

TENTATIVE PROGRAM (as of 19/05/2025)

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Monday (19/05/2025)

TUTORIALS

Reserved for PhD Students who've secured their contribution at QuantuMatter2025 (Capacity: 60 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 : Silvano de Franceschi (CEA/UGA, France)

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 : Soo-Hyon Phark (Center for Quantum Nanoscience, South Korea)

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: **Max Hays** (MIT, USA)

I

Non-degenerate Noise-Resilient Superconducting Qubit

13:00 – 14:00: *Cocktail Lunch (offered by the organizers)*

14:00 – 14:30: Poster Session I

Chair : Katharina Franke (Freie Universität Berlin, Germany)

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 $\sin(2\phi)$ 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 – 16:45: **Soo-Hyon Phark** (Center for Quantum Nanoscience, South Korea) I
 Coherent Quantum Platform Crafted Atom-by-Atom on a Surface

16:45 – 17:45: *Coffee Break / Poster Session / Exhibition*



Wednesday (21/05/2025)

Workshop 01: Topological Quantum Matter: materials growth, characterization & theory

Chair : Giordano Scappucci (Delft University of Technology, The Netherlands)

09:00 – 09:15: **Valentina Bonino** (ESRF, France) O
 Using X-rays nanoprobe 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 : Jordi Arbiol (ICREA & ICN2, Spain)

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 : Moïra Hocevar (Institut Néel CNRS, France)

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

Workshop 02: Quantum matter: theory & simulations

Chair : Raquel Queiroz (Columbia University in the City of New York, USA)

09:00 – 09:15: **Matteo Brunelli** (College de France, France)

Nonreciprocal Quantum Matter

09:15 – 09:30: **Nicolas Lorente** (CSIC, Spain)

Realization of Two-dimensional Discrete Time Crystals with Anisotropic Heisenberg Coupling

09:30 – 09:45: **Tommaso Roscilde** (Ecole Normale Supérieure de Lyon, France)

Scaling multipartite entanglement in the real world

09:45 – 10:00: **Kilian Seibold** (University of Konstanz, Germany)

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)

Correlated topological matter : news and views from quantum simulation

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

Chair : Nathan Goldman (Collège de France, Belgium)

11:30 – 12:00: **Raquel Queiroz** (Columbia University in the City of New York, USA)

Quantum geometry: how to picture bound electrons in infinite lattices

12:00 – 12:15: **Matthew Brooks** (Laboratory for Physical Sciences, USA)

Simulated Non-Abelian Statistics of Majorana Zero Modes from A Kitaev Lattice

12:15 – 12:30: **Botao Wang** (Université Libre de Bruxelles, Belgium)

Constructing lattice models for anyons in one dimension

12:30 – 12:45: **Jeanne Colbois** (Institut Neel, CNRS & UGA, France)

Instabilities in the random-field XXZ chain

12:45 – 13:00: **Carlo Trugenberger** (SwissScientific Technologies SA, Switzerland)

Superinsulation: theory and applications

13:00 – 14:45: *Lunch Break*

Chair : Ramon Aguado (ICMM-CSIC, Spain)

14:45 – 15:15: **Reinhold Egger** (Heinrich Heine University Düsseldorf, Germany)

Quantum Mpemba Effects

15:15 – 15:30: **Guangze Chen** (Chalmers University of Technology, Sweden)

Quantum simulation of open quantum many- body systems with giant atoms

15:30 – 15:45: **Laurent Vernac** (Laboratoire de Physique des Lasers, France)

Probing quantum thermalization and quantum magnetism with lattice-trapped dipolar atoms

15:45 – 16:00: **Nicolas Cherroret** (CNRS, France)

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 : Reinhold Egger (Heinrich Heine University Düsseldorf, Germany)

17:00 – 17:30: **Ramon Aguado** (ICMM-CSIC, Spain)

Novel qubits in hybrid semiconductor-superconductor nanostructures

17:30 – 17:45: **Andriani Keliri** (JEIP Collège de France, CNRS, France)

Slave-spin approach to the Anderson-Josephson quantum dot

Workshop 03: Quantum information

Chair : Lorenzo Mauro (CEA Grenoble, France)

