MAY 20-23
Grenoble (France)
QUANTUM MATTER
2025
International Quantum Matter Conference

TENTATIVE PROGRAM (as of 30/04/2025)

K: Keynote lecture / I: Invited Lecture / O: Oral contribution

INDEX

Monday (19/05/2025)

TUTORIALS
Reserved for PhD Students who´ve secured their contribution at QuantuMatter2025 (Capacity: 80 max)

Chair : TBD
13:30 – 14:30: **Yann-Michel Niquet** (CEA, France) T
What does modelling tell us about spin qubits?
14:30 – 15:30: **Xavier Waintal** (CEA Grenoble, France) T
New trends in tensor networks: from machine learning to Quantum computing

15:30 – 16:00: *Coffee Break*

Chair : TBD
16:00 – 17:00: **Eric Akkermans** (Technion, Israel) T
Topological Defects : Creating and Imaging Quantum Matter
17:00 – 18:00: **Cristiane Morais Smith** (Utrecht University, The Netherlands) T
Topology between one and two dimensions

Tuesday (20/05/2025)

Chair : TBD
08:00 – 08:45: Registration
08:45 – 09:00: Opening
09:00 – 09:30: **M. Zahid Hasan** (Princeton University, USA) K
New Frontiers in Topological Quantum Matter
09:30 – 09:45: **Philippe St-Jean** (Université de Montréal, Canada) O
Quantized Hall drift in a frequency-encoded photonic Chern insulator
09:45 – 10:15: **Gloria Platero Coello** (ICMM-CSIC, Spain) I
Long-range quantum transfer mediated by topological edge states
10:15 – 10:30: Award Ceremony

10:30– 11:15: Coffee Break / Poster Session / Exhibition

Chair : TBD
11:15 – 11:45: **Katharina Franke** (Freie Universität Berlin, Germany) I
Atomic-scale design of magnetic adsorbate structures on superconductors
11:45 – 12:00: **Ziwei Dou** (Institute of Physics, Chinese Academy of Sciences, China) O
Evidence of P-wave Pairing in K2Cr3As3 Superconductors from Phase-Sensitive Measurement
12:00 – 12:15: **Pascal Simon** (University Paris-Saclay, France) O
Magnetic impurities in superconductors: Role of many-body interactions
12:15 – 12:30: **Kevin Roux** (ISTA, Austria) O
Granular aluminium superinductors for cQED experiments on planar Germanium
12:30 – 13:00: **Joel I-jian Wang** (MIT, USA) I
Probing Quantum Materials with Superconducting Quantum Technology

13:00 – 14:00*: Lunch Break*
14:00 – 14:30: Poster Session I

Chair : TBD
14:30 – 15:00: **Lieven Vandersypen** (Tudelft/QuTech, The Netherlands) I
Semiconductor spin qubits – vision, opportunities and challenges
15:00 – 15:15: **Corentin Déprez** (QuTech, TU Delft, The Netherlands) O
Shared-control shuttling link between distant germanium spin-qubit registers
15:15 – 15:30: **Alfredo Levy Yeyati** (Universidad Autónoma de Madrid, Spain) O

Quantum Circuits with Multiterminal Josephson-Andreev Junctions
15:30 – 15:45: **François Lefloch** (CEA-Grenoble - IRIG/PHELIQS, France) O
Gate- and flux-tunable sin(2phi) Josephson element with proximitized Ge-based junctions
15:45 – 16:00: **Kilian Sandholzer** (Technical University of Munich, Germany) O
Erbium dopants in silicon for quantum networks
16:00 – 16:15: **Seddik Ouacel** (CNRS, Institut Néel, France) O
Electronic interferometry with ultrashort plasmonic pulses

16:15 – 17:00: *Coffee Break / Poster Session / Exhibition*

Chair : TBD
17:00 – 17:30: **Mete Atature** (University of Cambridge, UK) I
A Many-Body Quantum Memory Using Optically Engineered Nuclei
17:30 – 18:00: **Soo-Hyon Phark** (Center for Quantum Nanoscience, South Korea) I
Coherent Quantum Platform Crafted Atom-by-Atom on a Surface

Wednesday (21/05/2025)

Workshop 01: Topological Quantum Matter: materials growth, characterization & theory
Chair : TBD
09:00 – 09:15: **Valentina Bonino** (ESRF, France) O
Using X-rays nanoprobes to investigate local carrier confinement in multi-quantum wells-based nanostructures
09:15 – 09:30: **Alexander Pawlis** (Forschungszentrum Jülich GmbH, Germany) O
Novel concept for all-in-situ quantum device epitaxy with III/V and II/VI semiconductors
09:30 – 09:45: **Elena Missale** (FBK, Italy) O
Engineering Germanium-Vacancy Center Arrays in Diamond Nanopillars for Quantum Applications
09:45 – 10:00: **Rosa Estela Diaz Rivas** (Purdue University, USA) O
Atomic-Scale Analysis of Metal-Semiconductor and Quantum Well Interfaces: Developing Metrics for Quantum Device Engineering
10:00 – 10:30: **Jordi Arbiol** (ICREA & ICN2, Spain) I
Quantum nanostructures at atomic scale: From vertical hybrid nanowires to planar nanowire networks and 2DEG/2DHG systems

