

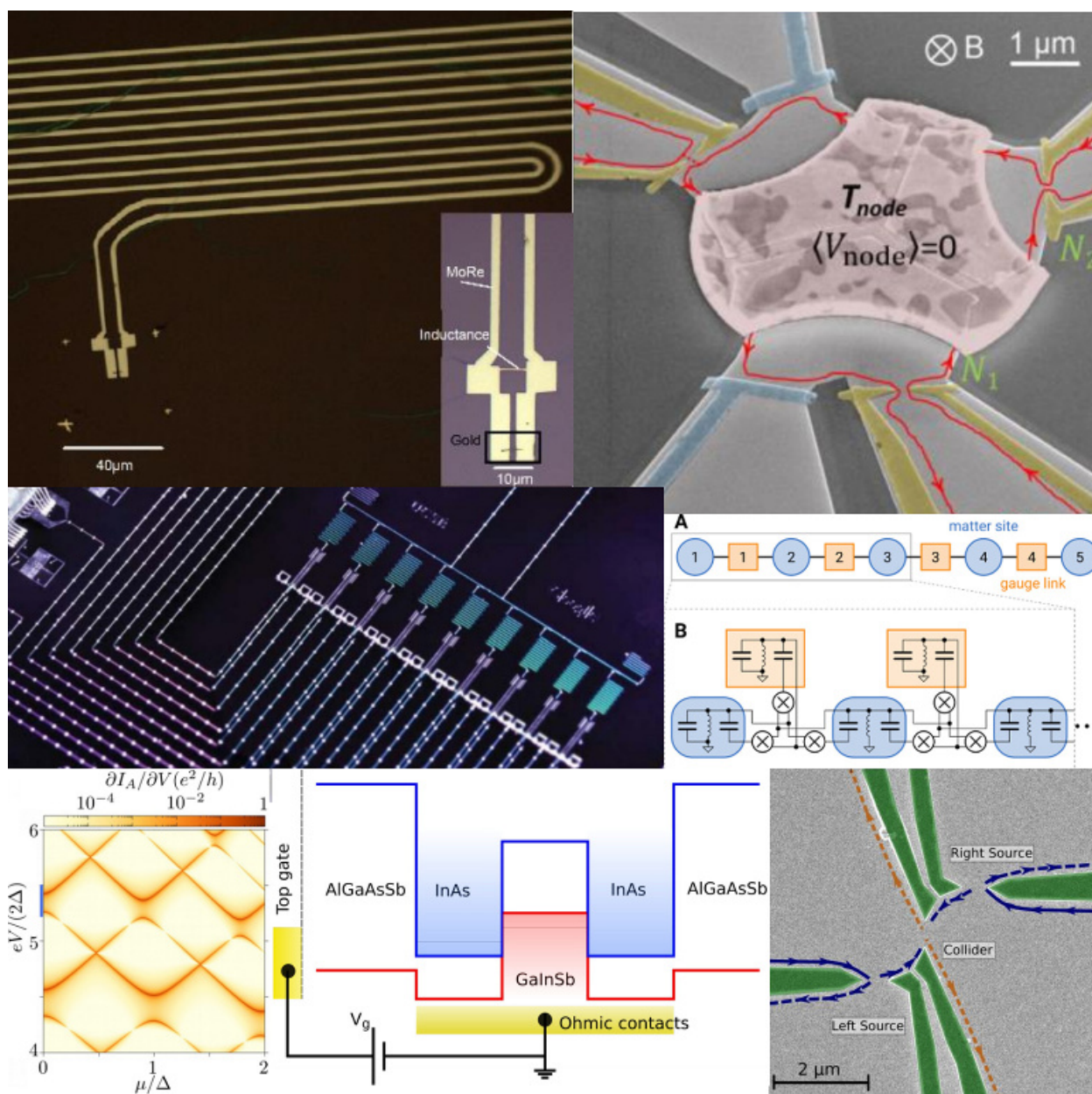
# GDR 2426

## PHYSIQUE QUANTIQUE MESOSCOPIQUE

SESSION PLENIERE 2021

29 Novembre - 2 Décembre 2021

Aussois, France



# PARTICIPANTS

Allard Thomas	Gautier Ronan	Piéchon Frédéric
Altimiras Carles	Glidic Pierre	Pillet Jean-Damien
Annabi Samy	Goerbig Mark Oliver	Piot Nicolas
Anthore Anne	Griesmar Joël	Pistolesi Fabio
Arrighi Everton	Groth Christoph	Pothier Hugues
Assouline Alexandre	Haack Géraldine	Praquin Matthieu
Avogadri Colin	Hagenmuller David	Quay Charis
Avriller Rémi	Hong Yuanzhuo	Rebora Giacomo
Bahr Arne	Houzet Manuel	Rech Jérôme
Ballu Xavier	Hutin Hector	Ribeiro Palau Rebeca
Basko Denis	Jeannin Matthieu	Riechert Hannes
Basset Julien	Jehl Xavier	Roch Nicolas
Bassi Marion	Jezequel Lucien	Roche Patrice
Benito Maria	Joly Marie	Roulleau Preden
Bermond Baptiste	Jouan Alexis	Safi Ines
Bernat Thomas	jouault Benoit	Sahu Manas Ranjan
Bertin-Johannet Bruno	Kiyooka Elyjah	Saïz Guilhem
Blasi Gianmichele	Lacerda Santos Neto Antonio	Saminadayar Laurent
Bretheau Landry	Le Breton Gaëlle	Sellem Lev-Arcady
Brun Boris	Le Régent François-Marie	Simon Florian
Calvo Florent	Leblanc Axel	Simon Pascal
Campagne-Ibarcq Philippe	Lefloch François	Souquet-Basiège Hubert
Carpentier David	Léger Sébastien	Stepanov Evgeny
Cayssol Jerome	Leumer Nico	Tangchingchai Chotivut
Champain Victor	Maillet Olivier	Tazairt Lise
Charpentier Thibault	Mailly Dominique	Tchoumakov Sergueï
Chaubet Christophe	Mannai Marwa	Touchais Jean-Baptiste
Chen Xianzhang	Marguerite Arthur	Troncoso Gonzalo
Collin Eddy	Markovic Danijela	Uldemolins Mateo
Cren Tristan	Marsal Quentin	Vallet Pierre
Crescini Nicolò	Martinez i Diaz Biel	Vanhoecke Matthieu
Debertolis Maxime	Massee Freek	Velluire Pellat Zoe
Degiovanni Pascal	Ménard Gerbold	Veyrat de Lachenal Lou-Anne
Dmytruk Olesia	Meyer Julia	Vincent Estelle
Dutreix Clément	Millory Victor	Wagner Alexander
