

Moriond 2008
Quantum Transport and Nanophysics



Vith Rencontres de Moriond in Mesoscopic Physics
La Thuile, Italy, on the italian side of the Mont-Blanc,

March 8th - March 15th 2008

Moriond 2008 scientific program

Session labels :

- **GR** : Graphene
- **H** : Hybride structures
- **QHE** : Quantum Hall effect
- **S** : Superconductors
- **QW** : Quantum wires
- **QB** : Qubits
- **NEMS** : Nano electronic mechanical systems
- **QN** : Quantum detection and noise
- **QD** : Quantum dots
- **EM** : Molecular electronics
- **SPIN** : Spintronics
- **QC** : Quantum coherence

N.B. : Oral presentations of 20 or 30 minutes include 5 minutes of questions.

Saturday, March 8th :

17 :00-19 :00 : REGISTRATION

19 :00-20 :00 : GET TOGETHER PARTY

20 :00-21 :00 : DINNER

Sunday, March 9th :

9 :00-9 :30 : INTRODUCTION

9 :30-10 :00 : Francisco Guinea

GR "*Electronic structure and transport in graphene*"

10 :00-10 :20 : David Horsell

GR "*Quantum interference in graphene*"

10 :20-10 :50 : COFFEE BREAK

10 :50-11 :10 : Vadim Cheianov

GR "*Percolation theory of the minimal conductivity of graphene*"

11 :10-11 :40 : Pertti Hakonen

GR "*Shot noise in ballistic single walled carbon nanotubes and in graphene*"

11 :40-12 :00 : Benjamin Huard

GR "*Transport across potential steps in graphene*"

12 :00-14 :00 : LUNCH

14 :00-16 :30 : FREE

16 :30-17 :00 : Poul Erik Lindelof

H "*Carbon nanotube electronic quantum devices*"

17 :00-17 :20 : Hideaki Takayanagi

H "*Enhanced magnetoconductance fluctuations due to proximity effect*"

17 :20-17 :40 : Christoph Strunk

H "*Andreev-bound states and supercurrents in diffusive and ballistic conductors*"

17 :40-18 :10 : COFFEE BREAK

18 :10-18 :30 : Helene Le Sueur

H "*Space and phase dependence of the local density of states in SNS systems probed with a low temperature AFM-STM*"

18 :30-18 :50 : Manuel Houzet

H "*Mesoscopic fluctuations of the supercurrent in diffusive Josephson junctions*"

18 :50-19 :10 : Andrei Zaikin

H "*Spin-resolved crossed Andreev reflection*"

19 :10-19 :30 : Wolfgang Belzig

H "*Elementary Charge Transfer Processes in a Superconductor-Ferromagnet Multi-Terminal Structure*"

20 :00- : DINNER

Monday, March 10th :

- 8 :30-9 :00 : Nissim Ofek
QHE *"Interference between two indistinguishable electrons from independent sources"*
- 9 :00-9 :20 : Peter Samuelsson
QHE *"Entanglement at finite temperatures in mesoscopic conductors"*
- 9 :20-9 :40 : Eugene Sukhorukov
QHE *"Mach-Zehnder interferometry of quantum Hall edge states."*
- 9 :40-10 :10 : COFFEE BREAK
- 10 :10-10 :40 : Dmitri Averin
QHE *"Mach-Zehnder interferometer in the FQHE regime"*
- 10 :40-11 :00 : Patrice Roche
QHE *"Coherence length of edge states in the Integer Quantum Hall regime"*
- 11 :00-11 :30 : Christian Schönberger
QHE *"Unexpected visibility asymmetry in the electronic Mach Zehnder interferometer"*
- 11 :30-12 :00 : Fabio Beltram
QHE *"Particle-hole duality for the investigation of quantum Hall edge channels"*
- 12 :00-14 :00 : LUNCH
- 14 :00-16 :30 : FREE
- 16 :30-17 :00 : Yigal Meir
S *"Transport through disordered superconducting thin films"*
- 17 :00-17 :20 : Tatyana Baturina
S *"Zero-conductivity state of Cooper-pair insulator"*
- 17 :20-17 :40 : Valerii Vinokur
S *"Collective dynamic state of a Josephson junction array"*
- 17 :40-18 :10 : COFFEE BREAK
- 18 :10-18 :30 : Vladimir Kravtsov
S *"Signature of multifractality for off-critical states and the multifractal superconductivity"*
- 18 :30-19 :00 : Amir Yacobi
QW *"charge fractionalization in quantum wires"*
- 19 :00-19 :20 : Karyn Le Hur
QW *"Charge Fractionalization and Transport in low dimensions"*
- 19 :20-19 :50 : Leonid Glazman
QW *"1D Fermions and Bosons beyond the Luttinger Liquid picture"*
- 20 :00-21 :00 : DINNER
- 21 :00-23 :00 : POSTER SESSION 1 : QN, QD, EM, SPIN, GR, QW

