analyst career development. [COA]

AFRL/VA: ongoing discussions on Combat Modeling with SEAS and FLAMES. [COA]

C17 SPO: ongoing discussions concerning Strategic Brigade Airdrop. [COA]

Miller, J.O. "Selected COA Research," Canadian Royal Military College and Canadian Forces Land OR Group Visit, Kingston, ON Canada, 19 Jun 2007. [COA]

6.5.6. BOOKS AND CHAPTERS IN BOOKS

JOHNSON, ALAN W.,

Johnson, A., Brigantic, R., and Mahan, J., 2007, "Strategic Mobility and Deployment", Methods for Conducting Military Operational Analysis: Best Practices in Use Throughout the Department of Defense, L. Rainey and A. Loerch, Editors, Military Operations Research Society, Publishers, pp 281-315. [COA]

6.6. CENTER FOR SPACE STUDIES AND RESEARCH

Note: Beginning in FY08, the Space Studies Working Group replaced the designation CSSR.

Center for Space Studies and Research
Homepage: http://www.afit.edu/cssr/

Chief   937-255-3636 x7469
Fax   937-656-7621, DSN 986-7621

6.6.1. FUNDED RESEARCH PROJECTS

COBB, RICHARD G.,

"Element Set Generation Using a Commercial Telescope." Sponsor: NASIC. Funding: $3,000. [CSSR]

"Innovative Space Missions." Sponsor: AFRL/VS. Funding: $59,000. [CSSR/CSE]

MALL, SHANKAR,

"Nanocomposites as Lightweight Electronic Enclosures for Satellites." Sponsor: SAF. Funding: $94,869. [CSSR]

6.6.2. REFEREED JOURNAL PUBLICATIONS

COBB, RICHARD G.,

Shepherd, M. J., Cobb, R. G., Peterson, G. A. and Palazotto, A.N., "Quasi-static Optics-based Surface Control of an In-plane Actuated Membrane Mirror" *Journal of Spacecraft and Rockets*, Vol. 44, No. 4, July 2007, pp. 953-963. [CSSR]

6.6.3. REFEREED PRESENTATIONS

COBB, RICHARD G.,

Shepherd, M. J., Cobb, R. G., Peterson, G. A. and Palazotto, A.N., "Quasi-static Optics-based Surface Control of an In-plane Actuated Membrane Mirror" *Journal of Spacecraft and Rockets*, Vol. 44, No. 4, July 2007, pp. 953-963. [CSSR]

6.6.4. OTHER PRESENTATIONS PUBLICATIONS AND PROFESSIONAL ACTIVITIES

COBB, RICHARD G.,

Irvin, D. R., Cobb, R.G., and Lovell, T. A., "A General Methodology For Minimum-Fuel Hovering Satellite Formations." AAS/AIAA Astrodynamics Specialist Conference. 19-23 Aug 2007, AAS 07-271. [CSSR]

Jorris, T. R. and Cobb, R.G., "3-D Trajectory Optimization Satisfying Waypoints and No-Fly Zone Constraints." AAS/AIAA Astrodynamics Specialist Conference. 19-23 Aug 2007, AAS 07-304. [CSSR]

Irvin, D. R. and Cobb, R. G. "Multiple Leg Fuel-Optimal Trajectories for Hovering Satellites " AAS/AIAA Spaceflight Mechanics Conference, Sedona AZ, 28 Jan - 1 Feb 2007 AAS 07-209. [CSSR]

Jorris, T. R. and Cobb, R.G., "2-D Trajectory Optimization Satisfying Waypoints and No-Fly Zone Constraints." AAS/AIAA Spaceflight Mechanics Conference, Sedona AZ, 28 Jan - 1 Feb 2007, AAS 07-114. [CSSR]

6.7. CENTER FOR SYSTEMS ENGINEERING

Center for Systems Engineering
Education and Training Division
Homepage: http://cse.afit.edu/

Chief   937-255-3355 x3363
Fax   937-255-4981

6.7.1. FUNDED RESEARCH PROJECTS

COBB, RICHARD G.,

"Innovative Space Missions." Sponsor: AFRL/VS. Funding: $59,000. [CSSR/CSE]

COLOMBI, JOHN M., Lt Col,

"Human Systems Interface Research." Sponsor: AFRL/HE. Funding: $10,000. [CSE]

HAVLICEK, JEFFREY D., Maj,

"Resourcing Global Strike or Global Persistent Attack Architecture." Sponsor: ACC. Funding: $50,150.
  [CSE]

JACQUES, DAVID R.,

"Counter-Improvised Explosive Device (C-IED) Effort Analysis." Sponsor: ACC. Funding: $50,000.
  [CSE]

STROUBLE, DENNIS D.,

"Air Force Center for Systems Engineering A-10 Systems Engineering Case Study." Sponsor: AFIT/SY.
  Funding: $31,000.

