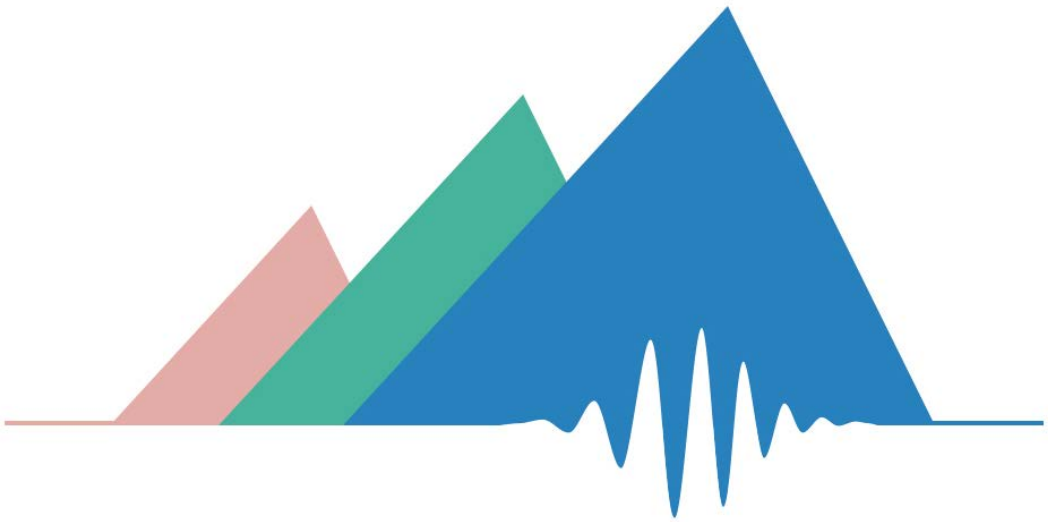

SINGLE PHOTON WORKSHOP 2017

Agenda

July 31 – August 4, 2017

University Memorial Center, University of Colorado Boulder

Monday: July 31, 2017

8:00	Registration open	
9:00	Welcome	
Metrology I		
9:10	Carl Williams (Invited) *NIST-Gaithersburg*	*A Federal Perspective on Single Photon Metrology and Technology*
9:40	Ingmar Müller Abstract *PTB-Berlin*	*Bilateral Comparison of Calibration Methods for Photon-Counting Detection Efficiency between NIST and PTB using Superconducting Nano-wire Single Photon Detectors*
10:00	Christopher Chunnilall *NPL*	*Metrology for characterizing single photon technologies*
10:20	**Coffee break**	
Applications I		
10:50	Alipasha Vaziri (Invited) *Rockefeller University*	*Visual Perception at the threshold*
11:20	Jeff Shainline *NIST-Boulder*	*Photonic signaling and superconducting detectors for large-scale neuromorphic computing*
11:40	Matt Shaw *JPL*	*Superconducting nanowire single photon detectors for deep space optical communication*
12:00	**Lunch**	
Detectors I		
13:30	Robert Hadfield (Invited) *University of Glasgow*	*Infrared single-photon detection with superconducting nanowires*
14:00	Gabrielle Bulgarini *Single Quantum*	*Single-photon detection with near unity efficiency, ultra-high detection rates, and ultra-high time resolution*
14:20	Boris Korzh *JPL*	*Single photon detection with a system temporal resolution below 10 ps*
14:40	Prasana Ravindran *UMass-Amherst*	*Active Quenching of Superconducting Nanowire Single Photon Detectors*
15:00	**Coffee break**	
Integration I		
15:30	Hong Tang (Invited) *Yale University*	*Photon pair generation and detection on silicon chips*
16:00	Cale Gentry *University of Colorado*	*Single-chip source of photon pairs with integrated pump rejection*
16:20	Evan Meyer-Scott *University of Paderborn*	*A plug & play single photon source with high heralding efficiency, and application to purity-efficiency tradeoff under spectral filtering*
16:45-19:15	Reception & Poster Session	

Tuesday: August 1, 2017

Applications II

8:30	Andrew Shields (Invited) *Toshiba-Cambridge*	*A Universal Transmitter for Quantum Communications*
9:00	Morgan Weston *Griffith University*	*Heralded quantum steering over a high-loss quantum channel*
9:20	Catherine Lee *MIT*	*High-dimensional quantum state transfer over deployed fiber*
9:40	Christoph Simon *University of Calgary*	*Single photons for quantum networks, macroscopic quantum effects, and neuroscience*
10:00	**Coffee break**	

Metrology II

10:30	Stefan Kück (Invited) *PTB-Braunschweig*	*Single-photon sources and detectors for quantum radiometry*
11:00	Glenn Solomon *NIST/JQI*	*Simultaneous, full characterization of a single-photon state*
11:20	Vaigu Aigar *VTT*	*Experimental demonstration of a predictable single photon source with variable photon flux*
11:40	Beatrice Rodiek *PTB-Braunschweig*	*Metrological realization of an absolute single-photon source based on a nitrogen-vacancy center in nanodiamond*
12:00	**Lunch**	
13:20	Exhibit-Only Time	

