

3rd Bonn Humboldt Award Winners' Forum
"Frontiers in Quantum Optics:
Taming the World of Atoms and Photons –
100 Years after Niels Bohr"

9 - 12 October 2013
Bonn

Programme

Wednesday, 9 October 2013

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| from 3:00 p.m. | Arrival and registration of the participants at Hotel Bristol and Hotel Residence | Hotel Bristol Prinz-Albert-Straße 2 53113 Bonn Hotel Residence Kaiserplatz 11 53113 Bonn |
| 4:30 p.m. | Walk from the hotels to the university | Meeting points: Hotel lobbies Hotel Bristol Hotel Residence |
| 5:00 p.m. | Opening Ceremony Welcome Addresses Professor Dr. Jürgen Fohrmann Rector, Universität Bonn Jürgen Nimptsch Mayor, City of Bonn Professor Dr. Helmut Schwarz President, Alexander von Humboldt Foundation Keynote Lecture Professor Dr. Serge Haroche Collège de France, Paris "Controlling photons in a box to explore the quantum world" | Lecture Hall I Universität Bonn Regina-Pacis-Weg 3 53113 Bonn |
| afterwards | Reception | Säulenhalle Universität Bonn |
| 9:00 p.m. | Walk from the university to the hotels | |

Thursday, 10 October 2013

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| from 8:00 a.m. | Registration and help desk | Hotel Bristol Bonn |
| 9:00 a.m. | Welcome and Introduction Dr. Enno Aufderheide Secretary General Alexander von Humboldt Foundation Professor Dr. Wolfgang Sandner Vice-President Deutsche Physikalische Gesellschaft Professor Dr. Dieter Meschede Universität Bonn | Conference Room "Chur I/II" Hotel Bristol Bonn |
| 9:30 a.m. | Panel "Exploring the quantum world with atoms and photons" Chair and Introduction: Professor Dr. Jean-Michel Raimond | Conference Room "Chur I/II" Hotel Bristol Bonn |
| 9:45 a.m. | Keynote lecture: Professor Dr. Howard J. Carmichael "100 years of quantum jumps: Inspiration, refutation, observation and reformulation" | |
| 10:45 a.m. | Coffee and tea break | |
| 11:00 a.m. | Professor Dr. Vahid Sandoghdar "Efficient coupling of single photons and single quantum emitters" | Conference Room "Chur I/II" Hotel Bristol Bonn |
| 11:30 a.m. | Professor Nir Davidson "Long coherence times with dense ultra-cold atomic ensembles" | |
| 12:00 p.m. | Professor Dr. Atac Imamoglu "Solid state quantum optics" | |
| 12:30 p.m. | Lunch | Restaurant Majestic Hotel Bristol Bonn |

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| 1:45 p.m. | Short presentations of posters (for details please see page 9ff) Chair: Professor Dr. Artur Widera | Conference Room "Chur I/II" Hotel Bristol Bonn |
| 2:15 p.m. | Poster session (including coffee and tea break) | |
| 3:00 p.m. | Panel "Cold atoms and many body physics" Chair and Introduction: Professor Dr. Wolfgang Ketterle | Conference Room "Chur I/II" Hotel Bristol Bonn |
| 3:15 p.m. | Keynote lecture: Professor Dr. Georgii V. Shlyapnikov "Many-body physics of quantum gases in disorder" | |
| 4:15 p.m. | Coffee and tea break | |
| 4:30 p.m. | Professor Dr. Massimo Inguscio "Ultracold fermions and novel one-dimensional matter" | Conference Room "Chur I/II" Hotel Bristol Bonn |
| 5:00 p.m. | Professor Dr. Michael Köhl "Photonic coupling of atomic and solid state quantum systems" | |
| 5:30 p.m. | Professor Dr. Tilman Pfau "A single electron in a Bose-Einstein Condensate" | |
| 6:00 p.m. | Dinner | Restaurant Majestic Hotel Bristol Bonn |
| 7:30 p.m. | Walk to Beethoven-Haus, Bonn | Meeting point: Hotel lobby Hotel Bristol |
| 8:00 p.m. | Lecture Recital Professor Dr. William A. Kinderman „Transformational processes in Beethoven: The piano sonata in C minor, opus 111 " | Kammermusiksaal Beethoven-Haus Bonngasse 24-26 53111 Bonn |

