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Do you recognise this view point?

Acknowledgements

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Practical information

ARRIVAL There are various options to reach the conference venue. **STANDARD MONDAY ARRIVAL:** Take the free bus shuttle from Modane train station to Aussois on Monday Dec. 4th at 11h00 in front of the station. **ARRIVAL BY CAR:** Take highway A43 from Chambéry to Modane, then follow Aussois. The Centre Paul Langevin, located on top of Aussois, is indicated from the village center.

DEPARTURE Sessions will end at 12h00 on Thursday Dec. 7. Either a lunch bag or a lunch at the cafeteriat is possible. **DEPARTURE FROM CHAMBÉRY:** A free bus shuttle will leave from Aussois at 12h15 (arrival at 14h00 at Chambéry train station). **DEPARTURE FROM MODANE:** For a later departure after lunch, take a taxi to Modane (around 10 euros per person if the cab is filled by 4 persons), or try to find a car sharing with colleagues.

INTERNET CONNECTION A wifi service is available throughout the center.

BOOKLET OF ABSTRACTS In order to avoid unnecessary paper waste, the full booklet of abstracts was not printed, but was sent by email to all participants. It can also be downloaded on the conference website: <https://gdr-meso-ple17.sciencesconf.org>.

TALKS The general format will be 30 minutes, including questions. The three tutorials will have a longer format. Please address at least half of your presentation to PhD students or non-specialists. The presentations are preferred in English. Please prepare a pdf file that you will distribute to the organizers during the conference so that your slides can be made available on the conference website.

POSTERS Poster sessions will take place on Monday and Wednesday evening, with some refreshments. The posters can hang in

place during the whole conference and will be presented at both sessions. A complete list of the posters and participants is provided at the end of this booklet (detailed abstracts can be found in the full online booklet).

HIKING: A part of Wednesday afternoon (12:00 to 16:30) will be free, as well as Monday morning for the early arrived. It is possible to start hiking directly from the conference center, which suggests a list of short or long walking tours. Due to the likely presence of snow (and if not, of mud), bring a good pair of hiking shoes in case you would like to do some exercise. It will be possible to order one day in advance a lunch bag for the picnic.

Program of the oral sessions

MONDAY DECEMBER 4 - OPENING

- 10:00-14:00 Welcome and registration at the Centre Paul Langevin
10:45 Arrival in Modane of the TGV train from Paris
11:00 Free bus shuttle from Modane to Aussois
12:00-13:30 - LUNCH -
13:45-14:00 Opening by the organizing committee

MONDAY DECEMBER 4 - “SPIN ORBIT AND TOPOLOGY”

- 14:00-14:30 **Jean-Noël Fuchs** (LPTMC, Paris) INVITED TALK
“Hofstadter butterfly of a quasicrystal”
- 14:30-15:00 **Taro Wakamura** (LPS, Orsay) INVITED TALK
“Strong spin-orbit interaction in graphene induced by transition metal dichalcogenides”
- 15:00-15:30 **Emmanuel Flurin** (LKB, Paris)
“Observing the topological invariant of Bloch bands using quantum walks in superconducting circuits”
- 15:30-16:00 **Rémi Avriller** (LOMA, Bordeaux)
“Bistability and Displacement Fluctuations in a Quantum Nano-mechanical Oscillator”
- 16:00-16:30 - COFFEE BREAK -

MONDAY DECEMBER 4 - “QUANTUM INFORMATION”

- 16:30-17:00 **Alessandro Crippa** (INAC, Grenoble) INVITED TALK
“Embracing CMOS and quantum technology in Silicon”
- 17:00-17:30 **Pierre-André Mortemousque** (Néel, Grenoble)
“Coherent control of individual electron spins in a two-dimensional array of tunnel-coupled quantum dots”
- 17:30-18:00 **Clément Godfrin** (Néel, Grenoble)
“Operating Quantum States in Single Magnetic Molecules: Implementation of Quantum Gates and Algorithm”

- 18:00-18:30 **Raphaël Lescanne** (LPA, Paris)
“Strongly pumped Josephson Circuits”
- 18:30-19:00 **Ramiro Rodriguez** (SPEC, Saclay)
“Finite Energy Relaxation in the Integer Quantum Hall Regime”
- 19:15-20:30 - DINNER -
- 20:30-22:30 - POSTER SESSION WITH REFRESHMENTS -

TUESDAY DECEMBER 5 - “ARTIFICIAL SYSTEMS”

- 09:00-09:30 **Rémi Desbuquois** (ETH, Zurich) INVITED TALK
“Réalisation du modèle de Haldane avec des fermions ultra-froids”
- 09:30-10:00 **Marijana Milicevic** (C2N, Marcoussis) INVITED TALK
“Edge states and Dirac cones in Orbital Graphene”
- 10:00-10:30 **Athmane Tadjine** (IEMN, Lille)
“Artificial electronic superlattices as platforms for probing robustness of non-trivial topology”
- 10:30-11:00 - COFFEE BREAK -
- 11:00-11:30 **Julien Gabelli** (LPS, Orsay) INVITED TALK
“Simulating artificial graphene in circuit-QED”
- 11:30-12:00 **Francois Fernique** (IPCMS, Strasbourg)
“Collective plasmons in metasurfaces of near-field coupled metallic nanoparticles”
- 12:00-12:30 **Dominique Maily** (C2N, Marcoussis)
“Nanofabrication using the Zeiss Orion He microscope ”
- 12:30-14:00 - LUNCH -

