

Programme of the workshop **S^{iq} hybrids**

Les Arcs, March 26-29, 2018

Monday, March 26th

14:00-19:30 *Arrivals, Registration*

19:30-20:00 Welcome session

20:00 *Dinner*

Tuesday, March, 27th

08:15-08:20 **Hermann Suderow:** Opening of the Workshop

Morning Session 1: Novel quantum states in superconductors

Chair:

08:20-08:40 **Benjamin Sacépé**

When Joule poisons Majorana in topological Josephson junctions

08:40-09:00 **Andrej Mesaros**

In-gap excitations due to defects in topological superconductors

09:00-09:20 **Mathieu Delbeck**

Synthetic spin-orbit interaction for Majorana devices

09:20-09:40 **Marcello Spera**

Spatial and energy dependent texturing of the charge order in 1T-Cu_xTiSe₂

09:40-10:00 **Gunta Kunakova**
Transparent superconductor-Bi₂Se₃ nanoribbon interface
hybrid devices

10:10-10:30 *Coffee break*

Morning Session 2: Novel quantum states in superconductors

Chair:

10:30-10:50 **Egor Babaev**
Superconductivity with frustrated Josephson coupling

10:50-11:10 **Mahdi Mashkoori**
Majorana quasiparticles in atomic chain of magnetic
impurities: effect of *d*-wave pairing

11:10-11:30 **Chuan Li**
Observation of 4π -periodic supercurrent and Zeeman π -
junction in Dirac semimetal Josephson junctions

11:30-11:50 **Zoltan Scherubl**
Signatures of non-local coupling in Cooper pair splitter:
The Andreev molecule

11:50-12:10 **Andrei D. Zaikin**
Non-equilibrium ϕ_0 -junction-like behavior of multi-
terminal normal-superconducting nanohybrids

12:10-14:10 *Lunch*

14:10-16:10 *Networking meetings and discussions*

Afternoon Session 1: Josephson junctions and networks

Chair:

16:10-16:30 **Jan Aarts**

Spontaneous emergence of Josephson junctions in single crystal rings of Sr_2RuO_4

16:30-16:50 **Jabir Ali Ouassou**

Superconducting spintronics in double-barrier Josephson junctions

16:50-17:10 **Edward Goldobin**

Experiments with artificial φ -Josephson junctions

17:10-17:30 **Tomas Novotny**

Perturbation theory for a correlated quantum dot attached to superconducting leads

17:40-18:00 *Coffee break*

Afternoon Session 2: Focus lectures & COST networking

18:00-18:30 **Sophie Gueron**

Focus lecture on selected topics in low-dimensional superconducting hybrids

18:30-19:00 **Alexander Buzdin**

Focus lecture on selected topics in Josephson physics

19:00-19:30 **Yonathan Anahory**

Focus lecture on selected topics in vortex matter

"COHERENT SUPERCONDUCTING HYBRIDS AND RELATED MATERIALS"
COST CA16218 Workshop, Les Arcs 1800, France, March 26-29, 2018

19:30-20:00 **Hermann Suderow, Irene Gonzalez Martin**
Presentation of the NANOCOHYBRI COST Action

20:00 *Networking Dinner*

Wednesday, March 28th

Morning Session 1: Superconductivity vs magnetism

Chair:

08:20-08:40 **Jean-Pascal Brison**
Intrinsic p-wave ferromagnetic superconductors: insights
from bulk materials

08:40-09:00 **Pavol Szabo**
On the origin of the quasiparticle states in the
superconducting gap of homogeneously disordered
ultrathin films: MoC case

09:00-09:20 **Vetle Risinggard**
Intrinsic superspin Hall current

09:20-09:40 **Mikhail Silaev**
Coupled transport of spin, heat and charge in
superconductors with Zeeman splitting

09:40-10:00 **Marco Aprili**
Spectroscopy of few-layer superconducting NbSe₂

10:10-10:30 *Coffee break*

Morning Session 2: Vortex matter

Chair:

10:30-10:50 **Morten Amundsen**

Geometry dependence of proximity induced vortex patterns in superconducting hybrid structures

10:50-11:10 **Vadim Geshkenbein**

Strong pinning theory of thermal vortex creep in type-II superconductors

11:10-11:30 **Marinela A. Ionescu**

Bulk pinning force analysis of MgB₂ co-added with c-BN and Ge₂C₆H₁₀O₇ fabricated by spark plasma sintering

11:30-11:50 **Enrico Silva**

Flux-flow regimes in Nb/PdNi/Nb hybrids, Nb and Nb₃Sn: unconventional vs conventional behavior

11:50-12:10 **Isabel Guillamon**

Scanning tunneling spectroscopy in pnictide superconductors: 122 and related systems

12:10-14:10 ***Lunch***

14:10-16:10 ***Networking meetings and discussions***

Afternoon Session 1: Low dimensionality, disorder, coherence

Chair:

