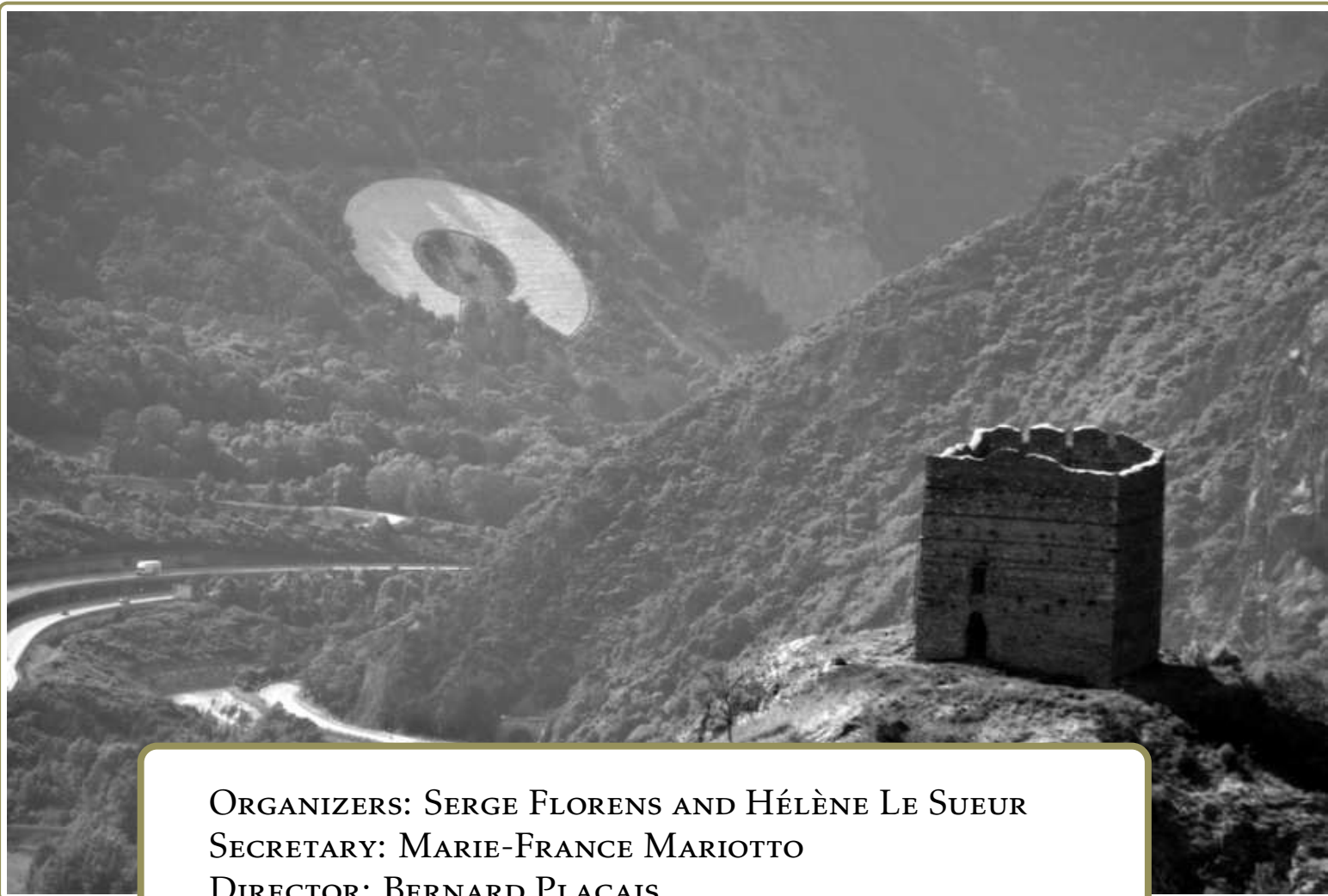


GDR2426 “Mesoscopic Quantum Physics”
2016 Annual Meeting
Aussois, France, December 5-8