TUESDAY DECEMBER 5 - “SPECIAL SESSION: SOLID STATE IMPLEMENTATIONS OF THE QUANTUM COMPUTER”

- 14:00-14:40 **Xavier Waintal** (INAC, Grenoble) INVITED TALK
“Will quantum error correction save the quantum computer?”
- 14:40-15:20 **Tristan Meunier** (Néel, Grenoble) INVITED TALK
“Towards large scale spin based quantum information processing in semiconductors”
- 15:20-16:00 **Benjamin Huard** (ENS, Lyon) INVITED TALK
“On the road to the superconducting quantum computer?”
- 16:00-16:30 - COFFEE BREAK -

TUESDAY DECEMBER 5 - “SUPERCONDUCTIVITY AND TOPOLOGY”

- 16:30-17:00 **Benjamin Heinrich** (MPQ, Paris) INVITED TALK
“Yu-Shiba-Rusinov impurities - building blocks of topological superconductors”
- 17:00-17:30 **Stefan Ilic** (INAC, Grenoble)
“Enhancement of the upper critical field in disordered transition metal dichalcogenide monolayers”
- 17:30-18:00 **Lauriane Contamin** (LPA, Paris) INVITED TALK
“Synthetic spin orbit interaction for Majorana devices”
- 18:00-18:30 **Rosa López** (LPS, Orsay)
“Charge and energy transport in a Majorana nanowire”
- 19:15-20:30 - CONFERENCE DINNER -
- 21:00-23:00 - MEETING OF THE GDR BOARD -

WEDNESDAY DECEMBER 6 - “QUANTUM TRANSPORT AND THERMODYNAMICS AT THE NANOSCALE”

- 09:00-09:30 **Jukka Pekola** (OVLL, Aalto, Finland) INVITED TALK
“Superconducting quantum refrigerators”
- 09:30-10:00 **Anne Anthore** (C2N, Marcoussis)
“Heat Coulomb blockade of one ballistic channel ”
- 10:00-10:30 **Keith Fratus** (IPCMS, Strasbourg)
“Quantum Thermalization and Spontaneous Symmetry Breaking”

10:30-11:00 - COFFEE BREAK -

11:00-11:30 **Nathanael Cottet** (ENS, Lyon)
“Observing a Quantum Maxwell Demon at Work”

11:30-12:00 **Bivas Dutta** (Néel Institute, Grenoble)
“Thermal Conductance of a Single Electron Transistor”

12:00-14:00 - LUNCH -

14:00-16:30 - FREE AFTERNOON -

WEDNESDAY DECEMBER 6 - “MESOSCOPIC SUPERCONDUCTIVITY”

16:30-17:00 **Landry Bretheau** (LSI, Palaiseau) INVITED TALK
“Tunneling spectroscopy of graphene nanodevices proximitized by superconductors”

17:00-17:30 **Leandro Tosi** (SPEC, Saclay)
“Quasiparticle dynamics in Andreev quantum dots”

17:30-18:00 **Jean-Damien Pillet** (LSI, Palaiseau)
“Theory for Hybridized Andreev States: The Andreev Molecule”

18:00-19:00 **Special session**
“Tribute to Frank Hekking and Jean-Louis Pichard”

19:00-19:30 - GENERAL DISCUSSION ON THE GDR

19:30-20:30 - DINNER -

20:30-22:30 - POSTER SESSION WITH REFRESHMENTS -

THURSDAY DECEMBER 7 - “TOPOLOGICAL SEMIMETALS AND INSULATORS”

09:00-09:30 **Adolfo Grushin** (Néel institute, Grenoble) INVITED TALK
“Quantization and enhancement of non-linear responses in topological matter”

09:30-09:45 **Mark Oliver Goerbig** (LPS, Orsay)
“Surface states in smooth topological heterojunctions”

09:45-10:00 **Bernard Plaças** (LPA, Paris)
“Observation of Volkov-Pankratov states in topological HgTe heterojunctions using RF compressibility”

- 10:00-10:30 **Thibaud Louvet** (ENS, Lyon)
“Ballistic Magnetotransport of Weyl Fermions”
- 10:30-10:45 - **COFFEE BREAK** -
- 10:45-11:15 **Thomas Kloss** (INAC, Grenoble)
“Transient conductance between Fermi and Luttinger liquids”
- 11:15-11:45 **Maëlle Kapfer** (SPEC, Saclay)
“Reliable charge detection using cross-correlated shot noise in the fractional quantum Hall effect”
- 12:15 - **DEPARTURE FOR CHAMBÉRY WITH THE FREE BUS SHUTTLE
(WITH LUNCH BAG)**
- 12:00-13:00 - **LUNCH** -

