CAFQA Workshop

- Grenoble
- May 26-28 2025

cnrs

université de BORDEAUX

UGA Université Grenoble Alpes

UNIVERSITÉ DE MONTPELLIER

UNIVERSITÉ CÔTE D'AZUR

université PARIS-SACLAY

PSL UNIVERSITÉ PARIS

Université Paris Cité

SORBONNE UNIVERSITÉ

UNIVERSITÉ TOULOUSE III PAUL SABATIER

Université de Strasbourg

UNIVERSITY OF CALGARY

UNIVERSITÉ DE SHERBROOKE

University of Waterloo

UBC THE UNIVERSITY OF BRITISH COLUMBIA

UNIVERSITY OF TORONTO

McMaster University

uOttawa

Université de Montréal

UNIVERSITY OF ALBERTA

UNIVERSITY OF SASKATCHEWAN

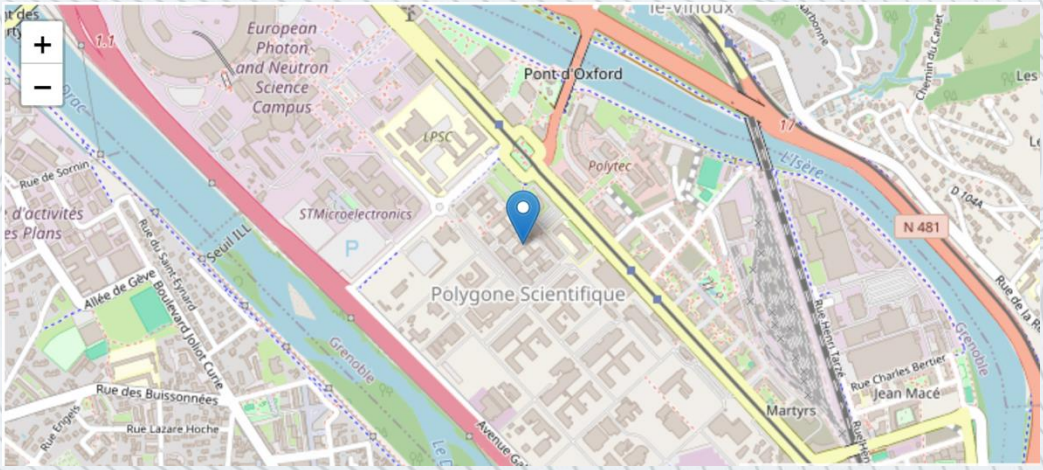
Overview of the program

Monday	Tuesday	Wednesday
8h00-8h30 : welcome		
8h30-9h15 : Opening session (CNRS, UGA, INRIA, CEA, organizing committee) 9h15-10h : Invited talk Urbasi Sinha from Calgary University 10h00-10h30 : Social science - De Vellis Arnaud - Grenoble	8h30-10h30 : Materials, circuits, simulation & computing - Sun Canon - Alberta - Bienaimé Tom - Strasbourg - Dupont-Ferrier Eva - Sherbrooke - Bernon Simon - Bordeaux	9h00-10h30 : Maths and quantum computing - Feder David - Calgary - Raphaël Bellard - USAKS - Scandolo Carlo Maria, Calgary
10h30-11h00 : coffee break	10h30-11h : coffee break	10h30-11h00 : coffee break
11h00-12h15 : Round table « Quantum governance and strategic independence »	11h00-13h00 : Optics & sensing - Shabir Barzanjeh - Calgary - D'Auria Virginia - Nice - St-Jean Philippe - Montreal - Lundeen Jeffl - Ottawa	11h00-12h30 : French-Canadian collaborations - Damian Markham - Sorbonne - Cyril Proust - Toulouse - Florent Baboux - Paris-Cité
12h15-13h30 : Lunch	13h00-14h15 : Lunch	12h30-13h45 : Lunch
13h30-15h00 : Materials & circuits - Hofheinz Max - Sherbrooke - Buisson Olivier - Grenoble - Pushin Dmitry - Waterloo	14h15-16h15 : coffee break and poster session 2	13h45-14h45 : Optics & sensing - Croquette Michaël - Grenoble - Steinberg Aephraim - Toronto
15h-18h : coffee break and poster session 1	16h15-18h15 : Labtours	14h45-15h30 : Invited talk Chris Westbrook from LCFIO
		15h30-16h00 : Closing session
18h00 - 19h00 : Reception -	19h30-21h30 : Steering committee working dinner	

Location

CNRS Grenoble

25, avenue des Martyrs, 38000 Grenoble
Building A, Seminar Hall



How to reach the conference center

Tram line B, Oxford direction, get off at the Oxford stop.