09:00 – 09:15: **Ahmad Fouad Kalo** (CEA, France)

Hole Spin-Photon Coupling in Silicon and Germanium Double Quantum Dots

09:15 – 09:30: **Tereza Vakhel** (TU Delft, The Netherlands)

Long-range optical coupling of distant quantum dot spins

09:30 – 09:45: **Michael Stern** (Bar Ilan University, Israel)

Strong coupling of a superconducting flux qubit to single bismuth donors

09:45 – 10:00: Maxime Gagnard (CEA, France)	O
Resonance fluorescence from a single quantum dot in a nanopost optical cavity	
10:00 – 10:30: Mario Berta (RWTH Aachen University, Germany)	I
Title to be defined	
<i>10:30– 11:30: Coffee Break / Poster Session / Exhibition</i>	
Chair : Maxime Gagnard (CEA, France)	
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: Olivier Buisson (CNRS, France)	O
High fidelity at high power in transmon qubit readout and suppression of measurement induced state transitions	
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	
<i>13:00 – 14:45: Lunch Break</i>	
Chair : Adolfo G. Grushin (Institut Néel / CNRS, France)	
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	
<i>16:00 – 17:00: Coffee Break / Poster Session / Exhibition</i>	
Chair : Daniel Stilck França (École Normale Supérieure de Lyon, France)	
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 : Pol Forn-Díaz (IFAE, Spain)	
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	
<i>10:30– 11:30: Coffee Break / Poster Session / Exhibition</i>	

Chair : Romain Maurand (CEA, France)

11:30 – 12:00: **Menno Veldhorst** (TU Delft, The Netherlands)

Operating and interconnecting qubit registers

12:00 – 12:15: **Lorenzo Leandro** (Quantum Machines, Italy)

Qubit reset via adaptive thresholding: a scalable approach for large quantum processing devices

12:15 – 12:30: **Priya Sharma** (University of Surrey, UK)

Towards a micromechanical qubit based on quantized oscillations in superfluid helium

12:30 – 13:00: **Pol Forn-Díaz** (IFAE, Spain)

Superconducting Qubits as sensors of High Energy Physics

13:00 – 14:45: *Lunch Break*

Chair : Cécile Yu (QuTech, The Netherlands)

14:45 – 15:15: **Benjamin Huard** (Ecole Normale Supérieure de Lyon, France)

Passive two-photon dissipation for bit-flip error correction of a cat code

15:15 – 15:30: **Paul Warburton** (UCL, UK)

Electric-Field Tuning of a Superconducting Resonator via the Aharonov-Casher Effect

15:30 – 15:45: **Sumeru Hazra** (Yale University, USA)

Parsing Spurious Transitions in Driven Superconducting Circuits

15:45 – 16:00: **Leo Peyruchat** (EPFL, Switzerland)

Multimode Surface Acoustic Wave Interactions Mediated by a Nonlinear SQUID Array

16:00 – 16:15: **Gonzalo Martín Vázquez** (University of Seville, Spain)

Passive leakage removal unit based on a disordered transmon array

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

Chair : Benjamin Huard (Ecole Normale Supérieure de Lyon, France)

17:00 – 17:15: **Xi Chen** (The Material Science Institute of Madrid, ICMM-CSIC, Spain)

Optimal Control for Open Quantum System in Circuit Quantum Electrodynamics

17:15 – 17:30: **Koushik Paul** (University of Basque Country (UPV/EHU), Spain)

Photonic counterdiabatic quantum optimization algorithm

17:30 – 17:45: **Segolene Olivier** (CEA, France)

A low-loss 200 mm SiN quantum photonics platform for quantum computing

17:45 – 18:00: **Eduardo Lee** (Universidad Autonoma de Madrid, Spain)

Emergent anomalous metallic phase in InAs-Al nanowires due to inverse proximity effect

18:00 – 18:15: **Esteban Rodriguez** (CEA Grenoble, France)

Unifying Floquet theory of longitudinal and dispersive coupling

18:15 – 18:30: **Alessandro Crippa** (NEST, CNR-Istituto Nanoscienze e Scuola Normale Superiore, Italy)

Coherent microwave comb generation by Josephson effect

18:30 – 18:45: **Simone Gasparinetti** (Chalmers University of Technology, Sweden)