Friday, 11 October 2013

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| from 8:00 a.m. | Registration and help desk | Hotel Bristol Bonn |
| 9:00 a.m. | Panel "Quantum information science" Chair and Introduction: Professor Dr. Rainer Blatt | Conference Room "Chur I/II" Hotel Bristol Bonn |
| 9:15 a.m. | Keynote lecture: Professor Dr. Rainer Blatt "Quantum information science with trapped ions" | |
| 10:15 a.m. | Coffee and tea break | |
| 10:30 a.m. | Professor Dr. Jian-Wei Pan "Some recent experimental progresses in quantum manipulation with photons and cold atoms" | Conference Room "Chur I/II" Hotel Bristol Bonn |
| 11:00 a.m. | Dr. Andrea Alberti "Quantum walks with neutral atoms: From a simple interferometer to quantum transport phenomena" | |
| 11:30 a.m. | Professor Dr. David DiVincenzo "Prospects for superconducting qubits" | |
| 12:30 p.m. | Lunch | Restaurant Majestic Hotel Bristol Bonn |
| 1:30 p.m. | Panel "Precision measurements and hot topics" Chair and Introduction: Professor Dr. Elisabeth Giacobino | Conference Room "Chur I/II" Hotel Bristol Bonn |
| 1:45 p.m. | Keynote lecture: Professor Dr. Jun Ye "Probing exotic quantum matter with clock precision" | |
| 2:45 p.m. | Coffee and tea break | |

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| 3:00 p.m. | Professor Dr. Edward Allen Hinds "Testing fundamental physics with cold molecules" | Conference Room "Chur I/II" Hotel Bristol Bonn |
| 3:30 p.m. | Professor Dr. Gerald Gabrielse "The most precisely measured and calculated property of an elementary particle: The greatest triumph of the standard model" | |
| 4:00 p.m. | Professor Dr. Markus Aspelmeyer „Quantum optomechanics: Quantum optical control of nano-, micro- and macro-mechanics“ | |
| 4:30 p.m. | Coffee and tea break | |
| 7:00 p.m. | Reception before Conference Dinner | Lounge of Hotel Bristol |
| 7:30 p.m. | Conference Dinner Dinner Speech: Professor Dr. Hans-Albert Bachor Australian National University, Wamboin | Conference Room "Chur I/II" Hotel Bristol Bonn |

Saturday, 12 October 2013

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| 9:45 a.m. | Bus transfer from Hotel Bristol | Meeting point: Hotel lobby Hotel Bristol |
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| 11:15 a.m. | Visit and guided tour of Castle Burg Satzvey (including lunch break) | Burg Satzvey An der Burg 3 53894 Mechernich |
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| 2:30 p.m. | Bus Transfer to Effelsberg | |
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| 3:30 p.m. | Visit of the Radio Telescope Effelsberg Max Planck Institut für Radioastronomie | Max-Planck-Straße 28 53902 Bad Münstereifel/ Effelsberg |
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| 5:30 p.m. | Wine tasting and farewell dinner Weingut Meyer-Näkel, Bad Neuenahr | Kloster Marienthal Klosterstraße 3-5 53507 Marienthal |
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| approx 9:30 p.m. | Arrival at Hotel Bristol, Bonn | |
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Sunday, 13 October 2013

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| until 12:00 p.m. | Checkout and departure | |
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Poster session 10 and 11 October 2013

*These posters were accepted for poster presentations on 10 October 2013.

- P01* Hans-Albert Bachor, Department of Physics, Australian National University
"Using quantum optics techniques in biology"
- P02* Marianne Bader, Max Planck Institut für die Physik des Lichts, Erlangen
"Exploiting time-reversal symmetry for optimizing the coupling efficiency to a cavity"
- P03* Michael Bauer, Universität Kaiserslautern
"Interaction between single neutral atoms and an ultracold atomic gas"
- P04 Igor, Bejenari, Universität Duisburg-Essen
"Atomistic calculation of thermoelectric properties of Si nanowires"
- P05 Stefan Brakhane, Institut für Angewandte Physik, Universität Bonn
„2D discrete quantum simulator“
- P06* Alexey Chizhik, Universität Göttingen
"Nanocavity: From fundamentals to applications"
- P07 Deung-Jang Choi, Universität Hamburg
"Controlling spin stability by a vector magnetic field and atom manipulation"
- P08 Nishita Desai, University College London
"An updated analysis of radion-higgs mixing in the light of LHC data"
- P09 Alain Moise Dikande, Max Planck Institut für Physik komplexer Systeme, Dresden
"Non-perturbative formulations of the dynamics of spatially imbalanced double-hump Bose-Einstein condensates under gravity"
- P10 David Andrew Duncan, Technische Universität München
"Quantitative adsorbate structure determination under catalytic reaction conditions"
- P11* Joachim Fischbach, Institut für Quantenphysik, Universität Ulm
"Entanglement and decoherence in strongly coupled two-level systems"
- P12 Jose Gallego Fernández, Institut für Angewandte Physik, Universität Bonn
„Photon storage in a small atomic ensemble with a fiber-based resonator“
- P13* Peng Gao, Universität Stuttgart
"Phase retrieval via active modulation during beam propagation"
- P14 Enno Giese, Universität Ulm
"Double Bragg diffraction: A new tool for atom optics"

