

Dr. Gero A. Nootz

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Technical Expertise

- Spatial and temporal laser beam characterization
- Field and laboratory measurements of light propagation in random and nonlinear media
- Simulation of light propagation in random and nonlinear media
- Design of LIDAR transmitters and receivers
- Operating, maintenance and development of laser systems with wavelengths from UV to Mid-IR and pulse-width from 10 fs to 10 ns
- Ultrafast optical spectroscopy
- Fluorescence techniques: single and multi-photon excitation, time-resolved fluorescence, fluorescence anisotropy
- Computer Skills: WaveTrain, LabVIEW, AutoCAD, SolidWorks, MatLab, Mathematica, MathCAD, Origin, C++

Research Experience

Postdoctoral Research

2014 – Present NRC Research Associate, U.S. Naval Research Laboratory,

Advisor: Dr. Weilin Hou

- Characterization of laser beam distortion due to optical turbulence
- Characterization of optical turbulence in Rayleigh–Bénard convection by experiment and simulation

2013 – 2014 NRC Research Associate, Naval Postgraduate School, Monterey CA

- Wave Optics Simulation of high energy laser beam propagation through deep optical turbulence for directed energy applications.
- Performance prediction of adoptive optics systems

2010 – 2013 Research Associate, Harbor Branch Oceanographic Institute, Florida Atlantic University, Ft. Pierce, FL

- Characterization of laser beam distortion due to optical turbulence in the ocean
- Design of LIDAR transmitters and receivers
- Proof of concept for small form factor frequency domain fluorescence lifetime sensor for use on autonomous underwater vehicles

Doctoral Research

- 2005 – 2010** CREOL, University of Central Florida, Orlando, FL
- Nonlinear optical characterization of semiconductor quantum dots
 - Design and implementation of a computerized data acquisition system

Education

- 2005 – 2010** PhD in Physics; CREOL and the Department of Physics, University of Central Florida, Orlando, Florida
- 1996 – 1999** Bachelors in Physical Engineering; Fach Hochschule, Luebeck, Germany

Selected Publications

1. **G. Nootz**, Ewa Jarosz, Fraser R. Dalgleish, and Weilin Hou, "Quantification of optical turbulence in the ocean and its effects on beam propagation," *Appl. Opt.* 55, 8813-8820 (2016)
2. **G. Nootz**, Weilin Hou and F. R. Dalgleish. "Determination of flow direction of an optically active turbulent field by means of a single beam" Submitted to *Optics Letters*, (2013).
3. **G. Nootz**, Weilin Hou and F. R. Dalgleish. "The effect of optical turbulence on the propagation of Laser beams in the ocean" In preparation for *Applied Optics*, 2013.
4. B. Ouyang, F. R. Dalgleish; F. M. Caimi,; T. E. Giddings; J. J. Shirron, A. K. Vuorenkoski, W. Britton, B. Metzger, B. Ramos, **G. Nootz**. "Compressive sensing underwater laser serial imaging system" *J. Electron. Imaging.* 22(2), 021010 (2013)
5. F. R. Dalgleish, **G. Nootz**, W. Hou, A. K. Vuorenkoski, B. Ouyang, and W. T. Rhodes. "Experimental assessment of laser line scan underwater image blurring due to mixing layer turbulence", In preparation for *Applied Optics*, 2013.