

39th Rencontres de Moriond
 “Quantum information and Decoherence in Nanosystems”
 LaThuile, Italy, 25th January-1st February 2004

Scientific Program

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| | “Quantum information and Decoherence in Nanosystems” LaThuile 25 th January-1 st February 2004 | | |
| | Time allocated for talks includes 10 mn of questions for long talks and 5 mn of questions for short talks | | |
| Sunday 25 th | 15h-20h arrival-registration-welcome party | | |
| Monday 26 th . | C=Quantum Noise Measurements, Full Counting Statistics, Quantum Detection | | |
| 8h25-8h35 | | | Introduction |
| 8h35-9h25 | C1 | B. Reulet | Environmental effects in the third moment of voltage fluctuations in a tunnel junction |
| 9h25-10h15 | C2 | Y. Nazarov | Quantum Noise: Challenge and Prospect. |
| 10h15-10h40 | | coffee break | |
| 10h40-11h30 | C3 | P. Samuelsson | Two-particle Aharonov-Bohm effect and Entanglement in the electronic Hanbury Brown Twiss set-up |
| 11h30-11h55 | C4 | R. Deblock | Detection of Quantum noise from an electrically-driven two-level system. |
| 11h55-12h20 | C5 | K. Nagaev | Frequency scales for current statistics of mesoscopic conductors |
| 16h30-17h20 | C6 | W. Belzig | Shot Noise in Diffusive Normal Metal-Superconductor-Heterostructures |
| 17h20-17h45 | C7 | P. Roche | Quantum partition noise of photon-created electron-hole pairs |
| 17h45-18h10 | C8 | F. Pistolesi | Current-current correlations in hybrid superconducting and normal metal multiterminal structures |
| 18h10-18h35 | C9 | F. Lefloch | Mesoscopic transition in the shot noise of diffusive SNS junctions |
| 18h35-19h00 | | coffee break | |
| 19h00-19h25 | C10 | G. Burkard | Lower bounds on electron spin entanglement from beamsplitter current correlations |
| 19h25-19h50 | C11 | U. Gavish | Heisenberg constrains on mesoscopic and molecular amplifiers |
| 19h50-20h15 | C12 | B. Placais | A GHz HBT experiment to probe the statistics of photons emitted by quantum conductors |
| 21h-22h30 | | POSTER 1 | C14-C15-C16-C17-C18-C19-C20-C21-C22-C23 |
| Tuesday 27 th | Correlated systems : $G=$ FQHE, zero resistance states. $F=$ “0.7 plateau” in QPCs, Luttinger liquids. | | |
| 8h30-9h20 | G1 | F. Beltram | Quasiparticle tunneling between fractional quantum Hall edges |
| 9h20-9h45 | G2 | B. Trauzettel | On the determination of fractional charge through shot noise measurements |
| 9h45-10h10 | G3 | T.Martin | photo assisted current and shot noise in the FQHE |
| 10h10-10h40 | | coffee break | |
| 10h40-11h05 | C13 | E. Sukhorukov | Statistics of fluctuations in Networks:Stochastic Path Integral Approach. |
| 11h05-11h55 | G4 | R. Du | Microwave-Induced Vanishing Resistance States in a 2D Electron Gas |
| 11h55-12h20 | G5 | A. D. Mirlin | Theory of the oscillatory photoconductivity of a 2D electron gas |
| 16h30-16h55 | H1 | J. Nicholls | Evidence for Many Body Behaviour at $G=0.7 2e^2/h$ |
| 16h55-17h45 | H2 | Y. Meir | The 0.7 anomaly: The puzzle and its resolution |
| 17h45-18h35 | | coffee break | |
| 18h35-19h00 | H3 | A. Bachtold | Evidence for a Luttinger liquid behavior in crossed meatallic single-wall nanotubes |
| 19h00-19h25 | H4 | N. Kang | Coulomb interaction and disorder effects in multiwall nanotubes |
| 19h25-19h50 | H5 | F. Dolcini | Oscillatory nonlinear conductance of a Luttinger liquid with an impurity |
| 19h50-20h15 | H6 | I. Safi | A one-channel conductor in an ohmic environment:mapping to a TTL |
| Wednesday 28 th | B= Quantum Entanglement and Information Processing with Mesoscopic Systems | | |
| 8h30-9h20 | B1 | D. Averin | Quantum Non-Demolition measurements |
| 9h20-10h10 | B2 | E. Collin | Quantum Coherence in the Quantrium Charge-Phase Qubit Circuit |
| 10h10-10h40 | | coffee break | |
| 10h40-11h30 | B3 | R. Fazio | Josephson arrays as quantum channels |
| 11h30-11h55 | B4 | J. Ankerhold | macroscopic tunneling of quantum bits |
| 11h55-12h20 | B5 | E. Buks | Superconducting stripline resonator for coupling Josephson |