Ferraro Dario	Mohapatra Sambit	Waintal Xavier
Ferrier Meydi	Montambaux Gilles	Weick Guillaume
Ficheux Quentin	Mora Christophe	Weinmann Dietmar
Filippone Michele	Nouri Louis	Whitney Robert
Florens Serge	Paradiso Nicola	Wise Jonathan
Flurin Emmanuel	Parmentier François	Yu Cécile
Fossion Diego	Percebois Gaetan	Yuncheng Mao
Fraudet Dorian	Perrin Vivien	
Garcia-Sanchez Daniel	Peugeot Ambroise	

# PROGRAMME

**lundi 29 novembre 2021**

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HEURES	ÉVÉNEMENT
14:00 - 16:05	Matériaux et Systèmes Topologiques
14:00 - 15:00	> A guide to the periodic table of topological insulators - <i>Jérôme CAYSSOL, Laboratoire Ondes et Matière d'Aquitaine</i>
15:00 - 15:30	> Large energy gap in the topological phase of InAs/InxGa1-xSb/InAs triple quantum wells - <i>Colin Avogadri - Laboratoire Charles Coulomb</i>
15:30 - 16:00	> Nonlinear edge modes from topological 1D lattices - <i>Lucien Jezequel, Laboratoire de Physique de l'ENS Lyon (Phys-ENS)</i>
16:00 - 16:30	Pause café
16:30 - 18:35	Matériaux et Systèmes Topologiques
16:30 - 17:05	> Exotic physics induced by magnetic moments in a superconductor - <i>Pascal Simon - Laboratoire de Physique des Solides, University Paris Saclay</i>
17:05 - 17:35	> Tunnelling process visualized by shot-noise scanning tunnelling microscopy - <i>Freek Massee - Laboratoire de Physique des Solides</i>
17:35 - 18:05	> Quantized conductance with nonzero shot noise as a signature of Andreev edge state - <i>Manas Ranjan Sahu - Department of Physics, Indian Institute of Science, Bangalore</i>
18:05 - 18:35	> Spectral and transport signatures of 1d topological superconductors of finite size in the sub- and supra-gap regime - <i>Nico Leumer - Institut de Physique et Chimie des Matériaux de Strasbourg</i>
19:00 - 20:30	Dîner
20:30 - 22:30	Autre - Session poster

