The Abdus Salam International Centre for Theoretical Physics

Conference on Strongly Interacting Systems at the Nanoscale

Cosponsor(s): co-sponsored by ONRG - Office of Naval Research GlobalEOARD - European Office of Aerospace Research and Development of the USAFI2CAM - International Institute for Complex Adaptive Matter
Organizer(s): Directors: A.J. Millis, V.I. Falko, B.N. Narozhny
Trieste - Italy, 08 - 12 August 2005

Final programme

Monday, 8 August 2005 (AM) MESOSCOPIC PHYSICS - Part I (Room:Adriatico Guest House Kastler Lecture Hall)
Chairperson: Prof. Vladimir FALKO

8 August 2005

08:30 - 10:20	**Registration and Administrative Formalities**
10:20 - 10:30	**Opening**
10:30 - 11:15	**Leonid GLAZMAN** / *Minnesota, USA* **Energy-resolved inelastic scattering off a magnetic impurity**
11:15 - 11:35	**Aditi MITRA** / *Columbia, USA* **Non-equilibrium transport in quantum impurity models**
11:35 - 12:20	**Denis BASKO** / *Princeton, USA* **Metal-insulator transition in a weakly interacting many-electron system with localized single-particle states**
12:20 - 13:05	**Alexander MIRLIN** / *Karlsruhe, Germany* **Interacting electrons in disordered quantum wires: Localization and dephasing**
13:05 - 16:05	--- Lunch break ---

Monday, 8 August 2005 (PM) QUANTUM TRANSPORT AND CORRELATIONS - Part I (Room:Adriatico Guest House Kastler Lecture Hall)
Chairperson: Prof. Natan ANDREI

8 August 2005

16:20 - 16:40 --- DISCUSSIONS during coffee break ---

16:40 - 17:25 **Amir YACOBY** / *Weizmann Inst., Israel*
Electrons in one-dimension: Spin-charge separation and localization

17:25 - 17:45 **Igor GORNY** / *Karlsruhe, Germany*
Interaction effects on magneto-oscillations in a 2D electron gas

17:45 - 18:05 **Emiliano PAPA** / *Austin, Texas, USA*
Quantum Hall line junctions, and gated edge states in quantum point constriction

18:05 - 18:50 **Andrey CHUBUKOV** / *Maryland, USA*
Non-analyticities in 2D and 3D Fermi liquids

18:50 - 19:50 --- Welcome Reception ---

Tuesday, 9 August 2005 (AM) CENTRAL SPIN PROBLEM (Room:Adriatico Guest House Kastler Lecture Hall)
Chairperson: Prof. Matthew HASTINGS

9 August 2005

09:00 - 09:45 **Daniel LOSS** / *Basel, Switzerland*
Electron spin decoherence in single and double quantum dots

09:45 - 10:30 **Yuly NAZAROV** / *Delft, Netherlands*
Nuclear magnetic field in quantum dots

10:30 - 11:00 --- DISCUSSIONS during coffee break ---

11:00 - 11:45 **Boris ALTSHULER** / *Princeton, U.S.A.*
To be confirmed

12:30 - 15:30 --- Lunch break ---

Tuesday, 9 August 2005 (PM) MESOSCOPIC PHYSICS - Part II (Room:Main Building Main Lecture Hall)
Chairperson: Prof. Boris NAROZHNY

9 August 2005

16:00 - 17:00 **Charles MARCUS** / *Harvard, U.S.A.*
Chairman: Prof. K.R. Sreenivasan
ICTP COLLOQUIUM Quantum circuits

17:00 - 17:30 (Room: Main Building, Lobby)
--- DISCUSSIONS during coffee break ---

17:30 - 17:50 **William COISH** / *Basel, Switzerland*
Hyperfine interaction in a two-electron double quantum dot

17:50 - 18:10 **Roberta CITRO** / *Salerno, Italy*
Spin and charge pumping in an interacting quantum wire

18:10 - 18:30 **Matthias ESCHRIG** / *Karlsruhe, Germany*
Interplay between ferromagnetic and superconducting proximity effects

Wednesday, 10 August 2005 (AM) STRONGLY CORRELATED SYSTEMS (Room:Adriatico Guest House Kastler Lecture Hall)
Chairperson: Prof. Alexei M. TSVELIK and Prof. Leon BALENTS

