Photonics West

2019

TECHNICAL PROGRAM

Conferences and Courses
2-7 February 2019

BIOS Expo
2-3 January 2019

Photonics West Exhibition
5-7 February 2019

The Moscone Center
San Francisco, USA

spie.org/pw
CONFERENCE 10934

SESSION 9
LOCATION: ROOM 209 (SOUTH LEVEL TWO) ....... MON 10:30 AM TO 12:10 PM

New Directions in Precision Metrology I
Session Chair: Avi Pe'er, Bar-Ilan Univ. (Israel)

10:30 am: Speckle-based spectrometer (Invited Paper), Hui Cao, Yale Univ. (USA) ........................................... [10934-38]


11:45 am: Advances in using orbital-angular-momentum beams for sensing and imaging applications (Invited Paper), Alan E. Willner, The Univ. of Southern California (USA) ........................................... [10934-39]

Lunch Break .................. Mon 12:10 pm to 1:40 pm

SESSION 10
LOCATION: ROOM 209 (SOUTH LEVEL TWO) ....... MON 1:40 PM TO 3:20 PM

New Directions in Precision Metrology II
Session Chair: John C. Howell, The Hebrew Univ. of Jerusalem (Israel)

1:40 pm: The spectrum of the vacuum as a primary reference for radiometry (Invited Paper), Samuel Lemieux, Robert W. Boyd, Univ. of Ottawa (Canada) .................................................. [10934-42]

2:05 pm: Recent developments in advanced techniques for gravitational-wave detection (Invited Paper), Yanbai Chen, Caltech (USA) .................................................. [10934-43]

2:30 pm: Gravitational decoherence and gravitational-wave function collapse (Invited Paper), Angelo Bassi, Univ. degli Studi di Trieste (Italy) .................................................. [10934-44]

2:55 pm: Squeezing enhanced Raman spectroscopy (Invited Paper), Yael Michael, Michael Rosenbluh, Avi Pe'er, Bar-Ilan Univ. (Israel) .................................................. [10934-45]

Coffee Break .................. Mon 3:20 pm to 3:50 pm

SESSION 11
LOCATION: ROOM 209 (SOUTH LEVEL TWO) ....... MON 3:50 PM TO 6:25 PM

New Directions in Precision Metrology III
Session Chair: Angelo Bassi, Univ. degli Studi di Trieste (Italy)

3:50 pm: Precision metrology within APRL (Remote Presentation), Gretchen R. Phelps, Air Force Research Lab. (USA) .................................................. [10934-46]

4:40 pm: Internally cooled rare-earth-doped microphotons for precision metrology (Invited Paper), Wm. Randall Babbitt, Montana State Univ. (USA) .................................................. [10934-47]

5:05 pm: Measuring gas thermodynamic properties with an optical frequency comb (Invited Paper), Andrei N. Luiten, The Univ. of Adelaide (Australia) .................................................. [10934-48]

5:30 pm: Tailoring of amplification spectrum using DC-field for high-precision two-wave mixing adaptive interferometry with CdTe (Invited Paper), Konstantin Shcherbin, Institute of Physics (Ukraine); Marvin B. Klein, Intelligent Optical Systems, Inc. (USA); Dean R. Evans, Air Force Research Lab. (USA) .................................................. [10934-50]

5:45 pm: Solid-state characterization of CdTe/Sn as a medium for adaptive interferometry (Invited Paper), Konstantin Shcherbin, Serguey G. Oculov, Institute of Physics (Ukraine); Dean R. Evans, Air Force Research Lab. (USA); Francois Ramaz, Bernard Briat, Institut Lavoisier, ESPCI (France) .................................................. [10934-49]

6:10 pm: GPS-steered green laser pointer: a convenient and accurate optical frequency reference, Hongquan Li, Lingfeng W. Wang, Stanford Univ. (USA); Brian H. Kohner, Univ. of California, Davis (USA); Karel E. Urbanek, Scott Lambert, Leo W. Holberg, Stanford Univ. (USA) .................................................. [10934-104]

TUESDAY 5 FEBRUARY

SESSION 12
LOCATION: ROOM 209 (SOUTH LEVEL TWO) ....... TUE 8:00 AM TO 10:05 AM

Entanglement-Enhanced Precision Metrology I
Joint Session with Conferences 10933 and 10934
Session Chair: Elihu Cohen, Univ. of Ottawa (Canada)

8:00 am: Time as the precious resource in quantum metrology: concurrent state preparation and sensing (Invited Paper), William J. Munro, NTT Basic Research Labs. (Japan); Anthony Hayes, Univ. of Sussex (United Kingdom); Shane Dooley, National Institute of Informatics (Japan); Jacob Cunningham, Univ. of Sussex (United Kingdom); Kei Nemoto, National Institute of Informatics (Japan) .................................................. [10934-11]

8:25 am: Achieving the Heisenberg limit in quantum metrology using quantum error correction (Invited Paper), Liang Jiang, Shih, Zhour, Mengyuan Zhang, Yale Univ. (USA); John Preskill, Caltech (USA) .................................................. [10934-51]

8:50 am: Single-photon quantum metrology (Invited Paper), Thomas Gerrits, National Institute of Standards and Technology (USA) .................................................. [10934-52]