Oral Presentations

Monday – Invited talk – Chair: Damian Markham

- Urbasi Sinha – Calgary, *Secure Semi-Device-Independent QRNG via LGI violations: From photonic systems to superconducting qubits*

Monday – Social Science – Chair: Amélie Favreau

- De Vellis Arnaud – Grenoble-Alpes, *Ethical and Legal Regulation of the Quantum Computer: an epistemological issue*

Monday – Round table on « Quantum governance and strategic independence » – Chairs: Amélie Favreau and Florian Martin-Bariteau

- D'Auria Virginia, Côte d'Azur
- Menissier Thierry , Grenoble-Alpes
- Thibault Karl , Sherbrooke
- De Vellis Arnaud – Grenoble-Ales

Monday – Materials & circuits – Chair: Cyril Proust

- Hofheinz Max – Sherbrooke - *Quantum-measurement based on Josephson photonics*
- Buisson Olivier - Grenoble-Alpes - *High-fidelity readout and measurement-induced state transitions in a transmon molecule in the high-power regime*
- Pushin Dmitry – Waterloo - *Quantum advancements in structured neutron waves for characterizing three-dimensional topological spin-textures*

Tuesday – Materials, circuits, simulation & computing – Chair: Max Hofheinz

- Sun Canon – Alberta - *Topological Landau Theory*
- Bienaimé Tom – Strasbourg - *Manipulation of qudits encoded in Rydberg blockaded arrays of single atoms*
- Dupont-Ferrier Eva – Sherbrooke - *Building blocks for a spin-based quantum computer based on industrial technology*
- Bernon Simon – Bordeaux - *In situ subwavelength quantum state engineering : control and measurement of dense ensemble*

Tuesday – Optics & sensing – Chair: Aephraim Steinberg

- Shabir Barzanjeh – Calgary - *Enhanced Quantum Emission from a Topological Floquet Resonance*
- D'Auria Virginia – Côte d'Azur - *Multipartite quantum states in bright SiN microcombs*
- St-Jean Philippe - Montreal - *Quantized Hall drift in a frequency-encoded photonic Chern insulator*
- Lundeen Jeff – Ottawa - *Two-Photon Interference for Concurrent Measurement of Amplitude and Phase in Spectroscopy*

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Oral Presentations

Wednesday – Maths and quantum computing – Chair: Steven Rayan

- Feder David – Calgary, *All stabilizer quantum codes for small systems via graphs*
- Raphaël Belliard – Saskatchewan, *Finite-dimensional caustics in non-equilibrium quantum thermodynamics and applications in material sciences*
- Scandolo Carlo Maria - Calgary, *Choi-Defined Resource Theo*ries

Wednesday – French-Canadian collaborations – Chair: Andrea Dessen

- Damian Markham – Sorbonne, *Advantages in entangling quantum sensors*
- Cyril Proust – Toulouse, *Strange metals and unconventional superconductivity*
- Florent Baboux - Paris-Cité, *Nonlinear waveguide arrays for quantum information*

Wednesday – Optics & sensing – Chair: Jeff Lundeen

- Croquette Michaël – Grenoble-Alpes, *Cavity optomechanics in the single photon regime*
- Steinberg Aephraim – Toronto, *I know what you did last nanosecond: Asking photons where they've been*

Wednesday – Invited talk – Chair: Anna Minguzzi

- Chris Westbrook – Paris-Saclay, *Metastable helium atoms: quantum optics, simulation and more with massive particles*

