The Abdus Salam International Centre for Theoretical Physics

Conference on Quantum Phenomena in Confined Dimensions

Cosponsor(s): NEC Laboratories America, Inc.
Organizer(s): Directors: V. Falko, J. Meyer, A. Millis; ICTP Local Organizer: B. Narozhny
Trieste - Italy, 04 - 08 June 2007

Venue: Adriatico Guest House Kastler Lecture Hall

Final programme

MONDAY, 4 JUNE 2007 (Room:Adriatico Guest House Kastler Lecture Hall)

4 June 2007

08:30 - 10:00 **Registration and Administration Formalities**

10:00 - 10:30 **Coffee break**

10:30 - 10:40 **V. KRAVTSOV** / *Head, ICTP Condensed Matter and Statistical Physics Section*
Opening Remarks

SESSION: QUANTUM DOTS AND WIRES - I
Chairperson: J. MEYER (The Ohio State Univ.)

4 June 2007

10:40 - 11:40 **S. TARUCHA** / *Univ. of Tokyo*
Kondo effect and spin correlation in single InAs self-assembled quantum dots with nanogap electrodes of normal, superconducting and ferromagnetic metal

11:40 - 12:40 **M. SKOLNICK** / *Univ. of Sheffield*
The macroscopically occupied polariton state in semiconductor microcavities

12:40 - 13:00 **A. RUSSELL** / *Univ. of Lancaster*
Bistability of optically-induced nuclear orientation in quantum dots

13:00 - 15:00 --- Lunch break ---

SESSION: GRAPHENE - I
Chairperson: F. GUINEA (CSIC, ICM de Madrid)

4 June 2007

15:00 - 16:00 **P. KIM** / *Columbia Univ.*
Electric transport in graphitic carbon materials

16:00 - 16:30 **K. KECHEDZHI** / *Univ. of Lancaster*
Weak localization magnetoresistance in graphene

16:30 - 17:00 --- Coffee break ---

17:00 - 17:30 **A. SAVCHENKO** / *Univ. of Exeter*
Weak localization in graphene layers

17:30 - 18:30 **B. ALTSHULER** / *Columbia Univ./NEC Res.Inst.Princeton*
PN junction in graphene: optics of electronic flows

19:00 - 20:00 --- Welcome Reception - Adriatico Guest House Terrace ---

TUESDAY, 5 JUNE 2007 (Room:Adriatico Guest House Kastler Lecture Hall)

SESSION: GRAPHENE - II
Chairperson: P. KIM (Univ. of Columbia)

5 June 2007

09:00 - 10:00 **A. MORPURGO** / *Univ. Delft Technology*
Phase coherent transport in graphene

10:00 - 10:20 **F. MOLITOR** / *ETH Zurich*
Mesoscopic transport in graphene

10:20 - 11:00 **V. CHEIANOV** / *Univ. of Lancaster*
Electron transport in inhomogeneous graphene structures

11:00 - 11:30 --- Coffee break ---

SESSION: GRAPHENE - III
Chairperson: K. FLENSBERG (Univ. of Copenhagen)

5 June 2007

11:30 - 12:30 **K. ENSSLIN** / *ETHH - Festkorperphysik, Zurich*
Raman imaging and transport properties of graphene

12:30 - 12:50 **J. PEREIRA** / *Univ. Fed. do Ceara/Univ. Antwerpen*
Quantum dots in doped bilayer graphene

12:50 - 15:00 --- Lunch break ---

SESSION: QUANTUM DOTS AND WIRES - II
Chairperson: R. HAUG (Univ. of Hannover)

5 June 2007

15:00 - 15:40 **K. FLENSBERG** / *Univ. of Copenhagen*
In-elastic electron-electron scattering in quantum wires

15:40 - 16:00 **A. ROMITO** / *The Weizmann Inst. of Science*
Charge fluctuations as dephaser of a spin qubit

16:00 - 16:20 **A. CHUDNOVSKIY** / *Univ. of Hamburg*
Tunneling into strongly biased Tomonaga-Luttinger liquid

