Bureau International des Poids et Mesures

BIPM Workshop
« The Quantum Revolution in Metrology »

Poster sessions

Poster Session 1: Thursday 28 September 2017

Topic of session 1: "Single photon measurements, radiometry with entangled sources, superconducting particle detectors"

S1-1: *Embedded Mass, Force and Laser Power Standard Using a Resonant Optical Cavity*
Dr. Gordon A. Shaw, NIST

S1-2: *The effect of turbulence in free-space synchronization, using second-order quantum interference*
Prof. Filippus Roux, NMISA

S1-3: *Directly realizing the becquerel with quantum thermal sensors*
Dr Dan Schmidt, NIST, USA

S1-4: *Nano-SQUIDs based on Niobium nanobridges for the inductive calorimeter*
Dr Wang Xueshen, NIM, China

S1-5: *Photon-based radiometry at KRISS*
Dr Kee Suk Hong, KRISS, Korea

S1-6: *High performance Silicon Single Photon Avalanche Diodes (SPAD): a valuable tool for quantum metrology*
Prof. Angelo Gulinatti, Politecnico di Milano, Italy **– CANCELLED**

S1-7: *Determination of x-ray fundamental parameters using quantum sensors*
Dr Joel Ullom, NIST, USA

S1-8: *Single Photon Metrology at NRC*
Dr Angela Gamouras, NRC-CNRC, Canada

S1-9: *Traceable calibration of single-photon detectors and sources*
Ms Beatrice Rodiek, PTB, Germany

S1-10: *Traceability for single photon radiometry*
Dr Ingmar Müller, PTB, Germany

S1-11: *Towards measurement and control of single-photon microwave radiation on chip*
Dr Antti Manninen, VTT MIKES, Finland

S1-12: *Single photon detection without lose the count*
Dr Mauro Rajteri, INRiM, Italy

S1-13: *Single photon interference in x-ray interferometry and the lattice parameter of silicon*
Dr Ulrich Kuetgens, PTB, Germany

Topic of session 2: "Quantum standards for mass, pressure vacuum, temperature, acoustics and vibration"

S2-1: *New technologies for a cold-atom vacuum standard* **– CANCELLED**
Ms Julia Scherschligt, NIST, USA

S2-2: *The Quantum Pascal*
Ms Julia Scherschligt, NIST, USA

S2-3: *Realization and Dissemination of Small Mass with an Electrostatic Force Balance*
Dr Gordon A. Shaw, NIST, USA

S2-4: *Photonic thermometry: a new hope*
Dr Zeeshan Ahmed, NIST, USA

S2-5: *An action quantum on a scale – dissemination of the quantum based kilogram*
Dr Dorothea Knopf, PTB, Germany

S2-6: *Towards a quantum standard for absolute pressure measurements in the range 200 Pa to 20 kPa based on a superconducting microwave cavity*
Dr Laurent Pitre, LNE-Cnam, France

S2-7: *The progress of Joule balance at NIM*
Dr. Zhengkun Li, NIM, China

S2-8: *Calculated atomic and molecular interactions for thermophysical standards*
Dr Roberto M. Gavioso, INRiM, Italy

S2-9: *Precise determination of the fine structure constant: impact on the new International System of Units*
Dr Pierre Cladé, LKB-UMPC, France

S2-10: *Thermodynamic temperature measurement with traceability to quantum electrical standards*
Dr Jifeng Qu, NIM, China

S2-11: *Quantum-based Johnson noise thermometry at NIST*
Dr Nathan E. Flowers-Jacobs, NIST, USA

S2-12: *Optomechanical accelerometers for low-uncertainty calibration in the field*
Dr Thomas LeBrun, NIST, USA

S2-13: *Perspective on Metrology of Thermophysical Quantities Based on Quantum Electrodynamic Calculations*
Dr Jintao Zhang, NIM, China

Topic of session 3: "Highly entangled systems for metrology, entangled optical clocks"

S3-1: *The Quantum Allan Variance* - **CANCELLED**
Dr R. Demkowicz-Dobrzanski, Faculty of Physics, University of Warsaw

S3-2: *Towards creation of the nuclear clock and frequency reference point: search for the optimal parameters today, working instruments of the future*
Prof. Feodr F.Karpeshin, VNIIM

S3-3: *Heisenberg limited Rabi spectroscopy*
Mr Ravid Shaniv, Physics of complex system department, The Weizmann Institute

S3-4: *Developing optical frequency standard in India*
Dr Subhadeep De, CSIR-NPL, India

S3-5: *Optical-clock local-oscillator universal interrogation protocol for zero probe-field-induced frequency-shifts*
Dr Thomas Zanon-Willette, Observatoire de Paris-UPMC, France

S3-6: *BBR-induced shifts and broadening of states in atoms and ions of alkaline-earth elements and thermometry for optical clocks*
Prof. Vitaly Palchikov, VNIIFTRI, Russia