Digital homodyne and heterodyne detection for stationary bosonic modes

18:45 – 19:00: **Anatoly Kulikov** (ETH Zurich, Switzerland)

Remote readout and arbitrary-phase gate between spatially separated superconducting nodes

Workshop 05: Quantum sensing

Chair : Eva Weig (TUM, Germany)

09:00 – 09:15: **Charlie Patrickson** (University of Exeter, UK)

Coherence Protection and High Frequency Magnetometry using an Ensemble of VB- in hexagonal Boron Nitride

09:15 – 09:30: **Sambunath Das** (Institute of Physics of the Czech Academy of Sciences, Czech Republic)

Harnessing spin-qubit decoherence to probe strongly-interacting quantum systems

09:30 – 09:45: **Sandrine Lopes** (C12 Quantum Electronics- Institut Jean Lamour, France)

On-chip micromagnet for spin qubit architecture: magnetic characterization and integration

09:45 – 10:00: **Paritosh Karnatak** (University of Basel, Switzerland)

Probing the magnetic order in a ferromagnetic monolayer

10:00 – 10:15: **Giacomo Rebola** (ENS de Lyon, France)

Time-resolved sensing of electromagnetic fields with single-electron interferometry

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

Chair : Anna Minguzzi (CNRS, France)

11:30 – 12:00: **Eva Weig** (TUM, Germany)

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)

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)

Detecting propagating microwave photons with quantum nondemolition transport measurements

12:30 – 12:45: **Patrick Wong** (Nordita, Sweden)

Quantum Sensing from Gravity as Universal Dephasing Channel for Qubits

12:45 – 13:00: **Tristan Clua Provost** (CNRS - Université de Montpellier, France)

A quantum sensor made of spin defects in an atomically-thin van der Waals material

13:00 – 14:45: *Lunch Break*

Chair : Silvano de Franceschi (CEA/UGA, France)

14:45 – 15:15: **Paola Cappellaro** (Massachusetts Institute of Technology, UK)

Quantum Advantage in Multiparameter Sensing

15:15 – 15:30: **Stefano Gregorio Giaccari** (INRiM, Italy)

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)

Proof-of-concept atomic-scale visualization of ‘poisoning’ quasiparticles in superconductors

15:45 – 16:00: **Petr Steindl** (C2N, Photonics Department, France)

Optimizing direct single-photon Wigner-function measurement

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

Chair : Paola Cappellaro (Massachusetts Institute of Technology, UK)

17:00 – 17:15: **Pascal Degiovanni** (CNRS / ENS Lyon, France)

The electronic ambiguity function in electron quantum optics

17:15 – 17:30: **Jorge Perez-Bailon** (INMA, Spain)

Fabrication of Nb SQUIDS using a Pt protective layer deposited with FEBID

17:30 – 17:45: **Sreehari Jayaram** (Physikalisches Institut, Germany)

Probing Vortex Dynamics in 2D Superconductors with Scanning Quantum Microscopy

Workshop 06: Topological quantum matter: electronics, spintronics, photonics & phononics

Chair : Ibrahim Sarpkaya (Bilkent University-UNAM, Turkey)

09:00 – 09:15: **Aybey Mogulkoc** (Ankara University, Turkey)

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)

Magnetic and Electronic Properties of Fe₃GeTeX (X = S, Se) Janus/Germanene Heterobilayers

09:30 – 09:45: **Ivan Amelio** (Université Libre de Bruxelles, Belgium)

Polarons and quantum optics of correlated 2D materials

09:45 – 10:00: **Kuan Eng Johnson Goh** (Agency for Science Technology and Research, Singapore)

Electrical Manipulation of Valley Polarized Charged Excitons in 2D Transition Metal Dichalcogenides

10:00 – 10:15: **Vincent Renard** (UGA/CEA, France)

Experimental evidence of the topological obstruction in twisted graphene layers

10:15 – 10:30: **Yuval Abulafia** (Technion, Israel)

Localized defects turn graphene to topological: dislocations & fractional charge

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

Chair : Vincent Renard (UGA/CEA, France)

11:30 – 11:45: **Richard Curry** (University of Manchester, UK)