16:20 - 16:40 **F. ROMEO** / *Univ. of Salerno*
Phase rigidity breaking in open Aharonov-Bohm ring coupled to a cantilever

16:40 - 17:00 --- Coffee break ---

SESSION: QUANTUM DOTS AND WIRES - III
Chairperson: S. TARUCHA (Univ. Tokyo)

5 June 2007

17:00 - 18:00 **R. HAUG** / *Univ. Hannover*
Transport through single and coupled quantum dots: Noise and statistics

18:00 - 18:20 **M. LAVAGNA** / *CEA, SPSMS/DRFMC, Grenoble*
Theoretical study of the phase evolution in a Kondo quantum dot

18:20 - 18:40 **A. TAGLIACOZZO** / *Univ. di Napoli "Federico II"*
Tuning spin transport and magnetoconductance in a semiconductor quantum ring with Rahsba spin-orbit interaction

WEDNESDAY, 6 JUNE 2007 (Room:Adriatico Guest House Kastler Lecture Hall)

SESSION: QUANTUM DOTS AND WIRES - IV
Chairperson: V. CHEIANOV (Univ. of Lancaster)

6 June 2007

09:00 - 10:00 **N. MASON** / *Univ. of Ilinois at Urbana-Champaign*
Electron interactions in carbon nanotube quantum wires

10:00 - 10:40 **Y. GEFEN** / *The Weizmann Inst. of Science*
Phase lapses and population switching in quantum dots: A quantum phase transition?

10:40 - 11:00 **A. CREPIEUX** / *CNRS, Centre Physique Theorique, Marseille*
Finite size effects, super- and sub-poissonian noise in a nanotube connected to leads

11:00 - 11:30 --- Coffee break ---

SESSION: GRAPHENE - IV
Chairperson: E. ROTENBERG (Lawrence Berkeley Nat. Lab.)

6 June 2007

11:30 - 12:30 **E. ANDREI** / *Rutgers Univ.*
Observation of Dirac fermions in graphene and graphite

12:30 - 13:00 **D. KHVESHCHENKO** / *Univ. of North Carolina*
Composite Dirac fermions in graphene

13:00 - 15:00 --- Lunch break ---

SESSION: SHORT TALKS AND INTRODUCTION OF POSTERS
Chairperson: B. NAROZHNY (ICTP, Trieste)

6 June 2007

15:30 - 17:00 **Short talks and Introdution of Posters**

Metal-insulator transition in a quantum Well system (J. AMALORPAVAM) 05'

Pure dephasing of two charge qubits in vertically coupled quantum dots (W. BEN CHOUIKHA) 05'

Conversion of entanglement between continuous variable and qubit systems (X.Y. CHEN) 05'

Nonlinear transport in ballistic mesoscopic systems: B field symmetry (A. HERNANDEZ) 05'

O-TT transition in SFS junctions with strongly spin-dependent scattering (O. KASHUBA) 05'

Quantum phenomena in carbon-nanotube field emission (S.D. LIANG) 05'

Surface plasmon guidance and control in semiconductor structures (V. MATHEW) 05'

One dimensional many-body dynamics in spin chains detected through multiple quantum coherence NMR experiments (E. RUFEIL FIORI) 05'

The effect of angular dependence of magnetization on electrical transport in GaMnAs/GaAs/GaMnAs heterostructures (A.A. SHOKRI) 05'

Spatially resolved Raman spectroscopy of single- and few-layer graphene (C. STAMPFER) 05'

17:00 - 19:00 **Poster Session and Coffee break**

THURSDAY, 7 JUNE 2007 (Room:Adriatico Guest House Kastler Lecture Hall)

SESSION: QUANTUM DYNAMICS AND CORRELATIONS - I
Chairperson: L.M. BALENTS (Univ. California at Santa Barbara)

7 June 2007

09:00 - 10:00 **D. LOSS** / *Univ. of Basel*
Nuclear spins in quantum dots and interacting 2DEGs