10:30– 11:30: Coffee Break / Poster Session / Exhibition

Chair : TBD
11:30 – 12:00: **Giordano Scappucci** (Delft University of Technology, The Netherlands) I
Materials for quantum computing: On and off the beaten path
12:00 – 12:15: **Noelia Fernandez** (kiutra GmbH, Germany) O
Stray magnetic fields in cryogenic environments as a source of decoherence of superconducting qubits
12:15 – 12:30: **Moïra Hocevar** (Institut Néel CNRS, France) O
Alternative Superconductors to Aluminum for Gate-Tunable Hybrid Josephson Junctions
12:30 – 12:45: **Francesca Chiodi** (Université Paris Saclay, France) O
Tuning Silicon and SiGe superconductivity with Nanosecond Laser Doping
12:45 – 13:00: **Sisheng Duan** (National University of Singapore, Singapore) O
Doping-Tunable Charge Ordering in Semiconducting Single-Layer Cr2Se3

13:00 – 14:45*: Lunch Break*

Chair : TBD
14:45 – 15:15: **Niels B. M. Schröter** (Max Planck Institute for Microstructure Physics in Halle, Germany) I
Spin- and Orbital Monopoles in Chiral Semimetals
15:15 – 15:30: **Maddison Coke** (University of Manchester , UK) O
Isolation and characterisation of novel isotope clusters for ion-implanted qubits
15:30 – 15:45: **Eva Maria Gonzalez Ruiz** (Institut de Physique Théorique, CEA, France) O
Two-photon correlations and HOM visibility from an imperfect single-photon source
15:45 – 16:00: **Jianguo Wen** (Argonne National Laboratory, USA) O

Quantum Emitter Electron Nanomaterial Microscope: A Tool for Analyzing Atomic Structures and Dynamics of Active Quantum Emitters
16:00 – 16:15: **Yariv Yanay** (University of Maryland, USA) O
Exponential Quantum Advantage for Simulating Open Systems

16:15 – 17:00: *Coffee Break / Poster Session / Exhibition*

Workshop 02: Quantum matter: theory & simulations
Chair : TBD
09:00 – 09:15: **Matteo Brunelli** (College dr France, France) O
Nonreciprocal Quantum Matter
09:15 – 09:30: **Nicolas Lorente** (CSIC, Spain) O
Realization of Two-dimensional Discrete Time Crystals with Anisotropic Heisenberg Coupling
09:30 – 09:45: **Tommaso Roscilde** (Ecole Normale Supérieure de Lyon, France) O
Scaling multipartite entanglement in the real world
09:45 – 10:00: **Kilian Seibold** (University of Konstanz, Germany) O
Quantum driven dissipative systems and their topological properties
10:00 – 10:30: **Nathan Goldman** (Collège de France, Paris & International Solvay Institutes & Université Libre de Bruxelles, Belgium) I
Correlated topological matter : news and views from quantum simulation

10:30– 11:30: Coffee Break / Poster Session / Exhibition

Chair : TBD
11:30 – 12:00: **Raquel Queiroz** (Columbia University in the City of New York, USA) I
Quantum geometry: how to picture bound electrons in infinite lattices
12:00 – 12:15: **Matthew Brooks** (Laboratory for Physical Sciences, USA) O
Simulated Non-Abelian Statistics of Majorana Zero Modes from A Kitaev Lattice
12:15 – 12:30: **Botao Wang** (Université Libre de Bruxelles, Belgium) O
Constructing lattice models for anyons in one dimension
12:30 – 12:45: **Jeanne Colbois** (Institut Neel, CNRS & UGA, France) O
Instabilities in the random-field XXZ chain
12:45 – 13:00: **Carlo Trugenberger** (SwissScientific Technologies SA, Switzerland) O
Superinsulation: theory and applications

13:00 – 14:45*: Lunch Break*

Chair : TBD
14:45 – 15:15: **Reinhold Egger** (Heinrich Heine University Düsseldorf, Germany) I
Quantum Mpemba Effects
15:15 – 15:30: **Guangze Chen** (Chalmers University of Technology, Sweden) O
Quantum simulation of open quantum many- body systems with giant atoms
15:30 – 15:45: **Laurent Vernac** (Laboratoire de Physique des Lasers, France) O
Probing quantum thermalization and quantum magnetism with lattice-trapped dipolar atoms
15:45 – 16:00: **Nicolas Cherroret** (CNRS, France) O
From inverse-cascade to sub-diffusive dynamic scaling in driven disordered Bose fluids
16:00 – 16:15: Speaker TBD

16:15 – 17:00: *Coffee Break / Poster Session / Exhibition*

Chair : TBD
17:00 – 17:30: **Ramon Aguado** (ICMM-CSIC, Spain) I
Novel qubits in hybrid semiconductor-superconductor nanostructures
17:30 – 17:45: **Andriani Keliri** (JEIP Collège de France, CNRS, France) O
Slave-spin approach to the Anderson-Josephson quantum dot

Workshop 03: Quantum information

Chair : TBD

09:00 – 09:15: **Ahmad Fouad Kalo** (CEA, France) O
Hole Spin-Photon Coupling in Silicon and Germanium Double Quantum Dots

