Single Photon Workshop 2009 venue: NIST, 325 Broadway, Boulder, CO

Nov. 3, Tuesday

1. Welcome

	8:00		Opening remarks
Abstracts	8:05		Exhibitor previews: Micro Photon Devices; Hamamatsu; idQuantique; SmartQuantum

2. Single-Photon Avalanche Detectors I (session chair: S. Cova)

Talk	8:25 Invited	Mark Itzler	InP avalanche diode-based single photon detectors: current status and future prospects
Talk	8:50	Richard Harris	Degradation of InP-Based Geiger-Mode Avalanche Photodiodes Due to Proton Irradiation
Talk	9:05	Angelo Gulinatti	A physically based model for evaluating the Photon Detection Efficiency and the Temporal Response of SPAD detectors
Talk	9:20	Michael Krainak	Photon-counting detectors on ICESat 1 and candidates for ICESat
Talk	9:35	Andrew Huntington	High-Rate Photon Counting with a Multi-Stage Sub-Geiger InGaAs APD
	9:50		break

3. Single-Photon Avalanche Detectors II (session chair: M. Itzler)

Talk	10:05 Invited	Joe Campbell	Single Photon Avalanche Detectors: Quenching Circuits for Reduced Afterpulsing
Talk	10:30	Sergio Cova	Ultra-fast time-gating of SPAD for wide dynamic range optical measurements
Talk	10:45	Krishna Linga	Very high gain, low excess noise self quenching near infrared single photon counting detectors and arrays
Talk	11:00	Ivan Rech	SPAD array detectors for parallel photon timing applications
	11:15	Richard Younger	Crosstalk Analysis of Integrated Geiger-mode Avalanche Photodiode Focal Plane Arrays
	11:30	Yuji Iwai	Hamamatsu will present an introduction to Hamamatsu's Multi Pixel Photon Counter (MPPC) technology and a review of our development and production efforts to date.
Talk	11:45	Fabrizio Guerrieri	Single-Photon Imager with Number-Resolving Capability
	12:00		lunch

4. Applications of Single-Photon Detectors I (session chair: J. Campbell)

Talk	13:30 Invited	Sergio Cova	Silicon Single-Photon Avalanche Diodes: technology trends and application drive
Talk	13:55	Alessandro Restelli	Investigation of SPAD operation with high-speed sub nanosecond periodic gating
Talk	14:10	Lijun Ma	Single photon detector and spectrometer using up-conversion technology

Video Talk	14:25	William Farr	Jitter Characterization of Near-Infrared Sensitive Single Photon Detectors
Talk	14:40	Mary Rowe	Single-Photon Detection with Quantum Dot, Optically Gated, Field-Effect Transistors
	14:55		break

5. Advanced Measurements with Single-Photon Detectors I (session chair: M. Krainak)

Talk	15:15 Invited	Hendrik Coldenstrodt-Ronge	Engineering photon sources and detectors for quantum technologies
Talk	15:40	Charles Bamber	Direct Measurement of the Photon Wavefunction
	15:55	Jessica Cheung	Measurement standards and techniques for photon counting technologies
Talk	16:10	Saikat Guha	Enhanced standoff optical sensing resolution using quantum illumination
Talk	16:25	Jeff Lundeen	Bridging Particle and Wave Responsivity in a Phase-Sensitive Photon-Number Detector

Nov. 4, Wednesday

1. Advanced Single-Photon Detectors I (session chair: M. Fejer)

	8:00 Invited	James Dynes	InGaAs photodetectors for high bit rate single photon applications
Talk	8:25	Jungsang Kim	Optimized Photon Detection with Visible Light Photon Counters and its Variations
	8:40	Burm Baek	Measurement of single photon detection timing jitter in a visible light photon counter
	8:55 Invited	Andrew Kerman	Progress in Superconducting Nanowire Single-Photon Detectors at MIT
	9:20 Invited	Eric Dauler	High-Rate Quantum Key Distribution with Superconducting Nanowire Single Photon Detectors
	9:45		break