Tuesday, March 11th :

- 8 :30-9 :00 : Oleg Astafiev
QB "*Single artificial-atom lasing*"
- 9 :00-9 :20 : Denis Vion
QB "*Cooper pair box qubits at CEA-Saclay*"
- 9 :20-9 :40 : Christopher Wilson
QB "*Probing Multiphoton Dressed States of a Superconducting Qubit*"
- 9 :40-10 :00 : Olivier Buisson
QB "*Strong tunable coupling between a charge qubit and a phase qubit*"
- 10 :00-10 :30 : COFFEE BREAK
- 10 :30-10 :50 : Alexey Ustinov
QB "*Coherent Oscillations in Current-Biased Josephson Junctions*"
- 10 :50-11 :10 : Michael Gershenson
QB "*Superconducting Nanocircuits for Topologically Protected Qubits*"
- 11 :10-11 :30 : Elisabetta Paladino
QB "*Coherent nanodevices as detectors of structured solid-state noise sources*"
- 11 :30-11 :50 : Antti Niskanen
QB "*Dynamical tunable coupling of optimally biased flux qubits*"
- 12 :00-14 :00 : LUNCH
- 14 :00-16 :30 : FREE
- 16 :30-16 :50 : Konstantin Efetov
GR "*Effects of radiation on transport in graphene*"
- 16 :50-17 :10 : Mikhail Feigelman
GR "*Theory of induced superconductivity in graphene*"
- 17 :10-17 :30 : Daniel Huertas-Hernando
GR "*Spin transport in mesoscopic graphene*"
- 17 :30-18 :00 : COFFEE BREAK
- 18 :00-18 :20 : Mihaita Popinciuc
GR "*Graphene Spin Valves*"
- 18 :20-18 :40 : Yasuhiro Niimi
GR "*Real-Space Imaging of Localized Electronic States at Graphite Surfaces*"
- 18 :40-19 :00 : Eyal Buks
NEMS "*Quantum Effects in a Vibrating RF-SQUID*"
- 19 :00-19 :30 : Matt LaHaye
NEMS "*Measurement of Dispersive Coupling Between a Nanoresonator and Cooper-Pair Box Qubit*"
- 20 :00-21 :00 : DINNER

Wednesday, March 12th :

- 8 :30-9 :00 : Klaus Ensslin
 QN *"Time-resolved single electron interference in semiconductor quantum circuits"*
- 9 :00-9 :30 : Gordey Lesovik
 QN *"Noise and Full Counting Statistics of Electronic Transport in Quantum Conductors "*
- 9 :30-10 :00 : Hermann Grabert
 QN *"Josephson junctions as on-chip noise detectors"*
- 10 :00-10 :30 : COFFEE BREAK
- 10 :30-11 :00 : Yuli Nazarov
 QN *"Realistic measurement of non-commutative variables "*
- 11 :00-11 :20 : Andrei Komnik
 QN *"Spin-resolved full counting statistics of Anderson and Kondo impurities"*
- 11 :20-11 :40 : Gwendal Fève
 QN *"Realization of a time-controlled single electron source"*
- 11 :40-12 :00 : Julien Gabelli
 QN *"Dynamics of Quantum Noise in a Tunnel Junction under ac Excitation"*
- 12 :00-14 :00 : LUNCH
- 14 :00-16 :30 : FREE
- 16 :30-16 :50 : Rosario Fazio
 H *"Cooper pair pumping in superconducting networks"*
- 16 :50-17 :10 : Mikko Möttönen
 H *"Observation of the Berry phase in a superconducting charge pump"*
- 17 :10-17 :30 : Valery Ryazanov
 H *"Experimental investigations of 0- and pi-state coexistence in Josephson SFS junctions"*
- 17 :30-18 :00 : COFFEE BREAK
- 18 :00-18 :20 : Vitaly Shumeiko
 H *"Manipulation with Andreev states in spin active mesoscopic Josephson junctions"*
- 18 :20-18 :40 : Jan Martinek
 H *"Magnon assisted long-range superconducting proximity effect in half-metallic ferromagnets"*
- 18 :40-19 :00 : Fabrizio Dolcini
 H *"Reversing the Josephson current with Aharonov-Bohm interferometry"*
- 19 :00-19 :20 : Dima Geshkenbein
 H *"Munichhausen effect, tunneling in an asymmetric SQUID"*
- 19 :20-19 :40 : Sabine Andergassen
 H *"Interplay of electromagnetic noise and Kondo effect in quantum dots"*
- 20 :00-21 :00 : DINNER
- 21 :00-23 :00 : POSTER SESSION 2 : H, S, QB, NEMS, QC

Thursday, March 13th :