09:15 – 09:30: **Tereza Vakhtel** (TU Delft, The Netherlands) O
Long-range optical coupling of distant quantum dot spins

09:30 – 09:45: **Ignacio Casal Iglesias** (Universidad Autónoma de Madrid, Spain) O
Ultrastrongly Coupled Gatemon Qubit

09:45 – 10:00: **Michael Stern** (Bar llan University, Israel) O
Strong coupling of a superconducting flux qubit to single bismuth donors

10:00 – 10:30: **Mario Berta** (RWTH Aachen University, Germany) I
Title to be defined

10:30– 11:30: Coffee Break / Poster Session / Exhibition

Chair : TBD

11:30 – 11:45: **Biel Martinez i Diaz** (CEA Leti, France) O
Steps towards variability-resilient spin qubits

11:45 – 12:00: **Lorenzo Mauro** (CEA Grenoble, France) O
Strain engineering in Ge/GeSi spin qubits heterostructures

12:00 – 12:15: **Andras Palyi** (Budapest University of Technology and Economics, Hungary) O
Exploiting the non-Abelian Berry phase for coherent control of spin qubits in semiconductors

12:15 – 12:30: **Lukas Cvitkovich** (University of Regensburg, Germany) O
Ab-initio investigation of decoherence sources in Si spin qubits

12:30 – 12:45: **Jaime Saez-Mollejo** (Institute of Science and Technology Austria, Austria) O
Exchange anisotropies in microwave-driven singlet-triplet qubits

12:45 – 13:00: **Mark van Blankenstein** (UNSW, Australia) O
Encoded cat qubit in a high spin nucleus in Silicon

13:00 – 14:45*: Lunch Break*

Chair : TBD

14:45 – 15:15: **Daniel Stilck França** (École Normale Supérieure de Lyon, France) I
Optimal quantum algorithm for Gibbs state preparation

15:15 – 15:45: **Luca Tagliacozzo** (CSIC, Spain) I
On temporal entropies, their scaling and measurement in many-body quantum dynamics

15:45 – 16:00: **Diego Fossion** (UClouvain, Belgium) O
Probing the Kondo cloud in a quantum dot : finite-size effects and barrier symmetry

16:00 – 16:15: **Maxime Gaignard** (CEA, France) O
Resonance fluorescence from a single quantum dot in a nanopost optical cavity

16:15 – 17:00: *Coffee Break / Poster Session / Exhibition*

Chair : TBD

17:00 – 17:15: **Adrià Medeiros Garay** (C2N - Université Paris Saclay, France) O
Heralding of a single spin via giant polarization rotations in a QD-based spin-photon interface

17:15 – 17:30: **Félix Cache** (Laboratoire Charles Coulomb, France) O
Coherent spin control of telecom single-photon emitters in Silicon

17:30 – 17:45: **Farah Basaric** (Forschungszentrum Jülich, Germany) O
Aharonov-Bohm and Altshuler-Aronov-Spivak oscillations in quasi-ballistic phase-pure core/shell GaAs/InAs nanowires

Workshop 04: Quantum Computing
Chair : TBD
09:00 – 09:15: **Benoit Bertrand** (CEA-LETI, France) O
FDSOI Spin Qubit Device optimization
09:15 – 09:30: **Maximilian Rimbach-Russ** (QuTech and Kavli Institute of Nanoscience, Delft University of Technology, The Netherlands) O
Systematic High-Fidelity Operations and Transfer of Semiconductor Spin-Qubits
09:30 – 09:45: **Kiryl Piasotski** (KIT, Germany) O
Theory of three-terminal Andreev spin qubits
09:45 – 10:00: **Malcolm Connolly** (Imperial College London, UK) O
A proposal for charge basis tomography of superconducting qubits
10:00 – 10:30: **Romain Maurand** (CEA, France) I
Hole spin in silicon: from spin qubits to spin-photon interaction

10:30– 11:30: Coffee Break / Poster Session / Exhibition

Chair : TBD
11:30 – 12:00: **Menno Veldhorst** (TU Delft, The Netherlands) I
Operating and interconnecting qubit registers
12:00 – 12:15: **Lorenzo Leandro** (Quantum Machines, Italy) O
Qubit reset via adaptive thresholding: a scalable approach for large quantum processing devices
12:15 – 12:30: **Priya Sharma** (University of Surrey, UK) I
Towards a micromechanical qubit based on quantized oscillations in superfluid helium
12:30 – 13:00: **Pol Forn-Díaz** (IFAE, Spain) I
Superconducting Qubits as sensors of High Energy Physics

13:00 – 14:45*: Lunch Break*

Chair : TBD
14:45 – 15:15: **Benjamin Huard** (Ecole Normale Supérieure de Lyon, France) I
Title to be defined
15:15 – 15:30: **Paul Warburton** (UCL, UK) O
Electric-Field Tuning of a Superconducting Resonator via the Aharonov-Casher Effect
15:30 – 15:45: **Sumeru Hazra** (Yale University, USA) O
Parsing Spurious Transitions in Driven Superconducting Circuits
15:45 – 16:00: **Leo Peyruchat** (EPFL, Switzerland) O
Multimode Surface Acoustic Wave Interactions Mediated by a Nonlinear SQUID Array
16:00 – 16:15: **Gonzalo Martín Vázquez** (University of Seville, Spain) O
Passive leakage removal unit based on a disordered transmon array