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| | | | Qubits |
| 16h30-17h30 | B6 | R. Hanson | Single-shot read-out of a spin qubit |
| 17h30-18h20 | B7 | S. Tsai | Josephson CNOT quantum logic gate |
| 18h20-18h45 | B8 | M. Sillanpaa | Radio frequency charge detection with inductive-SET (L-SET) |
| 18h45-19h10 | | coffee break | |
| 19h10-19h35 | B9 | J. Vidal | Entanglement and spin squeezing in a quantum phase transition |
| 19h35-20h00 | B10 | D. Feinberg | Spin current shot noise as probe of interactions and entanglement in mesoscopic systems |
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| 21h-22h30 | | POSTER 2 | B20-B21-B22-B23-B24-B25-B26-B27 |
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| Thursday 29 th . | B= Quantum Entanglement and Information Processing with Mesoscopic Systems E= Hybrid Systems :Normal Metal-superconductor, Ferromagnetic Metal-superconductor A= Quantum Coherence and Decoherence Scheme in Nanosystems | | |
| 8h30-9h20 | B11 | H. Takayanagi | Superconducting Flux Qubit as a Macroscopic Artificial Atom |
| 9h20-9h45 | B12 | G. Blatter | Decoherence in superconducting qubits by phonon radiation and tetrahedral qubits |
| 9h45-10h10 | B13 | K. Frahm | Universal regime of fidelity decay in realistic quantum computations |
| 10h10-10h40 | | coffee break | |
| 10H40-11H05 | E1 | A. Bauer | Spontaneous current in a superconducting loop with a ferromagnetic pi-junction |
| 11H05-11H30 | E2 | W. Escoffier | STM spectroscopy and transport in granular superconducting films |
| 11H30-11H55 | E3 | H. Courtois | anomalous DOS in metallic film in proximity with a superconductor |
| 11H55-12H20 | E4 | J. Y. T. Wei | Current-Driven Dephasing of d-wave Superconductivity |
| 16h30-17h20 | A1 | M. V. Feigelman | Dephasing in disordered metals with superconductive grains |
| 17h20-17h45 | A2 | J. Imry | Decoherence in mesoscopic systems |
| 17h45-18h35 | A3 | I. Neder | An electronic Mach*Zehnder interferometer |
| 18h35-19h00 | | coffee break | |
| 19h00-19h25 | A4 | F. Sols | Electronic lifetimes in ballistic quantum dots electrostatically coupled to metallic environments |
| 19h25-19h50 | A5 | Ph. Jacquod | What is left of quantum coherence in the deep classical limit? |
| 19h50-20h15 | A6 | G. Montambaux | Non-exponential energy and phase relaxations in low dimensional disordered conductors |
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| 21h-22h30 | | POSTER 3 | A11-A12-A14-A15-E7-E8-E9-E10-E11-E12-E13 |
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| Friday 30 th . | F= Spin dependent transport I= Correlated systems : Quantum Dots, wires and 2DEG E= Hybrid Systems :Normal Metal-superconductor, Ferromagnetic Metal-superconductor | | |
| 8h30-9h20 | F1 | K. Enslin | Phase coherence in ring structures |
| 9h20-10h10 | F2 | V. Falko | Spin-orbit coupling and quantum transport in semiconductor dots and wires |
| 10h10-10h35 | F3 | A. Khaetskii | Spin relaxation and decoherence in quantum dots |
| 10h35-11h05 | | coffee break | |
| 11h05-11h55 | F4 | D. Ralph | spins in metallic grains |
| 11h55-12h20 | F5 | D. A. Gorokhov | Fluctuations of g-Factors in Metal Nanoparticles: Effects of Electron-Electron interaction and spin-orbit scattering |
| 16h30-17h20 | F6 | M. Zaffalon | spin injection and spin transport in mesoscopic ferromagnet/metal and ferromagnet/superconductor structures |
| 17h20-17h45 | F7 | J. Schliemann | Non-ballistic spin field-effect transistor, anisotropic charge conductivity and spin-Hall effect |
| 17h45-18h10 | I1 | V.E. Kravtsov | Dynamic localization in quantum dots |
| 18h10-18h35 | I2 | M.Yamaguchi | Conductance oscillations of a quantum wire with a side-coupled quantum dot |
| 18h35-19h00 | | coffee break | |
| 19h00-19h25 | E5 | Y. Avishai | Quantum dot in the Kondo regime coupled to unconventional superconductors |
| 19h25-19h50 | E6 | V. M. Yakovenko | Andreev bound states in superconductors: Spontaneous soliton formation and fractional Josephson effect. |
| 19h50-20h15 | I3 | J-L Pichard | Residual conductance of correlated one dimensional nanosystems |
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| 21h-22h30 | | POSTER 4 | F8-F9-F10-F11-G6-G7-H7-H8 |
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| Saturday 31 th . | D= Quantum Transport in Molecular and Atomic Scale Systems B= Quantum Entanglement and Information Processing with Mesoscopic Systems E= Hybrid Systems :Normal Metal-superconductor, Ferromagnetic Metal-superconductor | | |
| 8h30-9h20 | D1 | M. Buitelaar | A carbon nanotube quantum dot coupled to superconductors |
| 9h20-9h45 | D2 | S. Kubatkin | Single organic molecule SET |
| 9h45-10h10 | D3 | J. van Ruitenbeek | Electrical conductance through a single hydrogen molecule |