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Poster session 1

Number	Presenter	Title	Campus
1	Milman Perola	Modes, states and superselection rules in quantum optics and quantum information	Paris Cité
2	Rodriguez Esteban	Unifying Floquet theory of dispersive and longitudinal coupling	Grenoble
3	Perrin Hugo	Quantum error correction resilient against atom loss	Strasbourg
4	Martinez I Diaz Biel	Steps towards variability-resilient spin qubits	Grenoble-Alpes
5	Smith Graeme	Reverse-type Data Processing Inequality	Waterloo
6	Nima Bassam	Sensing dark matter using rare-earth nuclei in a crystal	Toronto
7	Descamps Eloi	Measuring multipartite entanglement with metrological tools	Paris Cité
8	Rodriguez Garcia Mauricio Javier	Exchange interaction in Germanium hole spin qubits	Grenoble-Alpes
9	Mauro Lorenzo	Strain engineering in Ge/GeSi spin qubits heterostructures	Grenoble-Alpes
10	Botteron Pierre	Towards Unconditional Uncloneable Encryption	Toulouse
11	Giampaolo Raffaele Aaron	Photon-to-Digital Converters - A high timing single photon sensor designed for Quantum Key Distribution with Adaptive Optics Capability	Sherbrooke
12	Izmaylov Artur	Optimizing Quantum Algorithms for Next-Generation Quantum Chemistry	Toronto
13	Sengupta Shamashis	Bistable current-voltage relations in voltage-biased superconductors	Paris-Saclay
14	Hara Nagisa	A classical proof of quantum knowledge for multi-prover interactive proof systems	Ottawa
15	Zhou Cunlu	Classifying Frustration-Freeness and Approximating Ground States via Semidefinite Programming	Sherbrooke
16	Gupta Tanul	Bose-Hubbard model with power-law hopping in one dimension	Strasbourg
17	Greffe Quentin	Bulk acoustic wave resonators as sensitive probes for direct spin-phonon interactions	Grenoble-Alpes
18	Senjean Bruno	Quantum Computing for excited-state quantum chemistry	Montpellier
19	Gong Yunhong	Satellite-to-ground quantum network based on high-accuracy tracking telescope	Calgary
20	Joubert-Doriol Loic	Estimating Timescales in the Nonequilibrium Steady State: Application to Molecular Isomerization in Nature	Gustave Eiffel
21	Chrirou Chaimae	Potential Barriers Make Quantum Thermoelectrics with Nearly Ideal Efficiency at Finite Power Output	Grenoble-Alpes
22	Dubovitskii Kirill	Pure dephasing of superconducting qubits due to Bogolyubov quasiparticles tunneling.	Grenoble-Alpes
23	Khvalyuk Anton	Low-temperature properties of strongly disordered superconductors	Grenoble-Alpes
24	Besombes Lucien	Optical probing of the carrier mediated coupling of the spin of two Co atoms in a quantum dot	Grenoble-Alpes
25	Besombes Lucien	Optical probing of a Ni2+ spin in charged and neutral quantum dots: influence of local strain	Grenoble-Alpes
26	Seedhouse Amanda	Strategies for noisy spin based quantum computers	Grenoble-Alpes
27	Kalo Ahmad Fouad	Hole spin-photon coupling in silicon and germanium double quantum dots.	Grenoble-Alpes
28	Levy-Bertrand Florence	Achieving spectroscopy with kinetic inductance detectors in a magnetic field	Grenoble-Alpes
29	Mandil Reem	High visibility long-fiber Sagnac interference for twin field quantum key distribution	Toronto
30	Fefferman Andrew	Aluminum nuclear-demagnetization refrigerator for continuous cooling below 1 mK	Grenoble-Alpes
31	Higginbottom Daniel	Electrically-triggered spin-photon devices in silicon	Simon Fraser
32	Petrescu Alexandru	High-fidelity readout and measurement-induced state transitions in a transmon molecule in the high-power regime: Part II	Sorbonne