16:10-16:30 **Sergio Caprara**

Negative electron compressibility and inhomogeneous

superconductivity in ionic-liquid gated thin films

16:30-16:50 **Nicolas Bergeal**

Superfluid stiffness in oxide interfaces

16:50-17:10 **Shai Wissberg**

Large-scale modulation in the superconducting properties of thin films due to domains in the SrTO₃ substrate

17:10-17:30 **Fabian Rudau**

Coherent terahertz radiation from stacks of intrinsic Josephson junctions

17:40-18:00 *Coffee break*

Afternoon Session 2: Low dimensionality, disorder, coherence

Chair:

18:00-18:20 **Thilo Bauch**

Quasiparticle spectroscopy using a YBCO transmon

18:20-18:40 **Sergey Kubatkin**

Sources of decoherence in superconducting quantum devices

18:40-19:00 **Andrey S. Vassenko**

Suppression of the low-frequency decoherence by Bell-state motion

Super-Poster Session

19:00-19:30 *Short presentations*

19:30-21:30

Session & Dinner

Victor Barrena

Superconducting density of states and the vortex lattice close to the quantum critical point in $\text{BaFe}_2(\text{As}_{1-x}\text{P}_x)_2$

Simon Bending

Gate-controlled superconductivity in few-layer 2D materials

Annica Black-Schaffer

Topological phases and Majorana fermions from magnetic impurities in superconductors

Adrian Crisan

Pinning potential in $\text{YBa}_2\text{Cu}_3\text{O}_7$ superconducting films with nanoengineered pinning centres

Szabolcs Csonka

Non-local probing of superconducting quantum dots via Yu-Shiba-Rusinov-state in Cooper pair splitter

Oleksandr Dobrovolskiy

Microwave-stimulated superconductivity in Nb films

Abdou Hassanien

Smeared d-wave anisotropy and discrete Andreev states in monolayer organic superconductor

Beena Kalisky

Mapping superfluid density near the superconductor insulator phase transition

Vladimir Krasnov

Signatures of the spin-triplet current in a Josephson spin valve

Wolfgang Lang

Unconventional critical state in cuprate superconductors with regular topological defects

Raphaël Leriche

Looking for topological superconductivity in misfit TMD LaNb_2Se_5

Floriana Lombardi

Unconventional induced superconductivity on the surface states of Bi_2Te_3

Ivan Maggio-Aprile

A BCS fingerprint revealed by the vortex cores of a high T_c superconductor

Milorad Milosevic

Effect of "impurities" on monolayer superconductivity: Some selected cases

Jason Robinson

Superspin

Mikel Rouco

Electron refrigeration in hybrid structures with spin-split superconductors

Tomas Samuely

Black diamond – effects of confinement and magnetism on superconductivity

Alejandro Silhanek

In-situ tailoring of superconducting junctions via electro-annealing

Daniela Stornaiuolo

Oxide 2DEG properties for advanced electronic applications

Daria Szewczyk

Thermal conductivity measurements for superconducting materials

Hermann Suderow

Bound states and unconventional low energy electronic behavior in superconductors

Lan Maria Tran

Switching superconducting state “on” and “off” depending on the direction of the magnetic field in the Co- and Ca-doped EuFe_2As_2 -based magnetic superconductors

Joris Van de Vondel

Direct visualization of degeneracy and vortex ice in nanostructured superconductors

Thursday, March 29th

Morning Session 1: novel approaches, material, devices

Chair:

08:20-08:40 **Xavier D. Baumans**

Anti-electromigration: Restoring conventional and high-T_c ultra-narrow superconducting junctions

08:40-09:00 **Wout Keijers**

Nano-SQUIDs with controllable weak links via
electromigration

09:00-09:20 **Benedikt Muller**

Advanced nano-SQUIDs based on sub-micron trilayer
Nb/HfTi/Nb Josephson junctions

09:20-09:40 **Rosa Cordoba**

Superconducting nanotubes vertically grown by He⁺
focused ion beam induced deposition

09:40-10:00 **Cheryl Feuillet-Palma**

High-Tc superconducting devices

10:00-10:20 *Coffee break*

Morning Session 2: novel approaches, material, devices

Chair:

10:20-10:40 **Clemens Muller**

A passive on-chip microwave circulator using a ring of
tunnel junctions

10:40-11:00 **Roberta Caruso**

Influence of microwaves on magnetic switching in Nb-
Al/AlO_x-(Nb)-PdFe-Nb Josephson junctions

11:00-11:20 **Evagelia Moshopoulou**

Temperature dependence of the crystal structure of the
superconductor LiTi₂O₄ and of the heavy fermion LiV₂O₄

11:20-11:40 **David Perconte**

Tunable proximity effect in cuprate
superconductor/graphene junctions

11:40-12:00 **Maria Jose Martinez-Perez**

Magnetization reversal in individual nanoparticles
revealed by nano-SQUID magnetometry

12:00-12:10 ***Closing Remarks***

12:10-13:30 ***Lunch***

13:30 ***Departure***