**mardi 30 novembre 2021**

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HEURES	ÉVÉNEMENT
09:00 - 10:35	Matériaux et Systèmes 2D
09:00 - 10:00	> Twisted bilayer graphene and Moire materials - <i>Christophe Mora, Laboratoire Matériaux et Phénomènes Quantiques</i>
10:00 - 10:35	> Excitonic nature of magnons in a quantum Hall ferromagnet - <i>Alexandre Assouline, SPEC, CEA, CNRS, Université Paris-Saclay, CEA Saclay.</i>
10:35 - 11:05	Pause café
11:05 - 12:05	Matériaux et Systèmes 2D
11:05 - 11:35	> Relaxation and revival of quasiparticles injected in an interacting quantum Hall liquid - <i>Dario Ferraro, CNR-SPIN, Università degli studi di Genova</i>
11:35 - 12:05	> Shot noise investigation of anyonic statistics in the Fractional Quantum Hall regime - <i>Olivier Maillet, Centre for Nanoscience and Nanotechnology (CNRS-C2N), Palaiseau</i>
12:05 - 14:00	Déjeuner
14:00 - 15:05	Oscillateurs Quantiques
14:00 - 14:35	> A macroscopic object passively cooled to its quantum ground state of motion - <i>Eddy Collin, Institut Néel</i>
14:35 - 15:05	> Circuit QED implementation of the non-perturbative boundary sine-Gordon model - <i>Sébastien Léger, Institut NEEL, CNRS, University of Grenoble Alpes</i>
15:05 - 16:10	Transport et Thermodynamique Quantique
15:05 - 15:40	> Dynamical Coulomb Blockade in a temperature-biased quantum channel - <i>Anne Anthore, Université de Paris - C2N</i>
15:40 - 16:10	> Dynamical Coulomb blockade of current and noise in out-of-equilibrium quantum circuits - <i>Ines Safi, Laboratoire de Physique des Solides</i>
16:10 - 16:40	Pause café
16:40 - 18:40	Supraconductivité Mésoscopique
16:40 - 17:10	> Gate-Assisted Phase Fluctuations in All-Metallic Josephson Junctions - <i>Julien Basset, Laboratoire de Physique des Solides</i>
17:10 - 17:40	> A Josephson junction supercurrent diode - <i>Nicola Paradiso, University of Regensburg</i>
17:40 - 18:10	> High kinetic inductance resonators in the strong disorder limit - <i>Thibault Charpentier, Institut Néel</i>
18:10 - 18:40	> Direct measurement of phase-dependent fluctuation-dissipation theorem in a superconducting-normal metal junction. - <i>Xavier Ballu, Laboratoire de Physique des Solides</i>
18:40 - 18:50	Bilan Ecole de Cargèse - <i>Sophie Guéron, Benjamin Huard, François Parmentier,</i>
19:00 - 21:30	Dîner
20:30 - 22:30	Autre - Session poster
20:30 - 22:00	Conseil Scientifique GDR - .