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| 10h10-10h40 | | coffee break | |
| 10h40-11h05 | D4 | M. R. Wegewijs | Electron tunnelling through polynuclear transition metal complexes |
| 11h05-11h30 | D5 | C. Urbina | Josephson effects in superconducting atomic contacts |
| 11h30-12h20 | D6 | JC Cuevas | Multiple Andreev Reflections and Superconducting Atomic Contacts |
| 16h30-17h20 | B14 | J. Claudon | Coherent oscillations in a current-biased dc SQUID |
| 17h20-17h45 | B15 | L. Y. Gorelik | Resonant microwave properties of voltage biased single Cooper pair transistor |
| 17h45-18h10 | B16 | T. Hayashi | Coherent charge oscillation and decoherence in a semiconductor double quantum dot |
| 18h10-18h35 | B17 | S. W. Kim | Quantum electron pumps beyond adiabatic regime |
| 18h35-19h00 | B18 | A.O. Niskanen | First measurements of the Cooper pair sluice |
| 19h00-19h25 | | coffee break | |
| 19h25-19h50 | B19 | J. Delahaye | Bloch oscillating transistor and Coulomb blockade of Cooper pairs |
| 19h50-20h15 | E7 | A. M. Savin | Cold electron transistor |
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| 21h-22h30 | | POSTER 5 | D7-D8-D9-D10-D11-D12 |
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| Sunday 1 st | I= Correlated systems : Quantum Dots, wires and 2DEG A= Quantum Coherence and Decoherence Scheme in Nanosystems | | |
| 8h30-8h55 | I4 | A. D. Zaikin | Electron transport through interacting quantum dots and diffusive metallic wires |
| 8h55-9h20 | A7 | R. Mohanty | Experimental test for electron decoherence by an arbitrarily small number of magnetic impurities. |
| 9h20-9h55 | A8 | S. Kettmann | Distribution of the Kondo temperature in mesoscopic disordered metals |
| 9h55-10h20 | A9 | C. Bauerle | Electron coherence in mesoscopic Kondo wires |
| 10h20-10h55 | A10 | A. Savchenko | Interactions in high mobility two-dimensional systems |
| 11h30 | | Lunch | |
| | | Departure | |