16:15 – 17:00: *Coffee Break / Poster Session / Exhibition*

17:00 – 17:15: **Xi Chen** (The Material Science Institute of Madrid, ICMM-CSIC, Spain) O
Optimal Control for Open Quantum System in Circuit Quantum Electrodynamics
17:15 – 17:30: **Koushik Paul** (University of Basque Country (UPV/EHU), Spain) O
Photonic counterdiabatic quantum optimization algorithm
17:30 – 17:45: **Segolene Olivier** (CEA, France) O
A low-loss 200 mm SiN quantum photonics platform for quantum computing
17:45 – 18:00: **Eduardo Lee** (Universidad Autonoma de Madrid, Spain) O
Emergent anomalous metallic phase in InAs-Al nanowires due to inverse proximity effect
18:00 – 18:15: **Esteban Rodriguez** (CEA Grenoble, France) O
Unifying Floquet theory of longitudinal and dispersive coupling
18:15 – 18:30: **Alessandro Crippa** (NEST, CNR-Istituto Nanoscienze e Scuola Normale Superiore, Italy) O
Coherent microwave comb generation by Josephson effect
18:30 – 18:45: **Simone Gasparinetti** (Chalmers University of Technology, Sweden) O
Digital homodyne and heterodyne detection for stationary bosonic modes
18:45 – 19:00: **Anatoly Kulikov** (ETH Zurich, Switzerland) O
Remote readout and arbitrary-phase gate between spatially separated superconducting nodes

Workshop 05: Quantum sensing
Chair : TBD
09:00 – 09:15: **Charlie Patrickson** (University of Exeter, UK) O
Coherence Protection and High Frequency Magnetometry using an Ensemble of VB- in hexagonal Boron Nitride
09:15 – 09:30: **Alessandro Miano** (Yale University, USA) O
Coherent conversion between 7.5-8.7 GHz and 21.5-25 GHz photons with a two-mode flux-tunable Josephson dipole
09:30 – 09:45: **Sambunath Das** (Institute of Physics of the Czech Academy of Sciences, Czech Republic) O
Harnessing spin-qubit decoherence to probe strongly-interacting quantum systems
09:45 – 10:00: **Sandrine Lopes** (C12 Quantum Electronics- Institut Jean Lamour, France) O
On-chip micromagnet for spin qubit architecture: magnetic characterization and integration
10:00 – 10:15: **Paritosh Karnatak** (University of Basel, Switzerland) O
Probing the magnetic order in a ferromagnetic monolayer
10:15 – 10:30: **Giacomo Rebora** (ENS de Lyon, France) O
Time-resolved sensing of electromagnetic fields with single-electron interferometry

10:30– 11:30: Coffee Break / Poster Session / Exhibition

Chair : TBD
11:30 – 12:00: **Eva Weig** (TUM, Germany) I
Towards spin-based quantum sensing in hybrid nanomechanical systems based on silicon carbide
12:00 – 12:15: **Stefan Forstner** (ICFO - The Institute of Photonic Sciences, Spain) O
Exploring strong mechanical nonlinearities from electron-phonon coupling via charge sensing
12:15 – 12:30: **Stephanie Matern** (CNR-INO Pitaevskii BEC Center and University of Trento, Italy) O
Detecting propagating microwave photons with quantum nondemolition transport measurements
12:30 – 12:45: **Patrick Wong** (Nordita, Sweden) O
Quantum Sensing from Gravity as Universal Dephasing Channel for Qubits
12:45 – 13:00: **Tristan Clua Provost** (CNRS - Université de Montpellier, France) O
A quantum sensor made of spin defects in an atomically-thin van der Waals material

13:00 – 14:45*: Lunch Break*

Chair : TBD
14:45 – 15:15: **Paola Cappellaro** (Massachusetts Institute of Technology, UK) I
Quantum Advantage in Multiparameter Sensing
15:15 – 15:30: **Stefano Gregorio Giaccari** (INRiM, Italy) O
Coupled atom-cavity systems for quantum-enhanced metrology: adiabatic elimination of the cavity mode beyond the leading order
15:30 – 15:45: **Jianfeng Ge** (Max Planck Institute for Chemical Physics of Solids, Germany) O
Proof-of-concept atomic-scale visualization of ‘poisoning’ quasiparticles in superconductors
15:45 – 16:00: **Petr Steindl** (C2N, Photonics Department, France) O
Optimizing direct single-photon Wigner-function measurement

16:00 – 17:00: *Coffee Break / Poster Session / Exhibition*

17:00 – 17:15: **Pascal Degiovanni** (CNRS / ENS Lyon, France) O
The electronic ambiguity function in electron quantum optics
17:15 – 17:30: **Jorge Perez-Bailon** (INMA, Spain) O
Fabrication of Nb SQUIDs using a Pt protective layer deposited with FEBID
17:30 – 17:45: **Sreehari Jayaram** (Physikalisches Institut, Germany) O
Probing Vortex Dynamics in 2D Superconductors with Scanning Quantum Microscopy