Full program and practical information



ORGANIZERS: SERGE FLORENS AND HÉLÈNE LE SUEUR
SECRETARY: MARIE-FRANCE MARIOTTO
DIRECTOR: BERNARD PLAÇAIS

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“The Aura” (<https://solidartmaurienne.wordpress.com>), located in the nearby Maurienne valley, is one of the largest collective piece of art, which required 15 years of work. Its total surface of 5000 m² is spanned by 42000 aluminium disks (also called “auras”) all showing the same individual shape as the monumental work itself. As a physicist, what do you see?

Acknowledgements

This conference was funded in part by the CNRS through the *Groupement de Recherche “Physique Quantique Mésoscopique”* (GDR2426). We thank all the participants who provided not only their scientific contribution, but also supported financially their participation to this event.

Practical information

ARRIVAL There are various options to reach the conference venue. **EARLY SUNDAY ARRIVAL:** Take a taxi to Aussois from Modane train station (preferably with other people arriving with the 18h47 TER train). The keys of the rooms will be available at the reception, and the breakfast will be served on Monday morning. Note that dinner will **not** be provided at the center on Sunday evening and that all restaurants in Aussois are still closed in early December. We propose to eat in Modane around 19h00 before taking the taxi to Aussois. **STANDARD MONDAY ARRIVAL:** Take the free bus shuttle from Modane train station to Aussois on Monday Dec. 5th at 11h00 in front of the station (Train Paris-Modane 06h28-10h45). **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 11h45 on Thursday Dec. 8. Either a lunch bag or a lunch at the cafeteria is possible. **DEPARTURE FROM CHAMBÉRY:** A free bus shuttle will leave from Aussois at 12h15 (arrival at 14h00 at Chambéry train station). Connections to Massy (14h44→18h35), Paris (16h23→19h19), Marseille (15h44→19h16). **DEPARTURE FROM MODANE:** For a later departure after lunch, take a taxi to Modane before 13h30 (7 euros per person if the cab is filled by 4 persons), or try to find a car sharing with colleagues. Then take the TER train to Chambéry (14h02→15h30) and from there your train connection.

INTERNET CONNECTION A wifi service is available throughout the center. The password is **centrepaulangevin73500**

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-ple16.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).

JOB ANNOUNCEMENTS: In case you wish to announce a job opportunity in your lab (*e.g.* a post-doc offer), you can send to the organizers a single slide (pdf) including brief details and a picture of yourself. All announcements will be compiled on a poster and displayed all along the conference, so that students or interested people can meet you and discuss.

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 5 - 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 5 - “MESOSCOPIC SUPERCONDUCTIVITY”

14:00-14:30	Claude Chapelier (INAC, Grenoble) INVITED TALK <i>“Visualizing out-of-equilibrium superconductivity”</i>
14:30-15:00	Anil Murani (LPS, Orsay) <i>“Ballistic edge states in Bismuth nanowires revealed by SQUID interferometry”</i>
15:00-15:30	Yonatan Cohen (Weizmann Institute, Israel) <i>“Pairing of Cooper-pairs into quartets and non-local supercurrent in a three-terminal Josephson junction”</i>
15:30-16:00	Régis Mélin (NEEL, Grenoble) <i>“A simple Floquet-Wannier-Stark viewpoint for emergence of low-energy scales in a three-terminal Josephson junction”</i>
16:00-16:30	- COFFEE BREAK -

MONDAY DECEMBER 5 - “QUANTUM HALL EFFECT”