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Poster session 2

Number	Presenter	Title	Campus
1	Bossard Elisa	Thermodynamic analysis of a fault-tolerant measurement-free bit-flip quantum memory	Grenoble-Alpes
2	Bluhm Andreas	On the simulation of quantum multimeters	Grenoble-Alpes
3	Salas-Montiel Rafael	Photon pairs and triplets with integrated photonics: towards a quantum computing cluster	Troyes
4	Cécile Naud	Attempt to nano-engineer flat bands to increase critical superconducting temperatures	Grenoble-Alpes
5	Lamblin Mathieu	The Quantum Spintronic Engine	Grenoble-Alpes
6	Assali Simone	Isotope- and strain-engineered germanium quantum wells	Grenoble-Alpes
7	Rajamani Akilan	Numerical evaluation of ensemble weights in state-averaged quantum eigensolver	Montpellier
8	Lam William	Hamiltonian and Lindbladian Learning with randomised Pauli states and measurements	Grenoble-Alpes
9	Nichols George	High Tc Josephson junctions for metrology applications	Waterloo
10	Chang Ziheng	Satellite-to-ground Reference-frame-independent Quantum Key Distribution	Calgary
11	W. Davis	Modular NV center Magnetometry	Saskatchewan
12	Dousset Cattleya	Optomechanical investigation of thermal and charge waves within suspended SiC nanowires	Grenoble-Alpes
13	Paparelle Iris Michela Anna	Pulse by pulse and frequency multiplexed quantum states for CV protocols	Sorbonne
14	Debray Antoine	Simulability of non-classical continuous-variable quantum circuits	Sorbonne
15	Jiménez Jaimes Juliette	Coupling of an atomic nanoring with an optical nanofiber.	Toulouse
16	Selvakumaran Asian	Quantum avalanche dynamics in a Kerr microresonator	Grenoble-Alpes
17	Boschetto Gabriele	Multi-Scale Modelling of Noise Sources in Semiconductor Spin Qubits	Grenoble-Alpes
18	Tlili Hajer	High-Order Nanowire Resonances for High-Frequency, Large-Coupling-Strength Quantum Dot Hybrid Nanomechanics	Grenoble-Alpes
19	Carrier-Coupal Lee	External magnetic field NV center sensing with parameter estimation using gradient-based optimization	Sherbrooke
20	Rasekh Farhad	Towards Rare-Earth Molecular Crystals as a New Platform in Quantum Networks	Calgary
21	Dubyna Dmytro	Experimental robustness of quantum correlations in a Su-Schrieffer,ÄìHeeger lattice	Waterloo
22	Sinha Pulkit	Dimension Independent and Computationally Efficient Shadow tomography	Waterloo
23	Cailleaux Samuel	Photonic Joule effect in superconducting circuits	Grenoble-Alpes
24	Hamonic Pierre	Gate-based single shot readout of a spin qubit unit cell	Grenoble-Alpes
25	Rothman Johan	HgCdTe Avalanche Photodiodes detectors for quantum optical applications	Grenoble-Alpes
26	Harris Grant	Developing quantum impurity models for x-ray spectroscopy analysis	Saskatchewan
27	Mahdavipour Kobra	Indistinguishability of identical particles as a resource for generating genuine multipartite entanglement	Calgary
28	Zanoni Elia	Thermodynamic state convertibility is determined by qubit cooling and heating	Calgary
29	L. Valdovinos Aguilar	Plasma deposition of nanocomposite thin films based on multiwalled carbon nanotubes	Saskatchewan

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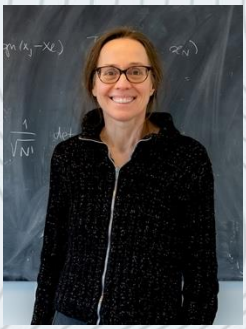
Organizing committee



Anna Minguzzi
CNRS - LPMMC

Franck Balestro
UGA – Institut Néel

Simon Zihlmann
CEA - IRIG

Amélie Favreau
UGA - CRJ

Parinaz Tajabor
UGA

QuantAlps

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Executive committee

Marco Aprili
CNRS, Univ. Paris Saclay

Isabelle Robert-Philip
CNRS, Univ. Montpellier

Barry Sanders
Univ. Calgary

Louis Taillefer
Univ. Sherbrooke

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Steering committee

Name	Campus
Guillaume Cassabois	Université de Montpellier
Eleni Diamanti	Sorbonne Université
Sophie Laplante	Université Paris Cité
Diana Serrano	PSL Université
Véronique Brouet	Université Paris Saclay
Loic Rondin	Université Paris Saclay
Anna Minguzzi	Université Grenoble Alpes
Franck Balestro	Université Grenoble Alpes
Brahim Lounis	Université de Bordeaux
Virginia D'Auria	Université Côte d'Azur
Patrick Cassam-Chenai	Université Côte d'Azur
Cyril Proust	Université de Toulouse Paul Sabatier
Guido Pupillo	Uiversité de Strasbourg
Jérôme Dubail	Uiversité de Strasbourg
William Witczak-Krempa	Université de Montréal
Philippe St-Jean	Université de Montréal
Jeff Lundeen	University of Ottawa
Aephraim Steinberg	University of Toronto
Bruce Gaulin	McMaster University
Chris Wilson	University of Waterloo
Alexandre Blais	Université de Sherbrooke
Christoph Simon	University of Calgary
Shabir Barzanjeh	University of Calgary
Marcel Franz	University of British Columbia
Steven Rayan	University of Saskatchewan
Lindsay Leblanc	University of Alberta

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