

Grenoble-Barcelona Twin Conference: Quantum Systems, New Materials & Smart Electronics

Grenoble 23-25 October 2019

WEDNESDAY 23 OCTOBER

14:00 – 15:00 OPENING (Room: Auditorium CNRS, Building A) Olivier Buisson, Hervé Courtois, Pol Forn, Xavier Obradors & Xavier Thibaut

15:00 – 18:00 A1 POWER SYSTEMS (Room: Lecture 2, Maison des Magistères)

Jose Luis Dominguez Answering the Challenges of Future Power Systems Ramon Costa-Castelló IRI Energy and Fuel Cell Laboratory

Mònica Aragüés-Peñalba Presenting CITCEA-UPC and its research activities

Xavier Obradors Advances in processing and applications of high critical current YBa2Cu3O7-x coated conductor

16:30-17:00 COFFEE BREAK

Nicolas Retière G2Elab's power system research group Pacal Tixador To be announced

15:00 – 18:00 B3 OPTOMECHANICS (Room: Amphi, Maison des Magistères)

Nadine Meyer Cooling levitated nanoparticles in a high finesse cavity Clivia Sotomayor Towards phonon circuits based on optomechanics Jean-Philippe Poizat Micro-engine driven by a single quantum dot

16:30-17:00 COFFEE BREAK

Oliver Arcizet To be announced

Dylan Cattiaux Nonlinear self-induced oscillations in microwave optomechanics

15:00 – 18:00 C1 OXIDE FILMS – MATERIALS (Room: Mag 2, Maison des Magistères)

Jose Santiso Strain-engineered microstructures in epitaxial thin oxide films

Xavier Torrelles Structural reconstructions of the polar (111) SrTiO3 surface

Massimiliano Stengel First-principles theory of flexoelectricity and related materials properties

Aude Bailly Structural investigation during the metal-insulator transition of an epitaxial VO2 film

16:30-17:00 COFFEE BREAK

Jean-Marc Tonnerre Depth resolved magnetism in heterostructures of ultrathin films studied by soft x-ray resonant reflectivity

Fatima Ibrahim Spin-orbit induced phenomena at ferromagnet/oxide and ferromagnet/2D material interfaces from first principles

18:00 – 20:00 POSTER SESSION & BUFFET DINNER (Room: Salle de Convivialité, Building A)

THURSDAY 24 OCTOBER

8:45 – 11:45 B1 POWER ELECTRONICS (Room: Lecture 2, Maison des Magistères)

Jesus Canas Silicon dioxide MOS capacitors on (100) p-diamond

Xavier Jorda Semiconductor Power Devices, Technologies and Systems at IMB-CNM

Yvan Avenas G2Elab latest research works in the field of power semiconductor implementation

10:15-10:45 COFFEE BREAK

Sergio Busquets Power Converter Design based on Switching-Cell Arrays

David Frey Power electronics based multiscale conversion systems: design and optimization

8:45 – 11:45 A2 2D MATERIALS FOR BIO & ENERGY (Room: Amphi, Maison des Magistères)

Cesar Moreno From molecules to atomically precise graphene nanoarchitectures

Laura Lechuga Combining nanophotonic sensor platforms with 2D materials for advanced diagnostics tools

Thomas Alava Graphene SGFET for biosensing : From transductor design to tripod-based non-covalent functionalization

10:15-10:45 COFFEE BREAK

Cecile Delacour Multiscale graphene neuroelectronics

Camille Raillon 2D materials coupled to nanopores for DNA sequencing applications

8:45 – 11:45 C3 QUANTUM FLUIDS (Room: Mag 2, Maison des Magistères)

Veronica Ahufinger Topology and quantum magnetism in lattices of rings

Irénée Frerot Bell non-locality in many-body systems

Luigi Amico Coherent effects in atomtronic circuits

10:15-10:45 COFFEE BREAK

Maxime Richard Nonequilibrium thermodynamics of a driven dissipative quantum fluids of light

Léonie Canet Kardar-Parisi-Zhang universality in 1D exciton-polariton systems

11:45 – 12:30 EDUCATION ROUND-TABLE (Room: Amphi, Maison des Magistères) Veronica Ahufinger & David Ferrand

12:30 – 14:30 BUFFET LUNCH (Room: Foyer, Maison des Magistères)

14:30 – 17:30 A3 SEMICONDUCTOR NANOCRYSTALS

(Room: Lecture 2, Maison des Magistères)

Andreu Cabot From nanocrystals to devices: Strategies to induce crystallographic texture and to increase printing speed

Davina Moodelly Visible and NIR-emitting silver-based metal chalcogenide quantum dots: promising candidates for biological imaging

Gerasimos Konstantatos Infrared Optoelectronics based on Colloidal Quantum Dots

16:00-16:30 COFFEE BREAK

Anindita Sahoo 2D and 0D Nanomaterials based Hybrid Infrared Phototransistor

Peter Reiss Ternary semiconductor nanocrystals for energy applications

14:30 – 17:30 B2 SPINTRONICS & HEAT TRANSPORT (Room: Amphi, Maison des Magistères)

Juan Sierra Spin-orbit and spin-heat interaction in graphene

Aron Cummings Simulation of charge and spin transport in disordered low-dimensional materials