2. Advanced Single-Photon Detectors II (session chair: A. Kerman)

	10:00	Jeffrey Stern	Development of Superconducting Nanowire Single Photon Detector Arrays
	10:15	S. B. McCracken	Optimization of States in a Lossy Metrology
	10:30	Burm Baek	Superconducting nanowire single-photon detector in an optical cavity for front-side illumination
Talk	10:45	Zhizhong Yan	Single photon optoelectronic mixing in the NbN superconducting nanowires
Talk	11:00	Adriana Lita	Progress Report on Optimization of Transition-Edge Sensors for High-Efficiency Photon-Number Resolving Detectors
Talk	11:15	Olga Minaeva	Up-to-date performance of ultrafast superconducting NbN photon counter
	11:30 Invited	Martin Fejer	Devices for Single-Photon Wavelength Conversion

	11:55		lunch
	3. Advanced Measurements with Single-Photon Detectors II (session chair: E Dauler)		
	13:30	Brice Calkins	Compact, Robust Sample Mount for Fiber-Coupled Cryogenic Detectors
Talk	13:45	Daniel Santavicca	Characterization of terahertz single-photon sensitive bolometric detectors
	14:00	Erik Duerr	Photon-Counting Imaging Ladar System at 2-mm Wavelength
Talk	14:15	Tracy Clement	High resolution measurement of relative group delay with superconducting nanowire single-photon detectors
Talk	14:30	Josef Blazej	Correlation photon counting experiment under conditions of extreme photon fluxes
	14:45		break
	4. Applications of Single-Photon Detectors I (session chair: J. Dynes)		
	15:15	Thomas Jennewein	Experimental requirements for few-photon applications outside the coincidence basis
Talk	15:30	Thomas Gerrits	Joint spectral distribution of a periodically poled KTP source for quantum information applications
Talk	15:45	Xiao Tang	Photon Sources and Detectors for Quantum Communication
Talk	16:00	Alexander Ling	Observation of fringe compression with a photon-number resolving detector
Talk	16:15	Ryan Bennink	Simultaneous teleportation of multiple photonic degrees of freedom
Talk	16:30	R.J. Collins	Short Wavelength Quantum Key Distribution in Telecommunications Optical Fiber
Nov. 5, Thursday			
	1. Non-classical Sources (session chair: A. Ling)		
Talk	8:00 Invited	Franco Wong	Generation of Single Spatiotemporal Mode Photons
	8:25	Chris Chunnilall	A source of entangled photons for the 1550 nm telecommunications window
Talk	8:40 Invited	Andreas Muller	Towards cross-platform two-photon interference using an efficient single photon source based on a semiconductor quantum dot
	9:05	Stefania Castelletto	Near infrared ultra-bright triggered single photon source from nano-diamonds
	9:20 Invited	Prem Kumar	Ultrafast Switching of Photonic Entanglement
	9:45		break
	2. Single-Photon Technology I (session chair: P. Kumar)		
	10:00 Invited	Xiaolong Hu	Efficiently Coupling Light to Superconducting Nanowire Single-Photon Detectors

Talk	10:25 Invited	Alex Clark	Creating intrinsically time bandwidth limited photon pairs
Talk	10:50	Kevin McCusker	A Pseudo-Deterministic Single-Photon Source
Talk	11:05	Petr Anisimov	Sub-Heisenberg limited phase measurement with two-mode squeezed light
Talk	11:20 Invited	Masahiro Takeoka	Photon detections for continuous variable quantum information processing and quantum receivers
Talk	11:45	Xingxing Xing	Towards fundamental tests and quantum information applications using novel photon sources from quantum dots and cavity-enhanced down-conversion
	12:00		lunch

3. Single-Photon Technology II (session chair: S. Polyakov)

	13:30	Shellee Dyer	All-Fiber Polarization-Entangled Photon Pair Source: CW Pumping for High Photon Pair Rates
Talk	13:45	Ryan S. Bennink	Optimal Gaussian Beams for Collinear Spontaneous Parametric Down-Conversion
Talk	14:00	M.G. Tanner	Enhanced telecom wavelength sensitivity in NbTiN superconducting nanowire single-photon detectors fabricated on oxidized silicon substrates
	14:15	Martin Stevens	Multi-Element Superconducting Nanowire Single-Photon Detectors for High-Order Coherence Measurements
Talk	14:30	Daniel Lum	The Quantum Tripwire: Analysis in the Presence of Photon Loss
Talk	14:45	Paul Lett	A four-wave mixing source for multi-spatial-mode entanglement
	15:00		break