Isotopically Enriched 28-Silicon for Quantum Technologies

11:45 – 12:00: **Mason Adshead** (University of Manchester, UK)

Deterministic Ion Implantation for Quantum Materials

12:00 – 12:15: **Werner van Weerdenburg** (Freie Universität Berlin, Germany)

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 – 13:00: Julia S. Meyer (CEA-Grenoble, France)	I
Classification of Topological phases in multiterminal Josephson junctions	
13:00 – 14:45: <i>Lunch Break</i>	
Chair : TBD	
14:45 – 15:15: Mikael Rechtmann (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: <i>Coffee Break / Poster Session / Exhibition</i>	
Chair : Sara Catalano (Material Physics Center, Spain)	
17:00 – 17:15: Florinda Viñas Boström (University of Copenhagen, Denmark)	O
Topological superconductivity in a quantum wire proximate to a helical magnet and conventional superconductor	
17:15 – 17:30: Lena Engström (Université Paris-Saclay, France)	O
Detecting the topological winding of superconducting nodes via Local Density of States	
17:30 – 17:45: Victor Rollano (Centro de Astrobiología, Spain)	O
Avoiding two-level-system losses in superconducting niobium resonators using gold capping layer	
17:45 – 18:15: Ferdinand Kuemmeth (University of Regensburg, Germany)	I
Proximitized germanium heterostructure as a platform for hybrid quantum devices	
Workshop 07: Quantum simulation	
Chair : Martin Ringbauer (Universität Innsbruck, Austria)	
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: <i>Coffee Break / Poster Session / Exhibition</i>	
Chair : Ivan Kassal (University of Sydney, Australia)	
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: Sudipto Das (Budapest University of Technology and Economics, Hungary)	O
Towards Unveiling the Topology of the 5/2 Fractional Quantum Hall State	
13:00 – 14:45: <i>Lunch Break</i>	

Chair : Andrew King (D-Wave, USA)	
14:45 – 15:00: Yariv Yanay (University of Maryland, USA)	O
Exponential Quantum Advantage for Simulating Open Systems	
15:00 – 15:15: Beatriz Pérez González (University of Augsburg, Germany)	O
Quantum origin of anomalous Floquet phases in cavity-QED materials	
15:15 – 15:30: Patrick Lenggenhager (Max Planck Institute for the Physics of Complex Systems, Germany)	O
Length-scale sensitivity of quantum mutual information variants	
15:30 – 15:45: Eyal Buks (Technion, Israel)	O
Experimentally testing the spontaneous disentanglement hypothesis using a magnetic resonator	
16:15 – 17:00: <i>Coffee Break / Poster Session / Exhibition</i>	
Industrial Forum (Day 1)	
Chair : Silvano de Franceschi (CEA/UGA, France)	
09:00 – 09:30: Andreas Bengtsson (Google Inc, USA)	K
Quantum error correction below the threshold	
09:30 – 10:00: Jelena Trbovic (QuantrolOx, Finland)	K
Accelerating the Development of Quantum Computers through Automation	
10:00 – 10:30: Yonatan Cohen (Quantum Machines, Israel)	K
The Research Driving Hybrid Control Technology Towards Useful Quantum Computing	
10:30 – 10:50: Aleksandra Soltamova (Qblox BV, The Netherlands)	I
Scalable Quantum Control: Advancing Fidelity and Integration with Qblox	
10:50– 11:30: <i>Coffee Break / Poster Session / Exhibition</i>	
Chair : TBD	
11:30 – 11:45: Rustin Nourshargh (Oxford Ionics, UK)	O
Scalable, high-fidelity all-electronic control of trapped-ion qubits	
11:45 – 12:15: Maud Vinet (Quobly, France)	K
European strategy to scale up semiconductor spin qubits	
12:15 – 13:15: Round table 1	
13:15 – 14:45: <i>Lunch Break</i>	
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	
16:00 – 17:00: <i>Coffee Break / Poster Session / Exhibition</i>	
Chair : TBD	
17:00 – 17:20: Borja Aizpurua (Multiverse Computing & DIPIC, Spain)	I
Multiverse Computing: News on Quantum AI	
17:20 – 17:40: Anurag Saha Roy (Qruise, Germany)	I
Machine Learning based Automated Calibration & Characterisation for Quantum Devices	
17:40 – 17:55: Andreas Fyrrillas (Quandela, France)	O
High-Fidelity Quantum Operation of Photonic Circuits with Resource-efficient Machine-learning-assisted Crosstalk Mitigation	



