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ESF Research Conferences

A Programme of the European Science Foundation

Fundamental Problems of Mesoscopic Physics Entanglement and Coherence in Nanoelectronics

Acquafredda di Maratea (near Naples), Italy, 3-8 September 2005

Chair: **Rosario Fazio** (Scuola Normale Superiore, Pisa, I)

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- Scuola Normale Superiore



- European Office of Aerospace Research and Air Force Office of Scientific Research,
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Final Programme

On line at: <http://www.esf.org/conferences/pc05188>

Saturday 3 September

Late afternoon / early evening	Registration at the hotel reception and ESF desk
19.30	Welcome drink
20.00	Dinner

Sunday 4 September

Note: 25 min are allocated to each talk + 5 min for discussion.

Session 1: Coherence and Disorder

09.00-09.30	Conference Opening
09.30-10.00	Norman Birge (Michigan State University, US) <i>Magnetic impurities, energy exchange, and dephasing in metals</i>
10.00-10.30	Denis Basko (Princeton University, US) <i>MIT in a weakly interacting many-electron system with localized single-particle states</i>
10.30-11.00	Coffee break
11.00-11.30	Vladimir Kravtsov (ICTP Trieste, I) <i>T-duality in the SUSY theory of disordered quantum systems</i>
11.30-12.00	Alexander Altland (Universität zu Köln, D) <i>Anderson localization from the replica formalism</i>
12.00-12.30	Florian Marquardt (LMU Munich, D) <i>Decoherence in degenerate Fermi systems</i>
13.00	Lunch

Session 2: Entanglement in mesoscopic conductors

16.30-17.00	Carlo Beenakker (Leiden University, NL) <i>Optimal quantum entanglement pump</i>
17.00-17.30	Markus Buttiker (University of Geneva, CH) <i>Generation, manipulation, and detection of orbitally entangled quasi-particle states</i>
17.30-18.00	Coffee break
18.00-18.30	Fabio Taddei (Scuola Normale Superiore, Pisa, I) <i>Entanglement witness for electrons in mesoscopic conductors</i>
18.30-19.00	Johann Blatter (ETH Zurich, CH) <i>Pulsed spin-entangled electron pairs on demand</i>
19.30	Dinner
21.00	Poster session

Monday 5 September

Session 3: Quantum coherence and superconductivity

09.00-09.30	Oleg Astafiev (NEC Corporation, JP) <i>Noise and decoherence in Josephson charge qubits</i>
09.30-10.00	Giuseppe Falci (University of Catania, I) <i>Tba</i>
10.00-10.30	Frank Hekking (Université J. Fourier Grenoble, F) <i>Quantum dynamics and phase diagram of underdamped Josephson junctions</i>
10.30-11.00	Coffee break
11.00-11.30	Igor Yurkevich (University of Birmingham, UK) <i>Low-Temperature Decoherence of Qubit Coupled to Background Charges</i>

- 11.30-12.00 **Hideaki Takayanagi** (NTT Laboratories, Atsugi, JP)
Readout of flux qubits
- 12.00-12.30 **Jukka Pekola** (Helsinki University of Technology, FIN)
Evidence of Cooper pair pumping with combined flux and voltage control
- 13.00 Lunch

Session 4: Coherence in interacting systems

- 16.00-16.30 **Daniel Loss** (University of Basel, CH)
Spin Decoherence due to Hyperfine Interaction in Single and Double Dots
- 16.30-17.00 **Alexander Kamenev** (University of Minnesota, US)
Transport through 1d Coulomb systems
- 17.00-17.30 **Igor Gornyi** (Forschungszentrum Karlsruhe, D)
Dephasing and weak localization in disordered Luttinger liquid
- 17.30-18.00 Coffee break
- 18.00-18.30 **Vladimir Fal'ko** (University of Lancaster, UK)
Spin relaxation and decoherence in quantum dots
- 18.30-19.00 **Yigal Meir** (Ben Gurion University, IL)
Formation of bound states in point contacts and quantum wires
- 19.30 Dinner
- 21.00 Poster session

Tuesday 6 September

Session 5: Quantum coherence in superconducting systems

- 09.00-09.30 **Yuriy Makhlin** (Landau Institute, Moscow, RU)
Tba
- 09.30-10.00 **Mikhail Feigelman** (Landau Institute, Moscow, RU)
Superconducting tetrahedral quantum bits
- 10.00-10.30 **Hans Mooij** (TU-Delft, NL)
Superconducting flux qubits: coherence in single and coupled systems
- 10.30-11.00 Coffee break
- 11.00-11.30 **Per Delsing** (Chalmers University, Göteborg, S)
The single Cooper-pair box as a charge qubit
- 11.30-12.00 **Laurent Levy** (LCMS/CNRS Grenoble, F)
Adiabatic pumping through a double island device
- 12.00-12.30 **Michal Avinun Kalish** (Weizmann Institute of Science, IL)
From Mesoscopic to Universal Transmission Phase in Quantum Dots
- 13.00 Lunch
- 14.00 Half-day excursion
- 20.00 Aperitif and Conference Dinner

Wednesday 7 September

Session 6: Coherence in interacting systems

09.00-09.30	Mikhail Kiselev (Universität Wuerzburg, D) <i>The Interplay of Spin and Charge Channels in Zero Dimensional Systems</i>
09.30-10.00	Jürgen König (Universität Bochum, D) <i>Probing single spins in quantum dots by electronic transport</i>
10.00-10.30	Gerd Schön (Universität Karlsruhe, D) <i>Nonequilibrium Kondo effect in a quantum dot coupled to ferromagnetic leads</i>
10.30-11.00	Coffee break
11.00-11.30	Thierry Martin (Université de la Méditerranée, Marseille, F) <i>A Mach-Zehnder interferometer in the Fractional Quantum Hall effect</i>
11.30-12.00	Arturo Tagliacozzo (Università di Napoli, I) <i>Operating on electrons confined in semiconducting nanostructures coherently, by means of external fields</i>
12.00-12.30	Jason Petta (Harvard University, US) <i>Spin relaxation and dephasing in a two-electron double dot</i>
13.00	Lunch

Session 7: Quantum transport and Interaction

16.00-16.30	Leonid Glazman (University of Minnesota, US) <i>Dynamical Structure Factor of 1D Fermions: Going Beyond the Tomonaga-Luttinger Model</i>
16.30-17.00	Ady Stern (Weizmann Institute of Science, IL) CANCELLED <i>Interference and transport in non-abelian quantum Hall states</i>
17.00-17.30	Robert Shekhter (Chalmers University, Göteborg, S) <i>Quantum nanomechanics of shuttle systems</i>
17.30-18.00	Coffee break
18.00-18.30	Richard Deblock (Laboratoire de Physique des Solides, Orsay, F) <i>Emission/Absorption asymmetry in the quantum noise of a Josephson junction</i>
18.30-19.00	Gilles Montambaux (Université Paris-Sud, F) <i>Non-exponential vs exponential quasiparticle and phase relaxations in low dimensional disordered conductors</i>
19.30	Dinner
21.00	Special discussion about the future of the conference series

Thursday 8 September

Breakfast and departure

All posters are accepted, unless the Conference Chair informs you otherwise.