9:15 am: Recent progress in multiphoton quantum technologies (Invited Paper), Omar Magana-Loaiza, Louisiana State Univ. (USA) .................................................. [10934-53]

9:40 am: Toward a quantum enhanced holometer: preliminary results of a power-recycled 2D optical cavity at INRIM (Invited Paper), Elena Losero, Silvia Padruttino, Fabio Saccomandi, Massimo E. Zucco, Paolo Traina, Ivano RuBerchero, Ivo Pietro Degiovanni, Marco Genovesi, Istituto Nazionale di Ricerca Metrologica (Italy) .................................................. [10934-54]

Coffee Break .................. Tue 10:05 am to 10:30 am

SESSION 13
LOCATION: ROOM 209 (SOUTH LEVEL TWO) ....... TUE 10:30 AM TO 12:10 PM

Entanglement-Enhanced Precision Metrology II
Joint Session with Conferences 10933 and 10934
Session Chair: Thomas Gerrits, National Institute of Standards and Technology (USA)

10:30 am: Experimental validation of new bounds on nonlocal correlations (Invited Paper), Elihu Cohen, Univ. of Ottawa (Canada) .................................................. [10934-32]

10:55 am: Using interaction-based readouts to approach the ultimate limit of detection noise robustness for quantum-enhanced metrology in collective spin systems (Invited Paper), Simon Haine, Univ. of Sussex (United Kingdom) .................................................. [10934-55]

11:20 am: From quantum coherence to nonclassicality and metrological power (Invited Paper), Kok Chuan Bobby Tan, Hyunseok Jeong, Seoul National Univ. (Korea, Republic of); Tyler Volkoff, Konuk Univ. (Korea, Republic of); Hyukjoon Kwon, Seoul National Univ. (Korea, Republic of) and Imperial College London (United Kingdom) .................................................. [10934-56]

11:45 am: Super-resolution enhancement by quantum image scanning microscopy (Invited Paper), Ron Tenne, Uri Rossman, Batel Rehavi, Weizmann Institute of Science (Israel); Yonatan Israeli, Weizmann Institute of Science (Israel) and Stanford Univ. (USA); Alexander Kruhniyi-Pleszak, Radek Lapkiewicz, Univ. of Warsaw (Poland); Yaron Gilberberg, Dan Oron, Weizmann Institute of Science (Israel) .................................................. [10934-57]

Lunch/Exhibition Break .................. Tue 12:10 pm to 1:30 pm
Session 9: New Directions in Precision Metrology I

Monday 4 February 2019
10:30 AM - 12:10 PM
Location: Room 209 (South Level Two)
Session Chair: Avi Pe'er, Bar-Ilan Univ. (Israel)

Speckle-based spectrometer (Invited Paper)
Paper 10934-38
Time: 10:30 AM - 10:55 AM
Author(s): Hui Cao, Yale Univ. (United States)

High-speed mid-infrared detectors (Invited Paper)
Paper 10934-102
Time: 10:55 AM - 11:20 AM
Author(s): Johannes Hilbrand, Benedikt Schwarz, Hermann Detz, Aaron Maxwell Andrews, Gottfried Strasser, Technische Univ. Wien (Austria)

We demonstrate high-frequency operation of both QCDs and QWIPs connected to a monolithic coplanar transmission line without air-bridge. A single-period QCD with more than 0.8 AW responsivity at 300K paves the way towards sensitive multiheterodyne detection at room-temperature.

Super phase oscillations (Invited Paper)
Paper 10934-41
Time: 11:20 AM - 11:45 AM
Author(s): John C. Howell, The Hebrew Univ. of Jerusalem (Israel)

Advances in using orbital-angular-momentum beams for sensing and imaging applications (Invited Paper)
Paper 10934-39
Time: 11:45 AM - 12:10 PM
Author(s): Alan E. Willner, The Univ. of Southern California (United States)

Lunch Break 12:10 PM - 1:40 PM

Session 10: New Directions in Precision Metrology II

Monday 4 February 2019
1:40 PM - 3:20 PM
Location: Room 209 (South Level Two)
Session Chair: John C. Howell, The Hebrew Univ. of Jerusalem (Israel)

The spectrum of the vacuum as a primary reference for radiometry (Invited Paper)
Paper 10934-42
Time: 1:40 PM - 2:05 PM
Author(s): Samuel Lemieux, Robert W. Boyd, Univ. of Ottawa (Canada)

Recent developments in advanced techniques for gravitational-wave detection (Invited Paper)
Paper 10934-43
Time: 2:05 PM - 2:30 PM
Author(s): Yanbei Chen, Caltech (United States)

Gravitational decoherence and gravitational-wave function collapse (Invited Paper)
Paper 10934-44
Time: 2:30 PM - 2:55 PM
Author(s): Angelo Bassi, Univ. degli Studi di Trieste (Italy)

Squeezing enhanced Raman spectroscopy (Invited Paper)
Paper 10934-45
Time: 2:55 PM - 3:20 PM
Author(s): Yoad Michael, Michael Rosenbluh, Avi Pe'er, Bar-Ilan Univ. (Israel)

Coffee Break 3:20 PM - 3:50 PM