

Topics

- Gate controlled superconductivity
- Superconducting electronics
- Quantum materials
- Magneto-electric effects in superconductors

Invited Speakers

Andrea Amoretti, University of Genova, Italy
 Julien Basset, Université Paris-Saclay, France
 Johanna Berger, University of Regensburg, Germany
 Karl Berggren, MIT Boston, USA
 Jinwoong Cha, KRISS, Korea
 Dario Daghero, University of Torino, Italy
 Christian Degen, ETH Zurich, Switzerland
 Kavesh Delfanazari, University of Glasgow, Scotland
 Julia Meyer, Université Grenoble Alpes, France
 Yuri Pashkin, Lancaster University, UK
 Thomas Jalabert, CEA Grenoble, France
 Björn Trauzettel, University of Würzburg, Germany

Industry and EIC Representatives

Rohith Acharya (Researcher at IMEC)
 Marco Arzeo (Lab manager at SEEQC-EU)
 Michaela Eichinger (Solution manager - quantum computing at Quantum Machines)
 Claudio Puglia (CEO at DSQM)
 Markus Ritter (EU policy officer - quantum technologies)
 Daniela Salvoni (EU sales director at Photon Technology Italy SRL)

Chairs

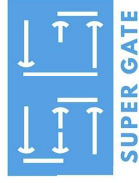
Angelo Di Bernardo (University of Salerno)
 Mario Cuoco (CNR SPIN)
 Francesco Giazotto (CNR NANO)
 Elke Scheer (University of Konstanz)

Program Committee

Marco Arzeo (SeeQc-EU)
 Wolfgang Belzig (University of Konstanz)
 Andrea Caviglia (University of Genève)
 Szabolcs Csonka (Budapest University of Technology and Economics)
 Simone Gasparinetti (Chalmers University of Technology)
 Antonio Vecchione (CNR SPIN)



The Workshop is organized as part of the
 EU FET-Open project SUPERGATE



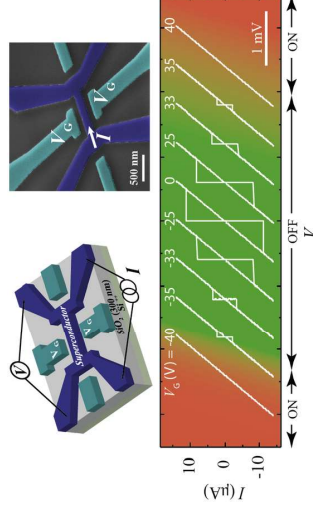
SUPER GATE 2024

Gate-Controlled Superconductivity



Status, Current Understanding and Perspectives about Gate-Controlled Superconductivity

October 6th - October 9th 2024
 Paestum (SA), Italy



Sunday 6 October	
14:00-17:00	Excursion to Paestum Archeological Area
17:30-19:00	Registration
19:30	Welcome drink
Monday 7 October	
8:45-9:00	Opening E. Scheer, SUPERGATE Coordinato', University of Konstanz, Germany <i>Chairs:</i> M. Cuoco, CNR SPIN and F. Giazotto CNR NANO
9:00-9:40	J. Basset, University Paris Sada, France <i>Gate-assisted phase fluctuations in all-metallic Josephson junctions</i>
9:40-10:20	Y. Pashkin, Lananster University, UK <i>Field effect in superconductors: reality or delusion?</i>
10:20-10:50	G. De Simoni, CNR NEST, Italy <i>Gate-tunable superconducting devices for digital electronics</i>
	Coffee Break
11:20- 12:00	<i>Chairs:</i> M. Cuoco, CNR SPIN and F. Giazotto, CNR NANO <i>Superconductors in strong electric fields: Quantum Electrodyamics meets superconductivity</i>
12:00-12:30	Y. Fukaya, Okayama University, Japan <i>Suppression of Josephson current by gating: role of spin-orbit coupling and low crystalline symmetry</i>
12:30-12:45	S. Annabi, Ecole Polytechnique, France <i>Quantum phase-transitions and non-locality in ultraclean carbon nanotube-based Josephson junctions</i>
12:45-13:00	C. Guarcello, University of Salerno, Italy <i>Anomalous Josephson effects in nanowire-based junctions</i>
	Lunch Break
14:30-15:10	<i>Chairs:</i> A. Di Bernardo, University of Salerno and W. Bellig, University of Konstanz K. Delfanazari, University of Glasgow, UK <i>Gate-voltage addressable superconducting-semiconducting hybrid circuits</i>
15:10-15:50	J. Cha, KRISs, South Korea <i>Coupling of Photons and Phonons in Superconducting Microwave Circuits</i>
	Coffee Break
16:15-16:30	<i>Chairs:</i> A. Di Bernardo, University of Salerno and W. Bellig, University of Konstanz J. Koch, University of Konstanz, Germany <i>Gate-controlled switching in non-centrosymmetric superconducting devices</i>
16:30-16:45	L. Kupas, Budapest University of Technology and Economics, Hungary <i>Switching dynamics of Al superconducting nanocircuits</i>
16:45-17:00	G. Trupiano, Scuola Normale Superiore, Italy <i>A superconducting microwave relaxation oscillator with quasiparticle injection</i>
17:00-17:30	D. Nikolic, University of Greifswald, Germany <i>Microscopic theory of gate-controlled surface depairing and anomalous in mesoscopic superconductors</i>
17:30-18:00	M. Berke, Budapest University of Technology and Economics, Hungary <i>Switching dynamics in Al/InAs nanowire-based gate-controlled superconducting transistor</i>
18:00	SUPERGATE Project Meeting
19:00	Free time/discussion
Tuesday 8 October	
9:00-9:40	<i>Chairs:</i> A. Caviglia, University of Geneve and A. Vecchione, CNR SPIN J. Berger, University of Regensburg, Germany <i>Gate tunable supercurrent diode and anomalous Josephson effect</i>
9:40-10:20	C. Degen, ETH Zurich, Switzerland <i>Scanning nitrogen vacancy magnetometry and imaging of Meissner screening</i>
10:20-10:35	K. Knapp, ETH Zurich, Switzerland <i>Imaging of gate-controlled suppression of superconductivity by scanning nitrogen vacancy magnetometry</i>
10:35-10:50	H. Riechert, Ecole Polytechnique, France <i>Coherent control of a carbon nanotube-based gatemon qubit</i>
	Coffee Break