## mercredi 1 décembre 2021

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HEURES	ÉVÉNEMENT
08:50 - 10:30	Interaction Lumière-Matière
08:50 - 09:25	> Diamond-based quantum sensing: Principles and application to high-pressure magnetic measurements - <i>Jean-François Roch, Laboratoire Lumière, Matière et Interfaces</i>
09:25 - 10:00	> Detecting spins by their fluorescence with a microwave photon counter - <i>Emmanuel Flurin, Service de physique de l'état condensé</i>
10:00 - 10:30	> Absence of Anderson localization in 1D dipole chains due to cavity photons - <i>Thomas Allard, Institut de Physique et Chimie des Matériaux de Strasbourg</i>
10:30 - 10:50	Pause café
10:50 - 12:25	Information et Circuits Quantiques
10:50 - 11:50	> Introduction to Quantum Computing: The Good, the Bad and the Ugly - <i>Xavier Waintal, Univ. Grenoble Alpes, CEA, INAC-PHELIQS, F-38000 Grenoble, FRANCE</i>
11:50 - 12:25	> Towards Quantum Computation with Fluxonium qubits - <i>Quentin Ficheux, ETH Zürich, Joint Quantum Institute</i>
12:25 - 16:00	Déjeuner et après-midi libre
16:00 - 18:00	Transport et Thermodynamique Quantique
16:00 - 17:00	> Quantum Information in Mesoscopic Quantum Thermal Machines - <i>Géraldine Haack, Université de Genève</i>
17:00 - 17:30	> Signature of resonant modes in radiative heat current noise spectrum - <i>Jonathan Wise, Université Grenoble Alpes and CNRS</i>
17:30 - 18:00	> Kwant: a numerical toolbox for quantum nanoelectronics - <i>Christoph Groth, Laboratoire Photonique Electronique et Ingénierie Quantique</i>
18:00 - 18:10	Discussion GdR
18:10 - 19:00	In Memoriam (Fabien Portier, Marc Sanquer)
19:00 - 20:30	Dîner festif

## jeudi 2 décembre 2021

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HEURES	ÉVÉNEMENT
08:50 - 10:25	Information et Circuits Quantiques
08:50 - 09:25	> Quantum simulation with solid-state quantum technologies : Observing many-body localization in a superconducting qubit array - <i>Michele Filippone - CEA Grenoble</i>
09:25 - 09:55	> Quantum reservoir neural network implementation on a Josephson Parametric Converter - <i>Danijela Markovic - Unité Mixte de Physique CNRS, Thales, Université Paris-Saclay</i>
09:55 - 10:25	> Determination of the disorder potential from quantum transport data using machine learning methods - <i>Gaetan Percebois - Institut de Physique et Chimie des Matériaux de Strasbourg</i>
10:25 - 10:45	Pause café
10:45 - 11:45	Information et Circuits Quantiques
10:45 - 11:15	> Engineering a U(1) lattice gauge theory in classical electric circuits - <i>Hannes Riechert - Laboratoire de physique de la matière condensée, Kirchhoff-Institute for Physics, Heidelberg University</i>
11:15 - 11:45	> Coulomb interactions and effective quantum inertia of charge carriers in a macroscopic conductor - <i>christophe chaubet - universite montpellier</i>

# POSTERS

#	Titre	Auteur
1	Radiofrequency magneto-transport in a mesoscopic Hall bar	Altimiras Carles
2	Valley currents in bilayer graphene/hBN superlattice	Arrighi Everton
3	Photon-Emission Statistics induced by Electron Tunnelling in Plasmonic Nanojunctions	Avriller Rémi
4	Towards a versatile and resilient detection of paramagnetic species at the micron scale using quantum circuits techniques	Bahr Arne
5	Near field versus far field in radiative heat transfer between two-dimensional metals	Basko Denis
6	Photo-assisted transport in normal metal-BCS superconductor junctions	Bertin-Johannet Bruno
7	Nonlocal thermoelectricity in topological Josephson junctions	Blasi Gianmichele
8	Transport signatures of scars in graphene dots at low magnetic field	Chen Xianzhang
9	Theory of high-power excitation spectra of rf-SQUID	Dmytruk Olesia
10	Wavefront dislocations reveal the band topology of 1D insulators	Dutreix Clément
11	Evidence of Orbital paramagnetism in a graphene/BN moiré	Ferrier Meydi
12	Circuit QED implementation of quantum impurity models	Florens Serge
13	Kondo-cloud extension around quantum dots	Fossion Diego
14	Non parametric photon conversion in circuit-QED	Fraudet Dorian
15	Combined Dissipative and Hamiltonian Cat Qubit Confinement	Gautier Ronan
16	Shot noise investigation of anyonic statistics in the Fractional Quantum Hall regime	Glidic Pierre
17	Magneto-spectroscopic signatures of Dirac materials – how far can we boost Lorentz ?	Goerbig Mark Oliver
18	Realization of a microwave photon-number amplifier	Griesmar Joël
19	Towards single-shot multiplexed photon number measurement and stabilization of Fock states	Hutin Hector
20	Unveiling quasiparticle dynamics by scanning critical current microscopy	Jalabert Thomas
21	CryoCMOS : Cryogenic electronics from transistors to quantum measurements	Jehl Xavier
22	Nonlinear edge modes from topological 1D lattices	Jezequel Lucien
23	Cavity-photon induced state transitions in a Fluxonium qubit	Jouan Alexis
24	Signatures of Liouvillian Exceptional Points in a Quantum Thermal Machine	Khandelwal Shishir