Workshop 06: Topological quantum matter: electronics, spintronics, photonics & phononics
Chair : TBD
09:00 – 09:15: **Aybey Mogulkoc** (Ankara University, Turkey) O
Magnetic and Chiral Properties of 2D Janus VXY (X= Cl, Br, I; Y= S, Se, Te) Monolayers
09:15 – 09:30: **Yesim Mogulkoc** (Ankara University, Turkey) O
Magnetic and Electronic Properties of Fe_3GeTeX (X = S, Se) Janus/Germanene Heterobilayers
09:30 – 09:45: **Ivan Amelio** (Université Libre de Bruxelles, Belgium) O
Polarons and quantum optics of correlated 2D materials
09:45 – 10:00: **Kuan Eng Johnson Goh** (Agency for Science Technology and Research, Singapore) O
Electrical Manipulation of Valley Polarized Charged Excitons in 2D Transition Metal Dichalcogenides
10:00 – 10:15: **Vincent Renard** (UGA/CEA, France) O
Experimental evidence of the topological obstruction in twisted graphene layers
10:15 – 10:30: **Yuval Abulafia** (Technion, Israel) O
Localized defects turn graphene to topological: dislocations & fractional charge

10:30– 11:30: Coffee Break / Poster Session / Exhibition

Chair : TBD
11:30 – 12:00: **Benjamin Sacepe** (Institut Néel - CNRS, France) I
Chiral supercurrent in quantum Hall Josephson junctions
12:00 – 12:15: **Werner van Weerdenburg** (Freie Universität Berlin, Germany) O
Exploring 2H-NbS2 as a platform for extended Yu-Shiba-Rusinov structures
12:15 – 12:30: **Ismaël Septembre** (University of Siegen, Germany) O
Non-Hermitian geometry and topology induce non-trivial photonic dynamics
12:30 – 12:45: **Florinda Viñas Boström** (University of Copenhagen, Denmark) O
Topological superconductivity in a quantum wire proximate to a helical magnet and conventional superconductor
12:45 – 13:00: **Lena Engström** (Université Paris-Saclay, France) O
Detecting the topological winding of superconducting nodes via Local Density of States

13:00 – 14:45*: Lunch Break*

Chair : TBD
14:45 – 15:15: **Mikael Rechstmann** (The Pennsylvania State University, USA) I
Fractional quantization in nonlinear optical Thouless pumps
15:15 – 15:30: **Sara Catalano** (Material Physics Center, Spain) O
EuS Interfaces for Low Temperature Spintronics
15:30 – 15:45: **Ibrahim Sarpkaya** (Bilkent University-UNAM, Turkey) O
Quantum Nature of Interaction between Two Spin States of Interlayer Excitons in a TMDC Heterostructure
15:45 – 16:00: **Michaël Croquette** (CNRS - Institut Néel, France) O
Cavity optomechanics in the single photon regime

16:00 – 17:00: *Coffee Break / Poster Session / Exhibition*

Chair: TBD
17:00 – 17:15: **Richard Curry** (University of Manchester, UK) O
Isotopically Enriched 28-Silicon for Quantum Technologies
17:15 – 17:30: **Mason Adshead** (University of Manchester, UK) O
Deterministic Ion Implantation for Quantum Materials
17:30 – 17:45: **Victor Rollano** (Centro de Astrobiología, Spain) O
Avoiding two-level-system losses in superconducting niobium resonators using gold capping layer

Workshop 07: Quantum simulation

Chair : TBD

09:00 – 09:15: **Gabriel Breuil** (DLR - German Aerospace Center, Germany) O
A comprehensive framework for quantum simulations of crystal structures using plane-wave and Wannier function-based methods

09:15 – 09:30: **Julian Schuhmacher** (IBM Quantum, IBM Research Europe - Zurich, Switzerland) O
Hybrid Tree Tensor Networks for Quantum Simulation

09:30 – 10:00**: Ivan Kassal** (University of Sydney, Australia) I
Simulating Quantum Chemical Dynamics on Quantum Computers

10:00 – 10:30: **Andrew King** (D-Wave, USA) I
Beyond-Classical Computation in Quantum Simulation

10:30– 11:30: Coffee Break / Poster Session / Exhibition

Chair : TBD

11:30 – 12:00: **Martin Ringbauer** (Universität Innsbruck, Austria) I
Quantum Computing and Simulation with Qudits

12:00 – 12:15: **Niccolò Baldelli** (Barcelona Supercomputing Center, Spain) O
Fragmented superconductivity in the Hubbard model as solitons in Ginzburg–Landau theory

12:15 – 12:30: **Jose Carlos Abadillo-Uriel** (CSIC, Spain) O
Theory of superconducting proximity effect in hole-based hybrid semiconductor-superconductor devices

12:30 – 12:45: **Rok Zitko** (Jozef Stefan Institute, Slovenia) O
Charge-conserving models for superconducting quantum devices

12:45 – 13:00: **Eyal Buks** (Technion, Israel) O
Experimentally testing the spontaneous disentanglement hypothesis using a magnetic resonator