Thursday (22/05/2025)

Chair : Pascale Senellart-Mardon (C2N/University Paris Saclay, France)

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 : Immanuel Bloch (Max-Planck Institute of Quantum Optics , Germany) - **TBC**

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: *Cocktail Lunch (offered by the organizers)*

14:00 – 14:30: Poster Session II

// Workshop PhD Students

Parallel session - PhD Student I

Chair : Silvano de Franceschi (CEA/UGA, France)

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: **Ilija Nikolov** (Brown University, USA) O

Enhanced Sensitivity with Spin-Squeezed States for Probing Ground State Electronic Order

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: **Alessandro Irace** (University Milano Bicocca, Italy) O

Synthetic-lattice Bloch wave dynamics in a single-mode microwave resonator

15:20 – 15:30: **Alexandre May** (CEA/Alice&Bob, France) O

Noise Mitigation in Single Microwave Photon Detection by Repeated Quantum Measurements

15:30 – 15:40: **Yann Portella** (C2N, Université Paris-Saclay, CNRS, France) O

A QKD-oriented tuning toolbox for photon number statistics with semiconductor quantum dots

15:40 – 15:50: **Simon Sundelin** (Chalmers University of Technology, Sweden) O

Quantum refrigeration powered by noise in a superconducting circuit

15:50 – 16:00: **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 : Michele Filippone (CEA, France)

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 Barga** (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 : Adolfo G. Grushin (Institut Néel / CNRS, France)

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: **Domonkos Svastits** (Budapest University of Technology and Economics, Hungary) O
Readout sweet spots for spin qubits with strong spin-orbit interaction

15:50 – 16:00: **Thibaut Pollet** (C2N, France) O
Noise spectroscopy of micropillar based single-photon source

16:00 – 16:10: **Maxime Thumin** (Néel Institut CNRS, France) O
Robustness of flat band superconductivity against disorder in the two-dimensional Lieb lattice

Parallel session - PhD Student IV

Chair : Gloria Platero Coello (ICMM-CSIC, Spain)

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** (Institut Néel, 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 qubits with superconducting resonators
 15:50 – 16:00: **Brennan Undseth** (QuTech/TU Delft, The Netherlands) O
 Baseband Control of Single-electron Silicon Spin Qubits in Two-dimensions
 16:00 – 16:10: **Raphaël Rousset** (Institut Néel, CNRS, France) O
 Gate-tunable Josephson parametric amplifiers based on semiconductor nanowires

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 – 10:30: Round Table 2

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

Chair : Antonio Corcoles-Gonzalez (IBM, USA) - TBC

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: *Cocktail Lunch (offered by the organizers)*

14:00 – 14:30: Poster Session II

Chair : TBD

14:30 – 15:00: **Antonio Corcoles-Gonzalez** (IBM, USA) K
 The path to advantage with Quantum Centric Supercomputing
 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 : Mete Atature (University of Cambridge, UK)

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– 10:45: Coffee Break

Chair : Yasunobu Nakamura (University of Tokyo, Japan)

10:45 – 11:15: **Mete Atature** (University of Cambridge, UK)

I

A Many-Body Quantum Memory Using Optically Engineered Nuclei

11:15 – 11:30: **Victor Roman-Rodriguez** (ICFO, Spain)

O

Ultrastrong coupling and mechanical non-linearities at the zero-point motion level

11:30 – 11:45: **Dongkeun Ki** (The University of Hong Kong, Hong Kong SAR)

O

Coulomb drag and interlayer coupling in quantum moiré materials

11:45 – 12:15: **Patrice Bertet** (CEA Paris-Saclay, France)

I

Nuclear spin qubits with coherence exceeding seconds

12:15 – 12:45: **Benjamin Sacepe** (Institut Néel - CNRS, France)

I

Chiral supercurrent in quantum Hall Josephson junctions

12:45: Closing & QUANTUMatter2026 announcement