

445th Wilhelm and Else Heraeus Seminar

Quantum Measurement and Metrology with Solid State Devices

1 – 5 November 2009

Physikzentrum Bad Honnef, Germany

<http://www.ptb.de/heraeus445/>

Sunday, 1 Nov. 2009

arrival

18:30 informal get together and dinner in the Ratskeller

Monday, 2 Nov. 2009

09:00 - 09:15 Welcome address

09:15 - 10:45 C. Caves (U New Mexico)
Quantum metrology

10:45 coffee and posters

11:15 - 12:45 J. Clarke (UC Berkeley)
Ultimate sensitivity of SQUIDs

12:45 lunch

14:00 - 15:00 A. Imamoglu (ETH Zürich)
Optical manipulation and measurement of spins in quantum dots

15:00 - 16:00 A. Korotkov (UC Riverside)
Non-projective measurement of solid-state qubits

16:00 coffee and posters

16:30 - 17:30 O. Astafiev (NEC)
Quantum optics with artificial atoms

17:30 - 18:30 chair: G. Schön (U Karlsruhe)
discussions

18:30 special dinner with free drinks sponsored by Heraeus Foundation

20:00 - 21:00 J. Martinis (UC Santa Barbara)
Generating arbitrary photon states in superconducting resonators: the quantum digital to analog converter

Tuesday, 3 Nov. 2009

- 09:00 - 10:30 M. Devoret (Yale)
Josephson-based parametric amplifiers
- 10:30 coffee and posters
- 11:00 - 12:30 D. Esteve (CEA Saclay)
Frequency-current conversion in single Cooper pair circuits
- 12:30 lunch
- 14:00 - 15:00 J. Pekola (Helsinki UT)
Hybrid single-electron turnstile
- 15:00 - 16:00 F. Piquemal (LNE, France)
Quantum metrology triangle
- 16:00 coffee and posters
- 16:30 - 17:30 M. Wulf (PTB)
Prospects of error correction in electron-counting experiments
- 17:30 - 18:30 chair: A. Zorin (PTB)
discussions
- 18:30 dinner
- 20:00 - 21:00 R. Gross (WMI TU München)
Cross-correlation detection of weak microwave signals: vacuum fluctuations and variance of nontrivial propagating signals

Wednesday, 4 Nov. 2009

- 09:00 - 10:00 J. Twamley (Macquarie U)
Quantum control and measurement
- 10:00 – 11:00 P. Schmidt (PTB)
Quantum logic spectroscopy and precision measurements
- 11:00 coffee and posters
- 11:30 - 12:30 A. Wallraff (ETH Zürich)
Photons, qubits and computers - A quantum mechanics lab on a chip
- 12:30 lunch
- 14:00 - 15:00 A. Ustinov (U Karlsruhe)
Spectroscopy of material defects using superconducting qubits
- 15:00 – 16:00 D. Haviland (KTH Stockholm)
Nonlinear electrodynamics with Josephson junction series arrays
- 16:00 coffee and posters

16:30 - 17:30 A. Shnirman (U Karlsruhe)

Charge solitons

17:30 - 18:30 chair: R. Gross (WMI TU München)

discussions

18:30 dinner

20:00 - 21:00 F. K. Wilhelm (U Waterloo)

Dynamics and backaction in the Josephson bifurcation amplifier

Thursday, 5 Nov. 2009

09:00 - 10:00 F. Khalili (Moscow)

QND measurements of macroscopic mechanical objects

10:00 - 11:00 M. LaHaye (Caltech)

Qubit-coupled nanomechanics

11:00 coffee

11:30 - 12:30 A. Tzalenchuk (NPL, UK)

Materials aspects of quantum metrology

12:30 - 12:40 Closing remarks

13:00 lunch

departure