S3-7: *Ion microtrap chips for atomic quantum technologies*
Dr Guido Wilpers, NPL, UK

S3-8: *How to optimize the shape of quantum light for quantum metrology?*
Prof. Claude Fabre, LKB-UPMC, France

Poster Session 2: Friday 29 September 2017

Topic of session 4: "Advances in quantum electrical standards, single electron transistors and demonstrations of the "quantum metrology triangle"

S4-1: *Epitaxial graphene QHR standards: Beyond GaAs*
Dr. Randolph E. Elmquist, NIST, USA

S4-2: *Digital Josephson impedance bridge*
Dr. Blaise Jeanneret, METAS, Switzerland

S4-3: *Impact of the new generation of Josephson voltage standards in ac and dc electric metrology*
Dr. Alain Rüfenacht, NIST, USA

S4-4: *Error modelling of quantum Hall array resistance standards*
Ms Martina Marzano, INRiM & Politecnico di Torino, Italy

S4-5: *The NMIA Calculable Capacitor: a unique opportunity for investigating quantum realizations of electrical quantities*
Dr Heather Leigh Johnson, NMIA, Australia

S4-6: *Josephson Voltage Standard Circuit Design Improvements for AC and DC Metrology*
Dr Anna E. Fox, NIST, USA

S4-7: *Arbitrary waveform generation of current with single-electron pump*
Dr Nobu-Hisa Kaneko, Japan

S4-8: *Distinction between Electromagnetically Induced Transparency and Autler-Townes Splitting: A conceptual approach*
Dr Satya Kesh Dubey, CSIR-National Physical Laboratory, India

S4-9: *Dependence of maximum pumping frequency on the profile of the quantum-dot potential in quantum dot-based single electron pumps*
Dr Nam Kim, KRISS, Korea

S4-10:*A new measured value of von Klitzing constant through calculable capacitor experiment at NIM*
Dr. Yan Yang, NIM, China

S4-11: *KRISS potential-profile-tunable electron pump for future current standard*
Dr Myung-Ho Bae, KRISS, Korea

S4-12: *Progress of the Quantum Hall (array) devices and Josephson junction array devices for the quantum electrical standards at NIM*
Prof. Jinjin Li, NIM, China

S4-13: *Accurate operation of single-electron pumps beyond 1 GHz*
Dr Masaya Kataoka, NPL, UK

S4-14: *The robustness and universality of tunable-barrier electron pumps*
Dr Giblin Stephen, NPL, UK

S4-15: *Optically driven Quantum Josephson Voltage standard*
Dr Sherstobitov S.V., VNIIFTRI, Russia

S4-16: *Quantum capacitances and inductances in the Quantum Hall Effect regime*
Prof. Chaubet Christophe, Université de Montpellier, France

Topic of session 5: "Beyond quantum metrology"

S5-1: *Self-calibrating photodiodes for measuring fundamental constants*
Dr Jarle Gran, Justervesenet, Norway

S5-2: *Electrical Measurements of the Dimensions of Nanostructures*
Prof. Waldemar Nawrocki, Poznan University of Technology, Poland

S5-3: *Thermoelectricity Measurements at QHE regime with Corbino structures*
Dr Tonina Alejandra, INTI, Argentina

S5-4: *Searching for an invariant of the sample composition in the measurement of the amount of substance*
Prof. Hong Yi, NIM, China

S5-5: *Measuring a Mole of Photons: Optical Power Traceable to the Kilogram*
Dr John Lehman, NIST, USA

S5-6: *Challenges for Radionuclide Metrology in the SI*
Dr Ryan Fitzgerald, NIST, USA

S5-7: *Novel source of multimode squeezed light for quantum enhanced space-time positioning*
Mr Lucas La Volpe, LKB-UPMC, France

S5-8: *Real-time state estimation and feedback control of an oscillating qubit via weak measurements and weak measurement reversal*
Mr Pieter du Toit, NMISA, South Africa

S5-9: *Entanglement generation through non-linear spin dynamics in atomic magnetometers*
Dr Witold Chalupczak, NPL, UK

S5-10: *Microvolt Josephson voltage standard based on a double channel Josephson array*
Ms Honghui Li, NIM, China

S5-11: *How to optimize the shape of quantum light for quantum metrology?* **– MOVED TO SESSION 3 (S3-8)**
Prof. Claude Fabre, LKB-UPMC, France

S5-12: *Tracking the evolving spin of an ensemble, unbothered by the uncertainty principle*
Prof. Morgan W. Mitchell, ICFO - The Institute of Photonic Sciences, Spain

S5-13: *Optical magnetometry beyond the shot noise limit*
Dr Ricardo Jimenez-Martinez, ICFO - The Institute of Photonic Sciences, Spain

S5-14: *Chip-scale atomic instrumentation for metrology*
Dr John Kitching, NIST - USA