4. Poster Session (15:15-17:00) (Posters should be up from Tuesday to Friday)

	15:15	Daniela Bagliani	Study of the thermal coupling in suspended IrAu transition edge sensors operated as single photon detectors
Poster	15:15	Stefan Kuck	Radiometric calibration of single-photon counting detectors
Poster	15:15	Josef Blazej	SPAD detector package for laser time transfer in space
Poster	15:15	Jason Pelc	Advanced Architectures for Low-Noise Frequency Conversion of Quantum States Using Lithium Niobate Waveguides
Poster	15:15	N. J. Krichel	Three-Dimensional Profiling of Low-Signature Targets Using Time-Correlated Single-Photon Counting
	15:15	Chris Chunnilall	The measurement of photon indistinguishability to a quantifiable uncertainty using a Hong-Ou-Mandel interferometer
Poster	15:15	Ivo Degiovanni	Suppressing deadtimes for high rate telecom-band photon counting exploiting multiplexed detector array systems
Poster	15:15	Jun Chen	Photon pairs from a PPKTP waveguide: a spectral study
Poster	15:15	Saikat Guha	Approaching Helstrom limits to optical pulse-position demodulation using SPD and optical feedback

	15:15	Elizabeth Goldschmidt	Tailored State Preparation for Solid-State Quantum Memory
Poster	15:15	Jan Bogdanski	Novel very high transmittance narrow-band spectral interference filter
Poster	15:15	F. Gatti	TERAEYE: a matrix of Q-Dots with THz single photon detection capability for application to fully passive and spectroscopic THz camera
	15:15	Alexander Ling	Extraction of correlated 2-photons with high efficiency

5. Summary Session (17:00-18:00) (ringmasters: P. Kwiat & F. Wong)

	17:00		Single Photon Technology Summary and Prospects Discussion

Conference Dinner (18:30-21:00)

Talk	20:00	Joseph Abeles	Photon-Counting Photomultipliers: Technology and Provenance, 1934- present

Nov. 6, Friday

1. Entanglement I (session chair: P. Grangier)

Talk	8:00 Plenary	Jeff Kimble	Quantum Networks with Single Atoms, Photons, and Phonons
	9:00 Invited	Harald Weinfurter	Atom – Photon – Entanglement
Talk	9:25 Invited	Philip Walther	Quantum information processing beyond the state-of-the-art technology
	9:50		break

2. Entanglement II (session chair: J. Kimble)

Talk	10:00 Invited	Philippe Grangier	Schrödinger's Kittens and Non-Gaussian States of the Light: New Tools for Quantum Communications
Talk	10:25 Invited	David Moehring	Multi-Photon Entanglement from a Single Trapped Atom
Talk	10:50 Invited	Wolfgang Tittel	Measuring entanglement with universal time-bin qubit analyzers
Talk	11:15	Alexander Sergienko	Dispersion Cancellation in Quantum Interferometry and Quantum Imaging
Talk	11:30	Radhika Rangarajan	Engineering Polarization-Entangled Photons
Talk	11:45	Alexander Sergienko	Photon-counting optical coherence tomography using superconducting single-photon detectors
	12:00		lunch

3. Entanglement III (session chair: H. Weinfurter)

Talk	13:30 Invited	Christian Kurtsiefer	Substantial scattering of Photons by a Single Atom
Talk	13:55 Invited	Warren Grice	The Role of Spectral and Spatial Entanglement in Down-Conversion Experiments
	14:20 Invited	Robert Thew	Novel Photon Pair Sources and Threshold Detectors

Talk	14:45	Dmitry Uskov	Generic Two-Qubit Photonic Gates Implemented by Number-Resolving Photodetection
	15:00		break

4. Entanglement IV (session chair: J. Chen)

	15:15 Invited	Allessandro Fedrizzi	Applications and experimental limitations of photonic quantum computing
Talk	15:40	Tian Zhong	High Quality Photonic Polarization Entanglement Distribution at 1.3-μm Telecom Wavelength
Talk	15:55	Oliver Slattery	Two techniques for high-speed entangled photon pair generation using periodically poled potassium titanyl phosphate waveguides
Talk	16:10 Invited	Ivo Degiovanni	Experimental estimation of entanglement at the quantum limit
Talk	16:35	Alexios Beveratos	Towards a deterministic entangled and single photon source at telecom wavelength using InAsP/InP quantum dots
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