10 August 2005

09:00 - 09:45 **Leon BALENTS** / *Santa Barbara, U.S.A.*
Frustrating Mott physics of bosons on the triangular lattice

09:45 - 10:30 **Matthias TROYER** / *ETH, Zurich, Switzerland*
Stability of lattice super-solids

10:30 - 10:50 **Anna POSAZHENNIKOVA** / *Karlsruhe, Germany*
Under-screened Kondo physics of a spin 1 quantum dot

10:50 - 11:10 --- DISCUSSIONS during coffee break ---

11:10 - 11:55 **Natan ANDREI** / *Rutgers, U.S.A.*
Non-equilibrium transport in quantum impurity models (Bethe-Ansatz for open systems)

11:55 - 12:15 **Marcus KINDERMANN** / *Cornell, USA*
Transport through a clean interacting wire: exactly solvable limits

12:15 - 13:00 **Nick ZHITENEV** / *Bell Labs Lucent Techn., Murray Hill, USA*
Nano- and meso-scale molecular junctions: Control of chemical bonds and surface topography at metal-molecule interface

15:00 - 18:00 --- Excursion to Aquileia Ruins (Udine) ---

Thursday, 11 August 2005 (AM) COLD ATOMS AND STRONGLY CORRELATED SYSTEMS (Room:Adriatico Guest House Kastler Lecture Hall)
Chairperson: Prof. Akira FURUSKI

11 August 2005

09:00 - 09:45 **Cord MUELLER** / *Bayreuth, Germany*
Localization of matter waves in 2D-disordered optical potentials

09:45 - 10:30 **Georgy SHLYAPNIKOV** / *Orsay, France*
Strongly interacting Fermi gases in the molecular and unitarity regimes

10:30 - 11:00 --- DISCUSSIONS during coffee break ---

11:00 - 11:45 **Vadim CHEIANOV** / *Lancaster, U.K.*
Exact results for the three-particle decay rate in a strongly correlated one-dimensional Bose gas

11:45 - 12:30 **Alexey TSVELIK** / *Brookhaven, USA*
Finite temperature correlation functions in integrable systems: exact results

12:30 - 15:30 --- Lunch break ---

16:20 - 16:40 --- DISCUSSIONS during coffee break ---

16:40 - 18:30 **Poster Session**

18:30 - 19:15 **P. WIEGMAN** / *The University of Chicago, U.S.A.*
Informal Presentation: Quantum Shock Waves

Friday, 12 August 2005 (AM) QUANTUM TRANSPORT AND CORRELATIONS - Part II (Room:Adriatico Guest House Kastler Lecture Hall)
Chairperson: Prof. Andy MILLIS

12 August 2005

09:00 - 09:45 **Igor LERNER** / *Birmingham, U.K.*
Decoherence and relaxation in charge qubit

09:45 - 10:30 **Akira FURUSAKI** / *RIKEN, Japan*
Renormalization of impurity scattering in 1D interacting electron systems in magnetic field

10:30 - 11:00 --- DISCUSSIONS during coffee break ---

11:00 - 11:45 **Michael PUSTILNIK** / *Georgia Tech., Atlanta, USA*
Quantum dot as a perfect spin filter

11:45 - 12:05 **Austin LAMACRAFT** / *Princeton, U.S.A.*
Particle correlations in a fermi superfluid

12:05 - 12:50 **Silvano DE FRANCESCHI** / *TASC, Trieste, Italy*
Quantum transport phenomena in nanowires and nanotubes

12:50 - 15:50 --- Lunch break ---

Friday, 12 August 2005 (PM) MESOSCOPIC PHYSICS - Part III (Room:Adriatico Guest House Kastler Lecture Hall)
Chairperson: Prof. Boris ALTSHULER

12 August 2005

16:20 - 16:40 --- DISCUSSIONS during coffee break ---

16:40 - 17:25 **Matthew HASTINGS** / *Los Alamos, U.S.A.*
Slow polaron dynamics via non-equilibrium born-oppenheimer

17:25 - 18:10 **Tomas NOVOTNY** / *Niels Bohr Institute, Copenhagen, Denmark*
Charge transport statistics of quantum shuttles

18:10 - 18:55 **Karsten FLENSBERG** / *Niels Bohr Institute, Copenhagen, Denmark*
Electron-vibron correlations in molecular transistors

19:00 - 20:00 --- Closing Reception ---