16:30-17:00	Gleb Finkelstein (Duke University, USA) INVITED TALK <i>“Supercurrent in the quantum Hall regime”</i>
17:00-17:30	Jérôme Rech (CPT, Marseille) <i>“Minimal excitations in the fractional quantum Hall regime”</i>
17:30-18:00	Keyan Bennaceur (Université de Sherbrooke, Canada) <i>“Unconventional transport and noise in the second Landau level”</i>
18:00-18:30	Fabien Lafont (Weizmann Institute, Israel) <i>“New paradigm for edge reconstruction of hole-conjugate fractional states”</i>
19:15-20:45	- DINNER -
21:00-23:00	- POSTER SESSION WITH REFRESHMENTS -

TUESDAY DECEMBER 6 - “NON-LINEAR QUANTUM CIRCUITS”

09:00-09:30	Wiebke Guichard (NEEL, Grenoble) INVITED TALK <i>“Weak and strong non linear effects in Josephson junction chains: From Kerr effect to quantum phase-slips”</i>
09:30-10:00	Chloé Rolland (SPEC, Saclay) <i>“Non-classical photons emitted by a DC biased Josephson junction”</i>
10:00-10:30	Christophe Mora (LPA, Paris) <i>“Squeezing by a quantum conductor”</i>
10:30-11:00	- COFFEE BREAK -
11:00-11:30	Philippe Joyez (SPEC, Saclay) <i>“What are the impedance combination rules in quantum circuits?”</i>

TUESDAY DECEMBER 6 - “DISORDERED CONDUCTORS”

11:30-12:00	Edouard Pinsolle (Université de Sherbrooke, Canada) <i>“Direct measurement of the electron energy relaxation dynamics in metallic wires”</i>
12:15-13:15	- LUNCH -

- 14:30-15:00 **Michele Filippone** (Université de Genève, Suisse)
“Quantum transport in many-body localized systems”
- 15:00-15:30 **Rodolfo Jalabert** (IPCMS, Strasbourg)
“Charge and spin diffusion on the metallic side of the metal-insulator transition”

TUESDAY DECEMBER 6 - “INTERACTING NANOSTRUCTURES”

- 15:30-16:30 **Edouard Boulat** (MPQ, Paris) INVITED TUTORIAL
“Out-of-equilibrium Kondo transport”
- 16:30-17:00 - COFFEE BREAK -
- 17:00-17:30 **Meydi Ferrier** (LPS, Orsay) INVITED TALK
“Non-equilibrium Noise and Symmetry of the Kondo effect”
- 17:30-18:00 **Matthieu Desjardins** (LPA, Paris)
“Cavity quantum electrodynamics with carbon nanotubes”
- 18:00-18:30 **Shintaro Takada** (NEEL, Grenoble)
“Measurements of transmission phase across a large quantum dot”
- 18:30-19:00 **Edvin Idrisov** (Université de Genève, Suisse)
“Thermal decay of charge fluctuations in mesoscopic circuits”
- 19:15-20:30 - CONFERENCE DINNER -
- 21:00-22:00 - MEETING OF THE GDR BOARD -

WEDNESDAY DECEMBER 7 - “FRONTIERS OF MEASUREMENT”

- 08:45-09:15 **Sophie Djordjevic** (LNE, Trappes)
“A practical quantum realization of the ampere from the elementary charge”
- 09:15-09:45 **Vincent Jacques** (L2C, Montpellier) INVITED TALK
“Imaging magnetism at the nanoscale with a single spin microscope”
- 09:45-10:15 **Patrice Bertet** (SPEC, Saclay) INVITED TALK
“Controlling spin relaxation with a cavity”
- 10:15-10:45 - COFFEE BREAK -
- 10:45-11:15 **Jakob Reichel** (LKB, Paris) INVITED TALK
“Spin squeezing in ultracold atoms: Towards metrological applications”

WEDNESDAY DECEMBER 7 - “QUANTUM CONTROL”