10:00 - 10:30 **C. HONERKAMP** / *Univ. of Wurzburg*
Long range ordered phases of electrons on the honeycomb lattice

10:30 - 11:00 --- Coffee break ---

SESSION: QUANTUM DYNAMICS AND CORRELATIONS - II
Chairperson: M.S. SKOLNICK (Univ. of Sheffield)

7 June 2007

11:00 - 11:40 **R. YOUNG** / *Toshiba Research Europe Ltd., Cambridge*
Quantum light generation and imaging using quantum dots

11:40 - 12:10 **A. GREILICH** / *Univ. of Dortmund*
Electron spin coherence in singly charged InGaAs/GaAs quantum dots

12:10 - 12:30 **B. GUMHALTER** / *Institute of Physics, Zagreb*
Ultrafast electron dynamics and decoherence in quasi-two dimensional surface bands

12:30 - 13:00 **S. VISHVESHWARA** / *Univ. Illinois effects in carbon nanotubes*
Proximity-induced effects in carbon nanotubes

13:00 - 15:00 --- Lunch break ---

SESSION: GRAPHENE - V
Chairperson: K. NOVOSELOV (The Univ. of Manchester)

7 June 2007

15:00 - 16:00 **A. PINCZUK** / *Univ. of Columbia*
Spectroscopy of electrons and phonons in graphene structures

16:00 - 16:30 **D. BASKO** / *Univ. of Columbia*
Effect of inelastic collisions on multiphonon Raman scattering in graphene

16:30 - 17:00 --- Coffee break ---

17:00 - 18:00 **E. ROTENBERG** / *Lawrence Berkeley National Lab.*
Many-body interactions in clean and alkali-adsorbed graphene

18:00 - 18:20 **J. CSERTI** / *Eotvos Lorand Univ.*
Role of the trigonal warping on the minimal conductivity of bilayer graphene

19:00 - 19:00 **Bus Departure for Conference Dinner to 'Rural Trattoria Mezzaluna', Duino Trieste**

FRIDAY, 8 JUNE 2007 (Room:Adriatico Guest House Kastler Lecture Hall)

SESSION: QUANTUM DYNAMICS AND CORRELATIONS - III
Chairperson: Y. GEFEN (The Weizmann Inst. of Science)

8 June 2007

09:00 - 10:00 **L. BALENTS** / *Univ. of California at Santa Barbara*
Semiclassical dynamics and long time asymptotics of the central spin problem

10:00 - 10:45 **J. MEYER** / *The Ohio State Univ.*
Electron-electron interaction effects in quasi-one-dimensional quantum wires

11:00 - 11:30 --- Coffee break ---

SESSION: QUANTUM DOTS AND WIRES - V
Chairperson: A.J. MILLIS (Univ. of Columbia)

8 June 2007

11:30 - 12:30 **K. LE HUR** / *Yale Univ.*
Charge fractionalization and transport in low dimensions

12:30 - 12:50 **S. TEBER** / *CNRS, Lab. Louis Neel, Grenoble*
Attenuation of one-dimensional plasmons

12:50 - 13:10 **R.S. WHITNEY** / *Inst. Max Von Laue-Paul Langevin, Grenoble*
Towards a dephasing diode: asymmetric and geometric dephasing

13:10 - 15:00 --- Lunch break ---

SESSION: GRAPHENE - VI
Chairperson: V. FALKO (Univ. of Lancaster)

8 June 2007

15:00 - 16:00 **F. GUINEA** / *CSIC, ICM de Madrid*
Graphene quantum dots

16:00 - 16:40 **A. LICHTENSTEIN** / *Univ. Hamburg*
Molecular doping and impurity states of graphene

16:40 - 17:00 --- Coffee break ---

17:00 - 18:00 **K. NOVOSELOV** / *Univ. of Manchester*
QED in a pencil trace

18:00 - 18:10 **CLOSING REMARKS**

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