- P15 Hannes Gorniaczyk, Universität Stuttgart
"Coherent Rydberg excitation in thermal microcells"
- P16 Fabian Grusdt, Universität Kaiserslautern
"Topological edge states in the one-dimensional super-lattice Bose-Hubbard model"
- P17* Michael Hoening, Universität Kaiserslautern
"Crystallization of atoms and photons in cold Rydberg ensembles"
- P18* Sebastian Hofferberth, 5. Physikalisches Institut, Universität Stuttgart
"Single photon nonlinear optics in ultracold Rydberg gases"
- P19 Johannes Hölzl, AG Quantum Optics and Quantum Information, Universität Erlangen
"Nonclassicality and nonlocality of spatial two-photon correlations of disparate sources"
- P20 David B. Hume, Universität Heidelberg
"Accurate Atom Counting in Mesoscopic Ensembles"
- P21* Nils Huntemann, Physikalisch-Technische Bundesanstalt, Braunschweig
"Yb+ Single-Ion optical frequency standard with systematic uncertainty at the 1e-17 level"
- P22* Francesco Intravaia, Humboldt-Universität zu Berlin
"Fluctuation-induced phenomena: Fundamental and technological implications"
- P23 Peter Arthur Jacobson, Max Planck Institut für Festkörperforschung, Stuttgart
"Magnetic properties of complex spin structures by combined STM/AFM"
- P24 Liangzhi Kou, Universität Bremen
"Tunable electronic/magnetic properties in transition metal dichalcogenide nanoribbon and heterostructures"
- P25 Ralf Labouvie, Universität Kaiserslautern
"Dynamics of quantum-systems with localized dissipation"
- P26 Abdollah Langari, Max Planck Institut für Physik komplexer Systeme, Dresden
"Renormalization of quantum information measures: An approach to quantum criticality"
- P27 Marc Lapert, Technische Universität München
"Molecular orientation at high temperature"
- P28 Ian Daniel Leroux, Physikalisch-Technische Bundesanstalt, Braunschweig
"A portable aluminium-ion frequency standard for relativistic geodesy"
- P29 Graham Lothead, 5. Physikalisches Institut, Universität Stuttgart
"Coupling a single electron to a Bose-Einstein condensate"
- P30 Robert Maiwald, Physikalisches Institut, Universität Bonn
"Free space light-atom interface"

- P31 Thomas Mehringer, FAU Erlangen-Nürnberg
"Superresolving multiphoton interferences with independent light sources"
- P32 David-Marcel Meier, Physikalisch-Technische Bundesanstalt, Braunschweig
"Laser spectroscopy of trapped Thorium ions: Towards a nuclear optical clock"
- P33 Thomas Niederprüm, Universität Kaiserslautern
"Rydberg physics on the millisecond timescale"
- P34 René Reimann, Institut für Angewandte Physik, Universität Bonn
„EIT-control and heterodyne spectroscopy of single atom motion in cavity QED“
- P35* Carsten Robens, Institut für Angewandte Physik, Universität Bonn
„Direct synthesis of light polarization for state-dependent transport of atoms“
- P36 Dag Schmidt, Universität Tübingen
"Collective light scattering from a Bose-Einstein condensate into the modes of an optical ring resonator"
- P37 Bruno Sciollo, Physikalisches Institut, Universität Bonn
"Anomalous diffusion in the Bose-Hubbard model with dissipation"
- P38 Ameneh Sheikhan, Physikalisches Institut, Universität Bonn
"Relaxation dynamics of a Fermi gas in an optical superlattice"
- P39 Nahid Talebi Sarvari, Max Planck Institut für Intelligente Systeme, Stuttgart
"Photon-assisted processes in the interaction of electron beams and plasmons: A numerical study"
- P40 Vipin Kerala Varma, Bethe Center for Theoretical Physics, Bonn
"Lattice bosons with two, three, and four body interactions"
- P41 Lev Vidmar, Universität München
"Sudden expansion of Mott insulators in one dimension"
- P42* Ulrich Vogl, Max Planck Institut für die Physik des Lichts, Erlangen
"Propagation of a bipartite entangled state through a fast-light medium"
- P43 Xing-Can Yao, Universität Heidelberg
"Quantum information processing with multi-photon entanglement"
- P44 Dylan Curtis Yost, Max Planck Institut für Quantenoptik, Garching
"Hydrogen 1S-3S Frequency Comb Spectroscopy"

Scientific direction

Chair: Professor Dr. Dieter Meschede

Professor at Institut für Angewandte Physik, Universität Bonn

Professor Dr. Elisabeth Giacobino

Université de Paris VI (Pierre et Marie Curie)

Professor Dr. Wolfgang Ketterle

Massachusetts Institute of Technology, Cambridge

Professor Dr. Jean-Michel Raimond

Université de Paris VI (Pierre et Marie Curie)

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