- 11:15-12:00 **Mazyar Mirrahimi** (INRIA, Paris) INVITED TUTORIAL
“Quantum error correction with superconducting circuits - Part 1”
- 12:15-13:15 - LUNCH -
- 12:00-16:30 - FREE AFTERNOON -
- 16:30-17:00 **Mazyar Mirrahimi** (INRIA, Paris) INVITED TUTORIAL
“Quantum error correction with superconducting circuits - Part 2”
- 17:00-17:30 **Philippe Campagne-Ibarcq** (LPA, Paris)
“Using spontaneous emission of a qubit as a resource for feedback control”
- 17:30-18:00 **Salha Jebari** (INAC, Grenoble)
“Near quantum-limited amplification and conversion based on a voltage-biased Josephson junction”
- 18:00-18:30 **Sébastien Jézouin** (LPA, Paris)
“Microwave photon router controlled by the quantum phase of a superconducting qubit”
- 18:30-19:00 **Philippe Tamarat** (LP2N, Bordeaux) INVITED TALK
“Optical Manipulation of Single Flux Quanta”
- 19:00-19:30 - GENERAL DISCUSSION ON THE GDR LED BY BERNARD PLAÇAIS
- 19:35-20:45 - DINNER -
- 21:00-23:00 - POSTER SESSION WITH REFRESHMENTS -

THURSDAY DECEMBER 8 - “GRAPHENE”

08:45-09:15	Wei Yang (LPA, Paris) <i>“Hyperbolic cooling of graphene Zener-Klein transistors”</i>
09:15-09:45	Rebeca Ribeiro (Columbia University, USA) <i>“On demand angle control in van der Waals heterostructures”</i>
09:45-10:15	François Parmentier (SPEC, Saclay) <i>“Photon-Assisted Shot Noise in Graphene in the Terahertz Range”</i>
10:15-10:45	- COFFEE BREAK -
10:45-11:15	Clemens Winkelmann (NEEL, Grenoble) INVITED TALK <i>“Charge Disorder and Screening in Graphene”</i>
11:15-11:45	Clement Dutreix (ENS, Lyon) <i>“Imaging the Berry Phase from Friedel Oscillations in 2D Semimetals”</i>
12:15	- DEPARTURE FOR CHAMBÉRY WITH THE FREE BUS SHUTTLE (WITH LUNCH BAG)
12:00-13:00	- LUNCH -
13:15	- DEPARTURE FOR MODANE BY TAXI, SHUTTLE OR CAR SHARING (AFTER LUNCH)

Poster titles (alphabetical list of first authors)