#	Titre	Auteur
25	Predicting the spatial separation between valley channels in a quantum Hall graphene PN junction : a self-consistent quantum electrostatic approach	Lacerda Santos Neto Antonio
26	Non-equilibrated to fully equilibrated edge heat transport in hole-conjugate states of the fractional quantum Hall effect	Le Breton Gaëlle
27	Topological Hamiltonian and edge state detection using ARPES in amorphous systems.	Marsal Quentin
28	Electron and Hole Spin Qubits Variability in Si MOS Devices	Martinez I Diaz Biel
29	Emission of photon multiplets by a dc-biased superconducting circuit	Ménard Gerbold
30	Fractionalization and anyonic statistics in the integer quantum Hall regime	Mora Christophe
31	Proposal for a NanoMechanical Qubit	Pistolessi Fabio
32	1D microwave photonic crystals for on-chip signal processing	Praquin Matthieu
33	Suppression of the radiation squeezing in interacting quantum Hall edge channels.	Rebora Giacomo
34	Engineering superconductivity with crystal orientation in SrTiO <sub>3</sub> -based 2DEG : superfluid stiffness of the (001), (110) and (111) interfaces	Saiz Guilhem
35	When topology and electronic correlations meet : BCS superconductivity and the Berry curvature	Simon Florian
36	Probing quantum electromagnetic magnetic fields with subnanosecond time resolution : the single electron radar	Souquet-Basiège Hubert
37	Identifying and characterizing quantum skyrmions	Stepanov Evgeny
38	Superconductor/Semiconductor hybrid nanostructures based on Germanium for quantum information	Tangchingchai Chotivut
39	A three-dimensional chiral Veselago lens	Tchoumakov Sergueï
40	Robust propagating in-gap modes due to spin-orbit domain walls in graphene	Touchais Jean-Baptiste
41	Anisotropy of Yu-Shiba-Rusinov states	Uldemolins Mateo
42	Electronic properties of 2D superconducting BSCCO flakes	Velluire Pellat Zoe
43	Specific heat of a 2D electrons gas in Quantum Hall regime	Veyrat De Lachenal Lou-Anne
44	Superconducting resonators for fast readout of Si spin qubits	Vincent Estelle
45	Bloch oscillations in Josephson Junctions	Wagner Alexander
46	Spontaneous orbital magnetization of mesoscopic dipole dimers	Weick Guillaume
47	Asymmetric power dissipation in electronic transport through a quantum point contact	Weinmann Dietmar
48	Optimizing the energy consumption of the full-stack of a quantum computer	Whitney Robert
49	Si hole qubits in a cQED architecture	Yu Cécile

	LUNDI 29	MARDI 30	MERCREDI 1	JEUDI 2
9				
			J. F. Roch	M. Filippone
10			E. Flurin	D. Markovic
			T. Allard	G. Percebois
11			Coffee break	Coffee break
		D. Ferraro	X. Waintal	H. Riechert
12		O. Maillet	Q. Ficheux	C. Chaubet
13	Lunch	Lunch	Lunch	Lunch
14				
15	J. Cayssol	E. Collin	Free time	
		S. Léger		
16	C. Avogadri	A. Anthore		
	L. Jezequel	I. Safi		
17	Coffee break	Coffee break	G. Haack	
	P. Simon	J. Basset	J. Wise	
18	F. Masee	N. Paradiso	C. Groth	
	M. R. Sahu	T. Charpentier	In Memoriam	
19	N. Leumer	X. Ballu		
	Free time	Free time		
20	Dinner	Dinner	Dinner	
21				
22	Poster session	Poster session	Free time	