13:00 – 14:45*: Lunch Break*

Chair : TBD

14:45 – 15:15: **Enrique Solano** (Kipu Quantum, Germany) I
Quantum Advantage for Industrial Applications

15:15 – 15:30: **Beatriz Pérez González** (University of Augsburg, Germany) O
Quantum origin of anomalous Floquet phases in cavity-QED materials

15:30 – 15:45: **Patrick Lenggenhager** (Max Planck Institute for the Physics of Complex Systems, Germany) O
Length-scale sensitivity of quantum mutual information variants

15:45 – 16:00: **Sudipto Das** (Budapest University of Technology and Economics, Hungary) O
Towards Unveiling the Topology of the 5/2 Fractional Quantum Hall State

16:00 – 17:00: *Coffee Break / Poster Session / Exhibition*

Industrial Forum (Day 1)

Chair : TBD

09:00 – 09:30: **Andreas Bengtsson** (Google Inc, USA) K
Quantum error correction below the threshold

09:30 – 09:50: **Aleksandra Soltamova** (Qblox BV, The Netherlands) I
Scalable Quantum Control: Advancing Fidelity and Integration with Qblox

09:50 – 10:05: **Rustin Nourshargh** (Oxford Ionics, UK) O
Scalable, high-fidelity all-electronic control of trapped-ion qubits

10:05 – 10:35: **Yonatan Cohen** (Quantum Machines, Israel) K
The Research Driving Hybrid Control Technology Towards Useful Quantum Computing

10:35– 11:15: Coffee Break / Poster Session / Exhibition

Chair : TBD

11:15 – 11:45: **Jelena Trbovic** (QuantrolOx, Finland) K
Title to be defined

11:45 – 12:15: **Maud Vinet** (Quobly, France) K
Title to be defined

12:15 – 13:15: Round table 1

13:15 – 14:45*: Lunch Break*

Chair : TBD

14:45 – 15:05: **Raphael Khan** (Bluefors, Finland) I
Noise characterisation in Bluefors cryogenic measurement systems

15:05 – 15:25: **Pau Jorba** (Kiutra, Germany) I
Accelerating cryogenic testing and characterization of quantum materials and devices with fast and easy-to-use cryostats

15:25 – 15:45: **Florian Froning** (Zurich Instruments, Switzerland) I
Real-time feedback at scale: From mid-circuit measurements to QEC

15:45 – 16:30: Round Table 2

16:30 – 17:00: *Coffee Break / Poster Session / Exhibition*

Chair : TBD

17:00 – 17:20: **Roman Orus** (Multiverse Computing & DIPC, Spain) I
Title to be defined

17:20 – 17:40: **Anurag Saha Roy** (Qruise, Germany) I
Machine Learning based Automated Calibration & Characterisation for Quantum Devices

17:40 – 17:55: **Andreas Fyrillas** (Quandela, France) O
High-Fidelity Quantum Operation of Photonic Circuits with Resource-efficient Machine-learning-assisted Crosstalk Mitigation

Thursday (22/05/2025)

Chair : TBD
09:00 – 09:30: **Immanuel Bloch** (Max-Planck Institute of Quantum Optics , Germany) K
Quantum Simulation and Quantum Computing with Fermions
09:30 – 09:45: **Xin Zhang** (Delft University of Technology, The Netherlands) O
Quantum simulation of a spin ladder using germanium quantum dots
09:45 – 10:00: **Dorothee Tell** (Max Planck Institute of Quantum Optics, Germany) O
Quantum simulation in a cold-atom Fermi-Hubbard system
10:00– 10:15: **Jaka Vodeb** (Jozef Stefan Institute, Slovenia) O
Stirring the false vacuum via interacting quantized bubbles on a 5,564-qubit quantum annealer
10:15 – 10:30: **Luis Canonico** (ICN2, Spain) O
Real-space Calculation of Orbital Responses in Disordered Materials

10:30– 11:00: Coffee Break / Poster Session / Exhibition

Chair : TBD
11:00 – 11:30: **Antoine Georges** (Collège de France, France) K
Machine Learning and Neural Networks for Quantum Systems
11:30 – 12:00: **Natalia Ares** (Oxford University, UK) I
Fully machine learning-driven control and characterisation of quantum devices
12:00 – 12:30: **Pascale Senellart-Mardon** (C2N/University Paris Saclay, France) K
Hybrid photonic quantum computing with semiconductor quantum dots.
12:30 – 13:00: **Vladimir M. Shalaev** (Purdue University, USA) I
Silicon Quantum Photonics