Poster titles (alphabetical list of first authors)

- Albert Romain** “Inelastic Cooper Pair Tunneling: Multiplication of Propagating Microwave Photons”
- Amisse Anthony** “Tunable coupling between two quantum dots through another central one”
- Atteia Jonathan** “Ballistic conductance of irradiated graphene”
- Baumard Julie** “Non-uniform superconducting phases generated by spin-orbit interaction”
- Benzoni Vincent** “Experiments to measure hybridized Andreev bound States at zero voltage”
- Bertrand Corentin** “ ”
- Blanchet Florian** “An on-demand source of anti-bunched microwave photons”
- Bonnet Pierre** “Superconducting Silicon Resonators”
- Brun Christophe** “2D topological superconductivity in Pb/Co/Si(111)”
- Combes Frédéric** “Semi-classical approach to the orbital susceptibility of electrons”
- Cubaynes Tino** “Strong coupling between an electron in a quantum dot circuit and a photon in a cavity”
- Cubaynes Tino** “Stamping carbon nanotubes for circuit quantum electrodynamics”
- Dartailh Matthieu** “Dynamical compressibility of the quantum spin Hall insulator HgTe”
- Degiovanni Pascal** “Extracting single electron wavefunctions from a quantum electrical current”
- Dutreix Clément** “Geometrical phase shift in Friedel oscillations”
- Falco Gianmaria** “Wave function correlations and the AC conductivity of disordered wires beyond the Mott-Berezinskii law”
- Feinberg Denis** “A chiral Josephson transistor”
- Ferraro Dario** “High-power collective charging of a solid-state quantum battery”
- Ficheux Quentin** “Qubit dynamics while simultaneously monitoring relaxation and dephasing”

Florens Serge “Frequency-conversion of a qubit ultra-strongly coupled to a waveguide”

Gennser Ulf “CryoHEMTs made at C2N for low-temperature readout electronics: performance and mesoscopic applications”

Griesmar Joël “Josephson Junction Spectroscopy of Mesoscopic Systems”
Guéron Sophie “ ”

Gómez Vitoria Mauricio “Orbital magnetism of gold nanoparticles”

Istas Mathieu “A general algorithm for computing bound states in infinite tight-binding systems”

Jalabert Thomas “Visualisation de la supraconductivité hors équilibre”

Kuzmanovic Marko “Spin dependant recombination dynamics in superconductors”

Lafont Fabien “Controlling Heat and Voltage of a Mesoscopic Contact”

Lavagna Mireille “Conductance and charge susceptibility of a double quantum dot”

Lefloch François “Strongly pumped Josephson circuits”

Leghtas Zaki “Superconductivity and CMOS technology”

Malcu Corneliu “The Josephson effect in Kitaev wires”

Meszáros Andrej “Majorana excitations induced by defects in two-dimensional topological superconductors with spin-orbit coupling”

Mi Shuo “Cross-channel electron waiting times of a multi-terminal scatterer”

Mora Christophe “Noise of a chargeless Fermi liquid”

Murani Anil “Phase dependent microwave absorption of a bismuth nanowire based Josephson junction: revealing topological Andreev level crossings”

Nachawaty Abir “Magnetic field driven ambipolar quantum Hall effect in epitaxial graphene close to the charge neutrality point”

Parmentier François “Strongly correlated electron transport in CMOS silicon quantum dots”

Peronnin Théau “ A number resolved, non destructive photocounter of propagating microwave photons”

Peugeot Ambroise “ Entangled photons with a DC-biased Josephson junction”

Pierret Aurélie “ Stamping carbon nanotubes for circuit quantum electrodynamics”

- Portier Fabien** “Quantum microwaves with a DC-biased Josephson junction”
- Ribeiro Rebeca** “Electrostatically doped hall bars for improved magneto-transport in monolayer graphene”
- Rossignol Benoit** “Jonction Josephson topologique et environnement électronique”
- Safi Ines** “Universal theory for out-of-equilibrium transport: application to driven Josephson junctions”
- Santos Tatiane** “Collision of interacting voltage pulses under Ehrenfest dynamics”
- Schaefferbeke Quentin** “Spectroscopy of a plasmonic cavity using electronic transport measurement”
- Seo Minky** “Strongly correlated electron transport in CMOS silicon quantum dots”
- Svetogorov Aleksandr** “Theory of coherent quantum phase-slips in inhomogeneous superconducting wires or Josephson junction chains”
- Tadjine Athmane** “Physics of electron g-factors in semiconductor nanostructures”
- Talbo Vincent** “Quantum transport through a double quantum dot”
- Tarento René-Jean** “Heat transport through Josephson nonuniform superconducting point contacts”
- Valmorra Federico** “Toward mesoscopic quantum electrodynamics in the terahertz frequency range”
- Weinmann Dietmar** “Scanning gate microscopy: from strongly to weakly invasive probes”
- Yang Kang** “A semiclassical approach for the spectrum of a voltage-biased three terminal Josephson junction”

Complete list of participants

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