Klaas-Jan Tielrooij Ultrafast dynamics of charge and heat in 2D materials

16:00-16:30 COFFEE BREAK

Matthieu Jamet Van der Waals epitaxy of transition metal dichalcogenides by MBE. Application to the study of the valley Nernst effect in WSe2

14:30 – 17:30 C2 OPTICAL SPECTROSCOPY 2D MATERIAL

(Room: Mag 2, Maison des Magistères)

Frank Koppens Nanoscale optics of twisted 2D materials

Laëtitia Marty Strong influence on 2D materials of substrate and defects revealed by optical and vibrational spectroscopies

Denis Basko Photoluminescence of graphene quantum dots: the role of symmetries which are absent

16:00-16:30 COFFEE BREAK

Zeila Zanolli Ab initio exciton and phonon dynamics in Transition Metal Dichalcogenides **Clément Faugeras** Dark and Bright excitons in heterostructures of 2D semiconductors

17:30 - 20:00 LAB VISITS (by reservation)

FRIDAY 25 OCTOBER

8:45 – 11:45 D1 OXIDE FILMS – SPINTRONICS (Room: Lecture 2, Maison des Magistères)

Josep Fontcuberta Electroresistance in epitaxial ferroelectric HfO 2 -based thin films

Stefania Pizzini Oxidation dependence of the Dzyaloshinskii-Moriya interaction in Pt/Co/MOx trilayers (M = Al or Gd)

Jordi Sort Magnetoelectric effects in mesoporous alloys: towards enhanced energy efficiency in magnetically-actuated devices

10:15-10:45 COFFEE BREAK

Rafael L. Seeger Probing antiferromagnets with currents

Aliona Nicolenco Magneto-ionic effects in nanoporous iron oxides

Gilles Gaudin Spin-orbit torques in an ultrathin ferromagnetic metal layer between two oxides: quantum confinement and Rashba effect

8:45 – 11:45 D2 TWO-DIMENSIONAL MATERIALS (Room: Amphi, Maison des Magistères)

Hanako Okuna Atomic defects in 2D materials studied by transmission electron microscopy

Maciej Jankowski In situ investigation of graphene growth on liquid copper

10:15-10:45 COFFEE BREAK

Nicolas Rougemaille Perpendicular magnetic anisotropy, unconventional spin texture and extraordinary gradual spin reorientation transition of cobalt films in contact with graphene,

8:45 – 11:45 D3 QUANTUM CIRCUITS, THERMODYNAMICS & INFO

(Room: Mag 2, Maison des Magistères)

Benoit Vermersch Probing quantum simulators and quantum computers via randomized measurements

Mike Zhitomirsky Advanced magnetocaloric materials for low-temperature refrigeration

Pol Forn Quantum Computing at IFAE

10:15-10:45 COFFEE BREAK

Alexia Auffeves The energetic cost of quantum control

Nicolas Roch Many-body physics with superconducting quantum circuits

11:45 – 12:15 SUMMARY AND FUTURE PLANS (Room: Amphi, Maison des Magistères) Jordi Sort, Nicolas Retière, Johann Coraux, Maxime Richard

12:15 – 12:30 CLOSING REMARKS (Room: Amphi, Maison des Magistères)

12:30 – 14:30 BUFFET LUNCH (Room: Foyer, Maison des Magistères)



LIST OF POSTERS

An, Kyongmo, Long range coupling of magnetic bilayers by coherent phonons

Aviles, Felix Luis [et al.]

Integration of Tb/Co Multilayers within Ultrafast Optically Switchable p-MTJ

Balestro, Franck, Single Molecular Magnet, a fascinating platform for quantum experiments

Bousquet, Jessica [et al.]

hBN encapsulated liquid-gated graphene field-effet transistors: toward sensitive and stable sensors in liquid medium

Bousquet, Jessica [et al.]

Ion-gel gated single layer MoS2 transistors as switch for multiplexing applications

Fontcuberta, Josep,

On the Role of Interfaces on Spin Transport in Magnetic Insulator/Normal Metal Heterostructures

Fontcuberta, Josep, Correlated electronic systems as transparent conductors

Martin, Mickael [et al.] Wafer-scale growth of layered III-VI materials by MOCVD

Maffei ,Maria [et al.]

Extracting topology from optical diffraction: a study of the Integer Quantum Hall Effect in two, thee and four dimensional crystals

Naldesi, Piero [et al.]

Angular Momentum Fractionalization for Attracting Bosons in Ring-Shaped Potentials

Rodriguez-Lamas, Raquel [et al.]

Tunable bipolar resistive switching in TiN/LaMnO3+/Pt heterostructures

Tiwari, Dhananjay

Investigating spin Hall angle and transparency in Py/Ta based heterostructure using Spintorque FMR

Tomasello, Bruno [et al.] Correlated Quantum Tunneling of Monopoles in Spin Ice

Vermersch, Benoit,

Randomized measurements: A toolbox for probing quantum simulators and quantum computers

Whitney, Robert, A non-equilibrium system as a demon

Zhitomirsky, Mike, Why magnetic cooling is "hot": theoretical and experimental perspectives