Sources I

14:20	Jelena Vuckovic (Invited) *Stanford University*	*Quantum Light Generation with Quantum Dot - Cavity QED systems*
14:50	Carlos Antón *CNRS*	*Efficient single photon sources in the solid-state*
15:10	**Coffee break**	

Sources II

15:40	Lorenzo De Santis *CNRS*	*Single-photon Fock-state filtering with an artificial atom*
16:00	Maria Chekhova (Invited) *Max-Planck Institute*	*Towards photon triplet generation through a direct cubic nonlinear effect*
16:30	Mike Reimer *University of Waterloo*	*New nanoscale source of bright entangled photon pairs*
16:50	Gregor Weihs *University of Innsbruck*	*Three Photons – Efficient and Interfering*

Short lecture course

19:00-21:30 ‘Single-photon metrology and its application to quantum technologies’

Course is organised by the European Metrology Program for Innovation and Research project ‘Optical metrology for quantum-enhanced secure telecommunication (14IND05)'

Wednesday: August 2, 2017

Detectors II

8:30	Karl Berggren (Invited) *MIT*	*Transmission-Line Superconducting Nanowire Single-Photon Detectors: Imagers and Coincidence Counters*
9:00	Félix Bussières *University of Geneva*	*Amorphous MoSi SNSPDs with a low time jitter and a high detection efficiency*
9:20	Daniel Slichter *NIST-Boulder*	*UV-sensitive SNSPDs for integration in an ion trap quantum processor*
9:40	Zhaohui Li *E China Normal Univ*	*Multi-beam laser imaging with 100-channel single-photon detector*

10:00 Coffee break

Applications III

10:30	Hugo Zbinden (Invited) *University of Geneva*	*Quantum-enabled applications*
11:00	Peter Bierhorst *NIST-Boulder*	*Device-Independent Random Number Generation with Photons*
11:20	Ivo Degiovanni *INRIM*	*Inferring the fairness of a quantum coin with a single (detected) toss*
11:40	Aitor Villar *National U of Singapore*	*Photons in space: a demonstration and a roadmap for satellite QKD*

12:00 Lunch

Integration II

13:40	Dirk Englund (Invited) *MIT*	*Large Scale Photonic Integrated Circuits for Quantum Information Science and Machine Learning*
14:10	Sonia Buckley *NIST-Boulder*	*Low-temperature waveguide coupled Si LEDs and superconducting nanowire detectors*

14:30 Coffee break & Exhibit-Only time

Metrology III

15:40	Sergey Polyakov, *NIST-Gaithersburg*	*Characterizing single-photon detectors within a second-order model and beyond*
16:00	Hugo Ferretti *University of Toronto*	*Beating Rayleigh's Curse Using SPLICE*
16:20	Jean-Philippe MacLean University of Waterloo	*Experimental observation of ultrafast biphoton correlations with energy-time entanglement*
16:40	Animesh Datta University of Warwick	*New aspects of quantum-optical sensing: multiple parameters & covertness*
17:00	Ivan Burenkov *NIST/JQI*	*Quantum Coherent Spectrometer: frequency discrimination below the standard quantum limit*

18:00 Conference Dinner—Boulder Style

Thursday: August 3, 2017

Quantum Measurements

8:30	Andrew White (Invited) *University of Queensland*	*Manifold single photons and their many uses*
9:00	Geoff Pryde *Griffith University*	*Unconditional shot noise limit violation in photonic quantum metrology*
9:20	Alex Jones *University of Oxford*	*Many-photon distinguishability and unambiguous characterization of multiport interferometers*
9:40	Michael Mazurek *University of Waterloo*	*Quantum-free state and measurement tomography*

10:00 Coffee break

Imaging

10:30	Eric Fossum (Invited) *Dartmouth College*	*Photon-Number-Resolving Quanta Image Sensor*
11:00	Joshua Rapp *Boston University*	*Unmixing Signal and Noise for Photon-Efficient Active Imaging*
11:20	Federica Villa *Politecnico di Milano*	*Monolithic CMOS SPAD array with gating, timing electronics and photon-coincidence detection for 3D-ranging*
11:40	Richard Younger *MIT-Lincoln Labs*	*Crosstalk Elimination in Infrared Geiger-mode Avalanche Photodiode Arrays*

12:00 Lunch

Sources III

13:30	John Rarity (invited) *University of Bristol*	*Spins and photons*
14:00	Fumihiro Kaneda *University of Illinois*	*Memory-assisted time multiplexing for efficient multi-photon generation*
14:20	Morgan Mastrovich *University of Waterloo*	*Spectral manipulation of entangled photons with an upconversion time lens*
14:40	Till Weinhold *University of Queensland*	*Sub-Megahertz Linewidth Single Photon Source Suitable for Quantum Memories*

15:00 Coffee break

Detectors III

15:30	Seth Bank (Invited) *University of Texas*	*Emerging Semiconductor Single Photon Counters*
16:00	Bernicy Fong *Excelitas Technologies*	*Transit time, timing jitter and time walk in SLiK APD – measurement and implication for single photon counting applications*
16:20	Alberto Gola *FBK, Trento*	*Overview of Silicon Photomultipliers Developed at FBK*
16:40	Hesong Xu *FBK, Trento*	*Detecting entangled photons using CMOS SPAD arrays*

17:00 Closing remarks