13:00 – 14:00*: Lunch Break*
14:00 – 14:30: Poster Session II

// Workshop PhD

Parallel session - PhD Student I
Chair : TBD
14:30 – 14:40: **Pierre Cussenot** (CEA - IPhT, France) O
Uniting Quantum Processing Nodes of Cavity- coupled Ions with Rare-earth Quantum Repeaters Using Single-photon Pulse Shaping Based on Atomic Frequency Comb
14:40 – 14:50: **Anthony Gandon** (ETH Zurich, Switzerland) O
Quantum computing in spin-adapted representations for efficient simulations of spin systems
14:50 – 15:00: **Alessandro Irace** (University Milano Bicocca, Italy) O
Synthetic-lattice Bloch wave dynamics in a single-mode microwave resonator
15:00 – 15:10: **Hubert Lam** (Centre de Nanosciences et de Nanotechnologies (C2N), France) O
Wigner function Reconstruction of Non-Gaussian Superposition States emitted from a Quantum Dot
15:10 – 15:20: **Ilija Nikolov** (Brown University, USA) O
Enhanced Sensitivity with Spin-Squeezed States for Probing Ground State Electronic Order
15:20 – 15:30: **Yann Portella** (C2N, Université Paris-Saclay, CNRS, France) O
A QKD-oriented tuning toolbox for photon number statistics with semiconductor quantum dots
15:30 – 15:40: **Simon Sundelin** (Chalmers University of Technology, Sweden) O
Quantum refrigeration powered by noise in a superconducting circuit
15:40 – 15:50: **Christopher Waas** (QuTech / TU Delft, The Netherlands) O
A Quantum Network Node based on the Tin-Vacancy Center in Diamond

Parallel session - PhD Student II
Chair : TBD
14:30 – 14:40: **Pedro Alcázar** (ICN2, Spain) O
Disorder in twisted multilayer graphene: Quasicrystals and Superperiodicities
14:40 – 14:50: **Lucas Araujo Oliveira Sotero Silva** (Chimie ParisTech, PSL University, CNRS, Institut de Recherche de Chimie Paris, France) O

Towards Integrated Quantum Interface with Rare-Earth Ion-Doped Thin Film
14:50 – 15:00: **Etienne Bargel** (C2N, France) O
Coherent generation of Fock-encoded superposition states by realistic QD-based emitters
15:00 – 15:10: **David Caldevilla** (Materials Physics Center, Spain) O
Experimental observation of Multiple Andreev Reflection at the interface with a spin-split superconductor
15:10 – 15:20: **Maarten Kamphuis** (University of Twente, The Netherlands) O
Induced superconductivity in epitaxial superconductor/TCI bilayer devices
15:20 – 15:30: **Jorge Martínez Romeral** (Catalan Institute of nanoscience and nanotechnology (ICN2), Spain) O
Dynamical control of topological properties in 2D quantum matter
15:30 – 15:40: **Sebastian Miles** (TU Delft, The Netherlands) O
Braiding Majoranas in linear quantum dot-superconductor arrays: Mitigating Coulomb repulsion and residual tunneling
15:40 – 15:50: **Nadav Orion** (Technion – Israel Institute of Technology, Israel) O
Topological Aspects of Quantum Entanglement in Two Qubit Systems
15:50 – 16:00: **Mio Poortvliet** (Leiden Institute of Physics , The Netherlands) O
Pulsed to continuous wave coherent micropillar cavity-quantum dot dynamics
16:00 – 16:10: **Justin Schirmann** (Institut Néel - CNRS, France) O
Geometry-Enforced Topology in Amorphous Chiral Metals

Parallel session - PhD Student III
Chair : TBD
14:30 – 14:40: **Arnab Adhikary** (Leibniz University of Hannover, Germany) O
Counterintuitive yet efficient regimes for measurement based quantum computation on symmetry protected spin chains
14:40 – 14:50: **Francesco Adinolfi** (Paul Scherrer Institute, Switzerland) O
Enhancing the coherent-state lifetime of a Kerr-cat qubit through leakage suppression
14:50 – 15:00: **Linus Andersson** (Chalmers University of Technology, Sweden) O
Direct detection of quasiparticle tunneling with a charge-sensitive transmon coupled to a waveguide
15:00 – 15:10: **Dario Denora** (TU Delft, The Netherlands) O
A three-dimensional array of quantum dots
15:10 – 15:20: **David Fernández-Fernández** (ICMM - CSIC, Spain) O
Effects of spin-orbit interaction on spin qubit shuttling
15:20 – 15:30: **Pierre Hamonic** (Institut Néel, France) O
A foundry-fabricated spin qubit unit-cell with in-situ dispersive readout
15:30 – 15:40: **Bohdan Khromets** (Institute for Quantum Computing, University of Waterloo , Canada) O
Exact voltage pulse engineering for the collective unitary control of semiconductor quantum dot spin qubit processors
15:40 – 15:50: **Thibaut Pollet** (C2N, France) O
Noise spectroscopy of micropillar based single-photon source
15:50 – 16:00: **Domonkos Svastits** (Budapest University of Technology and Economics, Hungary) O
Readout sweet spots for spin qubits with strong spin-orbit interaction
16:00 – 16:10: **Maxime Thumin** (Néel Institue CNRS, France) O
Robustness of flat band superconductivity against disorder in the two-dimensional Lieb lattice