Chairs: A. Caviglia, University of Geneva and A. Vecchione, CNR SPIN	
11:20- 12:00	J. Meyer, University Grenoble Alpes, France <i>Josephson tunneling at odd parity</i>
12:00-12:30	L. Ruf, University of Konstanz, Germany <i>Gate controlled superconducting currents in Nb devices</i>
12:30-12:45	L. Marian, Université de Sherbrooke, Canada <i>Observation of microwave Higgs modes in superconducting titanium nanostructures</i>
12:45-13:00	L. Andersson, Chalmers University, Sweden <i>Real-time detection of quasiparticle tunneling events using a transmon qubit directly coupled to a waveguide</i>
	Lunch Break
14:30-15:10	<i>Chairs:</i> K. K. Berggren, MIT and M. Arzeo, SeeQc-EU D. Daghero, University of Torino, Italy <i>Reversible tuning of superconductivity in ion-gated NBN thin films</i>
15:10-15:50	B. Trauzettel, University of Wuerzburg <i>Dynamics of biased Josephson junctions</i>
	Coffee Break
16:15-18:00	Industry/EU Session <i>Chairs:</i> K. K. Berggren, MIT and M. Arzeo, SeeQc-EU
16:15-16:30	M. Ritter, European Commission DG CNECT <i>The European Vision for Quantum Technologies</i>
16:30-16:50	C. Puglia, DSQM, Italy <i>Exploitation of laboratory results through DSQM: A superconducting electronics spin-off</i>
16:50-17:05	M. Eichinger, Quantum Machines, Denmark <i>Beyond qubits: what does it take to run Shor's algorithm on a fault tolerant computer?</i>
17:05-17:20	D. Salvoni, Photon Technology Italy <i>Superconducting Single Photon Detectors for Quantum Information</i>
17:20-17:35	R. Acharya, IMEC, Belgium <i>Superconducting Qubit Control with Ultra-Low-Power Cryo-CMOS Multiplexer at Millikelvin Temperatures</i>
17:35-17:50	M. Arzeo, SEE-QC EU, Italy <i>SFQ electronics for chip-based quantum computing</i>
17:50-18:00	Closing remarks
19:30	Conference dinner Hotel Cerere Paestum
Wednesday 9 October	
9:00-9:40	<i>Chairs:</i> E. Scheer, University of Konstanz and P. Makk, Budapest University of Technology and Economics T. Jalabert, University of Grenoble, France <i>Probing the dynamics of quasiparticles in a superconducting nanowire by scanning critical current microscopy</i>
9:40-10:20	K. K. Berggren, MIT, USA <i>Superconducting Microstrip-Based Electronics: Revisiting the Cryotron</i>
10:20-10:35	L. Lakić, University of Copenhagen, Denmark <i>Proximitized gate-controlled quantum dots in germanium</i>
10:35-10:50	D.C. Ohnmacht, University of Konstanz, Germany <i>Full counting statistics of Yu-Shiba-Rusinov states</i>
	Coffee Break
11:20- 11:50	<i>Chairs:</i> E. Scheer, University of Konstanz, and P. Makk, University of Budapest J. van den Brink, JFW Leibniz Dresden, Germany <i>Topological surface superconductivity in PtBi₂</i>
11:50-12:20	V. Buccheri, Chalmers University, Sweden <i>Microwave characterization of gate controlled superconducting nanowires</i>
12:20-12:35	I. Aupias, University of Geneve, Switzerland <i>Local and ultrafast dynamics of NbTiN superconducting nanowires</i>
12:35-12:50	A. Guarino, CNR SPIN, Italy <i>Gate Induced Nanoscale Currents Distribution in Nb Dayem Bridges</i>
12:50-13:05	C. Autieri, MagTop Warsaw, Poland <i>Dirac surface states and superconductivity in Nb- and Ta-based A15 compounds</i>
13:05-13:15	Closing
	Lunch
Afternoon	Departure