- 8 :30-9 :00 : Rolf Haug
 QD "Shot noise in single and coupled quantum dots"
- 9 :00-9 :20 : Matthias Hettler
 QD "Cross-correlations in quantum dot systems"
- 9 :20-9 :40 : Christophe Mora
 QD "Current noise analysis for $SU(4)$ Kondo screening in quantum dots"
- 9 :40-10 :10 : Kensuke Kobayashi
 QD "Coherence and Correlation of Electrons in Quantum Hybrid Systems"
- 10 :10-10 :40 : COFFEE BREAK
- 10 :40-11 :00 : Mark Buitelaar
 QD "Pauli Spin Blockade in Carbon Nanotube Double Quantum Dots"
- 11 :00-11 :20 : Andrey Lebedev
 QD "Exact N -particle scattering matrix for electrons interacting on a quantum dot"
- 11 :20-11 :40 : Marc Sanquer
 QD "Dynamics of charges in a nanoscopic As-doped silicon barrier detected by SET electrometry"
- 11 :40-12 :00 : Michael Thorwart
 QD "Interaction-induced harmonic frequency mixing in quantum dots"
- 12 :00-14 :00 : LUNCH
- 14 :00-16 :30 : FREE
- 16 :30-16 :50 : Markus Garst
 QW "Critical conductance of a one-dimensional doped Mott insulator"
- 16 :50-17 :10 : Frederic Pierre
 QW "Experimental test of the dynamical Coulomb blockade theory for coherent conductors"
- 17 :10-17 :40 : Marc Bockrath
 QW "The One-Dimensional Wigner Crystal in Carbon Nanotubes"
- 17 :40-18 :10 : COFFEE BREAK
- 18 :10-18 :30 : Takis Kontos
 QW "Shot noise in carbon nanotube devices."
- 18 :30-18 :50 : Leonid Gorelik
 QW "High-temperature excess current and quantum suppression of electronic backscattering in a 1-D system."
- 18 :50-19 :10 : (Anders) Mathias Lunde
 QW "Electron-electron interaction effects in a quantum point contact"
- 20 :00-21 :00 : DINNER

Friday, March 14th :

- 8 :30-9 :00 :** Jan van Ruitenbeek
EM *"Electron transmission through a single molecule"*
- 9 :00-9 :20 :** Andr s Halbritter
EM *"Huge negative differential conductance in molecular nanojunctions"*
- 9 :20-9 :50 :** Herre van der Zant
EM *"Three-terminal transport through molecular quantum dots"*
- 9 :50-10 :20 :** COFFEE BREAK
- 10 :20-10 :40 :** Sense Jan van der Molen
EM *"Light-controlled conductance switching of a robust molecular device "*
- 10 :40-11 :10 :** Wolfgang Wernsdorfer
EM *"Nanospintronics using molecular nanomagnets"*
- 11 :10-11 :30 :** Franck Balestro
EM *"Observation of a Quantum Phase Transition in a single-molecule Quantum Dot"*
- 11 :30-11 :50 :** Minchul Lee
EM *"Josephson Effect through Metallofullerene Molecules"*
- 12 :00-14 :00 :** LUNCH
- 14 :00-16 :30 :** FREE
- 16 :30-17 :00 :** Michel Pioro-Ladriere
SPIN *"Micro-magnet technology for electrical control of single electron spin"*
- 17 :00-17 :30 :** Daniel Loss
SPIN *"Nuclear Spins in Quantum Dots and Interacting 2DEGs"*
- 17 :30-17 :50 :** Joel Moore
SPIN *"Spin Hall and spin drag effects in two- and three-dimensional materials"*
- 17 :50-18 :20 :** COFFEE BREAK
- 18 :20-18 :40 :** Gergely Zarand
SPIN *"Geometric phases in semiconductor spin qubits : Manipulations and decoherence"*
- 18 :40-19 :00 :** Bjoern Trauzettel
SPIN *"Spin qubits in graphene and carbon nanotubes"*
- 19 :00-19 :20 :** Juhn-Jong Lin
QC *"Strong electron dephasing in highly disordered $\text{Cu}_9\text{Ge}_4\text{Au}_3$ thin films and other conductors"*
- 19 :20-19 :50 :** Dmitrii Maslov
QC *"Non-metallic conduction in layered metals"*
- 20 :00-21 :00 :** DINNER

Saturday, March 15th :

9 :00-9 :20 : Hélène Bouchiat

QC "*Magnetic field asymmetry of non-linear mesoscopic transport as a signature of interactions*"

9 :20-9 :40 : Mikhail Polianski

QC "*Rectification and nonlinear transport through chaotic dots and rings*"

9 :40-10 :00 : Laurent Saminadayar

QC "*Quantum Coherence in Networks*"

10 :00-10 :20 : Meydi Ferrier

QC "*Geometrical dependence of decoherence by electronic interactions in a GaAs/GaAlAs square network*"

10 :20-10 :50 : Giulio Casati

QC "*Classical and quantum chaos and understanding and control of heat flow*"

10 :50-11 :10 : CONCLUDING REMARKS