Parallel session - PhD Student IV
Chair : TBD
14:30 – 14:40: **Wael Ardati** (CNRS Institut Néel, France) O
Investigating Loss Mechanisms in Fluxonium protected from energy decay using bi-fluxon tunneling.
14:40 – 14:50: **Maria Benito** (IMB-CNM, Spain) O
Weighting Coupling Strength of Superconducting CPW Resonators Characteristics
14:50 – 15:00: **Antoine Covolo** (Collège de France, France) O
Protecting collective-encoded qubits against non-Markovian dephasing
15:00 – 15:10: **Helio Huet** (Paris-Saclay University, CNRS, C2N, France) O
Deterministic and Reconfigurable Graph State Generation with a Solid-State Quantum Emitter
15:10 – 15:20: **Pranjal Kapoor** (Institute Neel, CNRS, France) O
Electrically tunable Josephson parametric amplifier based on graphene Josephson junctions
15:20 – 15:30: **Elyjah Kiyooka** (Lateqs/Pheliqs group, France) O

Gate-tunable transmon qubit in 2-dimensional Germanium hole gas
15:30 – 15:40: **Léo Noirot** (CEA Grenoble, France) O
A hole spin flopping mode qubit: fast and coherent
15:40 – 15:50: **David Rodriguez** (CAB (CSIC-INTA), Spain) O
Dispersive readout of electronuclear spin qudits with superconducting resonators
15:50 – 16:00: **Raphaël Rousset** (Institut Néel, CNRS, France) O
Gate-tunable Josephson parametric amplifiers based on semiconductor nanowires
16:00 – 16:10: **Brennan Undseth** (QuTech/TU Delft, The Netherlands) O
Baseband Control of Single-electron Silicon Spin Qubits in Two-dimensions

16:10 – 17:10: *Coffee Break / Poster Session / Exhibition*

Industrial Forum (Day 2)
Chair : TBD
09:00 – 09:15: **Alexia Salavrakos** (Quandela, France) O
An error-mitigated photonic quantum circuit Born machine
09:15 – 09:30: **Felix Bussieres** (ID Quantique, Switzerland) O
Opportunities of photon-number resolution with SNSPDs to enable photonic quantum processors
09:30 – 09:45: **Boris Bourdoncle** (Quandela, France) O
Minimizing resource overhead in fusion-based quantum computation using hybrid spin-photon devices
09:45 – 10:00: **Antonio Guardiani** (Single Quantum, The Netherlands) O
Fast time-gated superconducting nanowire single-photon detectors (SNSPDs)
10:00 – 10:15: Speaker TBD
10:15 – 10:30: Speaker TBD

10:30– 11:00: Coffee Break / Poster Session / Exhibition

Chair : TBD
11:00 – 11:15: **Nikita Astrakhantsev** (Google Quantum AI, USA) O
Benchmarking the 69-qubit superconducting chip in the analog regime
11:15 – 11:30: **Marc de Voogd** (Delft Circuits, The Netherlands) O
Scalable i/o solutions for addressing 1000+ qubits: Proven capabilities and future directions
11:30 – 11:45: **Jonathan Reiner** (Quantum Machines, Israel) O
Tightly integrating a GPU and a QPU for fast calibration of multi-qubit circuits
11:45 – 12:00: **Matthew Weaver** (QphoX, The Netherlands) O
Optical Interfaces for Scalable Qubit Operation
12:00 – 12:15: **Kirsten Bark** (HQS Quantum Simulations, Germany) O
Demonstration of system-bath physics on a gate-based quantum computer
12:15 – 12:30: **Narendra Hegade** (Kipu Quantum, Germany) O
Digitized counterdiabatic quantum critical dynamics
12:30 – 12:45: **Ariane Soret** (Quandela, France) O
Quantum Energetic Advantage in Boson Sampling
12:45 – 13:00: **Zahra Sadre Momtaz** (TNO Netherlands Organization for Applied Scientific Research, The Netherlands) O
Fabrication and Characterization of Micrometer-thin Diamond Platelets for Open Microcavities

13:00 – 14:00*: Lunch Break*
14:00 – 14:30: Poster Session II

Chair : TBD
14:30 – 15:00: **Antonio Corcoles-Gonzalez** (IBM, USA) K
Title to be defined
15:00 – 15:15: **Vladyslav Bohun** (Haiqu Inc., Ukraine) O
Scalable and shallow quantum circuits encoding probability distributions informed by asymptotic entanglement analysis
15:15 – 15:30: **Amin Hosseinkhani** (IQM Quantum Computers, Germany) O
Noise-Robust Estimation of Quantum Observables in Noisy Hardware

15:30 – 16:30: Round Table 3

16:30 – 17:15: *Coffee Break / Poster Session / Exhibition*

Friday (23/05/2025)

Chair : TBD

09:00 – 09:30: **Marcel Franz** (University of British Columbia, Canada) I
Persistent spin currents in superconducting altermagnets

09:30 – 10:00: **Yasunobu Nakamura** (University of Tokyo, Japan) K
High-fidelity gates and readout for superconducting quantum processors

10:00– 11:00: Coffee Break

Chair : TBD

11:00 – 11:15: **Victor Roman-Rodriguez** (ICFO, Spain) O
Ultrastrong coupling and mechanical non-linearities at the zero-point motion level

11:15 – 11:30: **Dongkeun Ki** (The University of Hong Kong, Hong Kong SAR) O
Coulomb drag and interlayer coupling in quantum moiré materials

11:30 – 12:00: **Patrice Bertet** (CEA Paris-Saclay, France) I
Nuclear spin qubits with coherence exceeding seconds

12:00: Closing