WALTER, JEORG, Maj,

"Impacts of Uninhabited Operation on Long-Range Strike Aircraft." Sponsor: AFRL/VA. Funding:
  $15,000. [CSE]

6.7.2. FUNDED EDUCATIONAL PROJECTS

JACQUES, DAVID R.,

"Space Systems Engineering Case Studies." Sponsor: SAF. Funding: $60,000. [CSE]

WALTER, JEORG, Maj,

"SENG 585NC." Sponsor: AFOTEC. Funding: $49,725. [CSE]

APPENDICES

APPENDIX A: FACULTY CREDENTIALS
NOTE: Additional information may be obtained from the AFIT Yellow Pages at
http://www.afit.edu/YellowPages/default.cfm

DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS
Access Phone: 937-255-3069, DSN 785-3069
Fax: 937-656-7621, DSN 986-7621
Homepage: http://www.afit.edu/en/eny/

BLACK, JONATHAN T., Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2007 (AFIT/ENY); BS Industrial Engineering, University of Illinois at Urbana-Champaign, 2001; MS Mechanical and Aerospace Engineering, Joint Institute for Advancement of Flight Sciences (joint NASA Langley Research Center and George Washington University program), 2003; PhD Mechanical Engineering, University of Kentucky, 2006. Dr. Black's research interests include lightweight and inflatable aerospace structures, structural and nonlinear dynamics, noncontact measurement systems, and computational structural mechanics. His current work involves developing novel measurement and modeling techniques to characterize the static and dynamic behavior of new, stiff, self-deploying lightweight aerospace structures. Tel. 255-3636 x4578, email: jonathan.black@afit.edu

BLUE, PAUL A., Maj, Instructor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2004 (AFIT/ENY); BS, University of Nebraska - Lincoln, 1993; MS, University of Minnesota - Twin Cities, 1995; PhD (ABD), University of Minnesota - Twin Cities, 2004. Maj Blue's research interests include the guidance and control of aerospace vehicles and the flight-testing of advanced control concepts. His current research is focused on guidance, navigation, and control of small unmanned aircraft systems, operator interfaces, and developing techniques to evaluate a controlled system's performance (e.g. an aircraft's handling qualities) based on the operators ability to perform a given task. Maj Blue's prior assignments include Flight Control Research Engineer at the Air Vehicles Directorate of the Air Force Research Laboratory and Exchange Engineer at the German Aerospace Center. He has several publications, including a textbook on robust control with Prof. Juergen Ackermann et al. Tel. 937-255-3636 x4714 (DSN 785-3636 x4714), email: Paul.Blue@afit.edu.

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APPENDIX C: ABBREVIATIONS FOR ORGANIZATIONS

There are a number of abbreviations for organizations that are used in this report. This alphabetical listing includes only selected organizations.

ACC	Air Combat Command
ACES	Applied Computational Electromagnetic Society
AETC	Air Education and Training Command
AFCEE	Air Force Center for Environmental Excellence
AFCESA	Air Force Civil Engineer Support Agency
AFIT	Air Force Institute of Technology
AFLMA	Air Force Logistics Management Agency
AFMC	Air Force Materiel Command
AFOTEC	Air Force Operational Test and Evaluation Center
AFRL	Air Force Research Laboratory
AFRL/AFOSR	AFRL/Air Force Office of Scientific Research
AFRL/DE	AFRL/Directed Energy Directorate
AFRL/HE	AFRL/Human Effectiveness Directorate
AFRL/IF	AFRL/Information Directorate
AFRL/ML	AFRL/Materials and Manufacturing Directorate
AFRL/MN	AFLR/Munitions Directorate
AFRL/PR	AFRL/Propulsion Directorate
AFRL/SN	AFRL/Sensors Directorate
AFRL/VA	AFRL/Air Vehicles Directorate
AFRL/VS	AFRL/Space Vehicles Directorate
AFCA	Air Force Communication Agency
AFSA	Air Force Security Agency
AFSEO	Air Force Seek Eagle Office (46 SK/SKE)
AFSPC	Air Force Space Command
AFTAC	Air Force Technical Applications Center
AFWA	Air Force Weather Agency
AHS	American Helicopter Society
AIA	Air Intelligence Agency
AIAA	American Institute of Aeronautics and Astronautics
AMC	Air Mobility Command
ARDA	Advanced Research and Development Activity
ASME	American Society of Mechanical Engineers
ASC	Aeronautical Systems Center
AU	Air University
DAGSI	Dayton Area Graduate Studies Institute
DARPA	Defense Advanced Research Projects Agency
DETEC	Directed Energy Test and Evaluation Capability
DISA	Defense Information Systems Agency
DoD	Department of Defense
DOE	Department of Energy
DoS	Department of State
DTRA	Defense Threat Reduction Agency
IEEE	Institute of Electrical and Electronics Engineers
INCOSE	International Council on Systems Engineering
ISSMO	International Society for Structural and Multidisciplinary Optimization
MORS	Military Operations Research Society
NASA	National Aeronautics and Space Administration
NASIC	National Air and Space Intelligence Center
NSA	National Security Agency
NSF	National Science Foundation

NSSA	National Security Space Architect
NSSO	National Security Space Office
OSD	Office of the Secretary of Defense
PACAF	Pacific Air Forces
SAE	Society of Automotive Engineers
SAF	Office of the Secretary of the Air Force
SPIE	The International Society for Optical Engineering
USSTRATCOM	United States Strategic Command
USAF	United States Air Force
USSOCOM	United States Special Operations Command
USTRANSCOM	United States Transportation Command
WPAFB	Wright-Patterson Air Force Base

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14. ABSTRACT
This report summarizes the research activities of the Air Force Institute of Technology's Graduate School of Engineering and Management. It describes research interests and faculty expertise; lists student theses/dissertations; identifies research sponsors and contributions; and outlines the procedures for contacting the school. Included in the report are: faculty publications, conference presentations, consultations, and funded research projects. Research was conducted in the areas of Aeronautical and Astronautical Engineering, Electrical Engineering and Electro-Optics, Computer Engineering and Computer Science, Systems and Engineering Management, Operational Sciences, Mathematics, Statistics and Engineering Physics.

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