Carles Altimiras	<i>“Phase-driven collapse of the Cooper condensate in a nanosized superconductor”</i>
Florian Blanchet	<i>“Single photon radiation scheme based on inelastic Cooper pair tunneling”</i>
Hélène Bouchiat	<i>“Andreev spectrum with high spin-orbit interactions”</i>
Boris Chenaud	<i>“Admittance of quantum Hall conductors”</i>
Francesca Chiodi	<i>“Laser Doping for superconducting silicon quantum devices”</i>
Richard Deblock	<i>“High frequency quantum noise measurement of a carbon nanotube in the Kondo regime”</i>
Sudipta Dubey	<i>“Gate tunable transition from diffusive to ballistic regime in graphene Josephson junction”</i>
Bivas Dutta	<i>“Experiments on heat transport through a single electron transistor”</i>
Hermann Edlbauer	<i>“Demonstration of a directional coupler for single flying electrons”</i>
Dario Ferraro	<i>“Single quasiparticle and electron emitter in the fractional quantum Hall regime”</i>
Anaïs Francheteau	<i>“Superconducting Silicon Devices”</i>
Loïc Huder	<i>“Multiple van Hove singularities in moiré superlattices of stressed graphene”</i>
Stephan Ilic	<i>“Enhancement of the paramagnetic limit in transition metal dichalcogenide monolayers”</i>
Romain Jaquet	<i>“Junction between two topological superconductors – Josephson current and noise”</i>
Hélène Le Sueur	<i>“Quantum Zeno Dynamics of a linear cavity coupled to a 3 level system”</i>
Chuan Li	<i>“4π-periodic Josephson supercurrent in ballistic Dirac-semimetal based Josephson junctions”</i>
Thibaud Louvet	<i>“Disordered Weyl Fermions”</i>
Ousmane Ly	<i>“Interpretation of scanning gate microscopy in quantum point contacts”</i>
Arthur Marguerite	<i>“Wigner function of a quantum Hall edge channel excited at GHz frequency”</i>
Pierre-André Mortemousque	<i>“Charge Control of a Nine Quantum Dot Array”</i>
Fabio Pistolesi	<i>“Nano-mechanical transition in quantum dots”</i>
Bernard Plaçais	<i>“A Zener-Klein graphene on boron nitride transistor with enhanced cooling capabilities”</i>
Christina Pörtl	<i>“Scanning gate microscopy signal enhanced by reflector”</i>
Hughes Pothier	<i>“Measurement of the channel’s transmissions of an InAs Josephson junction”</i>
Nicolas Roch	<i>“Multimode circuit QED: Towards many-body physics”</i>
Ramiro Rodriges	<i>“Finite Energy Relaxation in the Integer Quantum Hall Regime”</i>
Minky Seo	<i>“Shot noise in the Coulomb Blockade regime”</i>
Evgeny Stepanov	<i>“A pseudopotential model for Dirac electrons in graphene”</i>
René-Jean Tarento	<i>“Giant Collective Magneto-Excitation in Spherical Clusters”</i>
Leandro Tosi	<i>“Quasiparticle dynamics in a hybrid Cooper-pair box”</i>
Taro Wakamura	<i>“Spin-orbit interaction in graphene induced by transition metal dichalcogenides”</i>
Yue Wang	<i>“Sensitivity of the mixing current technique to detect nano-mechanical motion”</i>

Complete list of participants

Carles Altimiras (SPEC, Saclay)
Anthony Amisse (INAC, Grenoble)
Pacôme Armagnat (INAC, Grenoble)
Rémi Avriller (LOMA, Bordeaux)
Christopher Bauerle (NEEL, Grenoble)
Julie Baumard (LOMA, Bordeaux)
Keyan Bennaceur (Université de Sherbrooke, Canada)
Patrice Bertet (SPEC, Saclay)
Corentin Bertrand (INAC, Grenoble)
Rémi Bisognin (LPA, Paris)
Florian Blanchet (INAC, Grenoble)
Hélène Bouchiat (LPS, Orsay)
Edouard Boulat (MPQ, Paris)
Philippe Campagne-Ibarcq (LPA, Paris)
David Carpentier (ENS, Lyon)
Jerôme Cayssol (LOMA, Bordeaux)
Claude Chapelier (INAC, Grenoble)
Boris Chenaud (L2C, Montpellier)
Francesca Chiodi (C2N, Paris-Sud)
Yonatan Cohen (Weizmann Institute, Israel)
Hervé Courtois (NEEL, Grenoble)
Matthieu Dartiailh (LPA, Paris)
Richard Deblock (LPS, Orsay)
Adrien Delgard (L2C, Montpellier)
Matthieu Desjardins (LPA, Paris)
Sophie Djordjevic (LNE, Trappes)
Sudipta Dubey (NEEL, Grenoble)
Clément Dutreix (ENS, Lyon)
Bivas Dutta (NEEL, Grenoble)
Hermann Edlbauer (NEEL, Grenoble)
Dario Ferraro (CPT, Marseille)
Meydi Ferrier (LPS, Orsay)
Michele Filippone (Université de Genève, Suisse)
Gleb Finkelstein (DUKE, USA)
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Manuel Houzet (INAC, Grenoble)
Loïc Huder (INAC, Grenoble)
Edvin Idrisov (Université de Genève, Suisse)
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Hélène Le Sueur (CSNSM, Orsay)
François Lefloch (INAC, Grenoble)
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