



15th Italian Quantum Information Science Conference
18-22 September 2023, University of Trieste

Conference Program

Version 3.2
13th September 2023

Mon 18th Sept

08:00 **Registration**

08:45 **Opening**

09:00 **G. Morigi**

10:00 **S. Felicetti**

10:30 **C. Break**

11:00 **M.A. Ciampini**

11:30 **L. Giannelli**

12:00 **M. Di Liberto**

12:30 **S. Paganelli**

13:00 **Lunch**

15:00 **E. Pelucchi**

15:30 **D. Fioretto**

16:00 **N. Bruno**

15:00 **V. Vitale**

15:30 **E. Tirrito**

16:00 **V. Gebhart**

16:30 **C. Break**

17:00 **I. Gianani**

17:30 **D. Bajoni**

18:00 **C. Stella**

17:00 **L. Razzoli**

17:30 **A. Catalano**

18:00 **D. Chisholm**

19:00 **Aperitivo**

Tue 19th Sept

09:00 **D. Braun**

10:00 **P. Solinas**

10:30 **C. Break**

11:00 **S. Hernandez Gomez**

11:30 **S. Zippilli**

12:00 **A. Smirne**

12:30 **P. Perinotti**

13:00 **Lunch**

15:00 **S. Lorenzo**

15:30 **G. Gramegna**

16:00 **N. Lo Gullo**

15:00 **A. Meda**

15:30 **V.G. Lucivero**

16:00 **V. Brosco**

16:30 **C. Break**

17:00 **G. Chesi**

17:30 **F. Carollo**

18:00 **S. Cusumano**

17:00 **N. Defenu**

17:30 **S. Bandyopadhyay**

18:00 **G. Lami**

18:30 **Poster**

20:00 **End Poster**

Wed 20th Sept

09:00 **G. Pupillo**

10:00 **A. Ferraro**

10:30 **C. Break**

11:00 **I. Siloi**

11:30 **L. Piroli**

12:00 **D. Massarotti**

12:30 **A. Chiesa**

13:00 **Lunch**

14:30 **SISTEQ Plenary Meeting**

16:30 **C. Break**

17:00 **Free time or city tour**

20:00 **Dinner**

Thu 21st Sept

09:00 **P. Lodahl**

10:00 **T. Giordani**

10:30 **C. Break**

11:00 **P. Scarlino**

11:30 **M. Rota**

12:00 **E. Distante**

12:30 **A. Carollo**

13:00 **Lunch**

15:00 **B. Bellomo**

15:30 **G. Cappellini**

16:00 **V. Viggiano**

15:00 **G. Ortolano**

15:30 **R. Moretti**

16:00 **M. Piccolini**

16:30 **C. Break**

17:00 **M. Brunelli**

17:30 **L. Leonforte**

18:00 **M. Burrello**

17:00 **G. Di Bello**

17:30 **I. Svampa**

18:00 **L. Lepori**

18:30 **Poster**

20:00 **End Poster**

Fri 22nd Sept

09:00 **V. Parigi**

10:00 **A. Zavatta**

10:30 **Poster awards**

10:45 **C. Break**

11:15 **A. Allevi**

11:45 **F. Di Colandrea**

12:15 **G. Foletto**

12:45 **P. Faccioli**

13:15 **Closing**

Main lecture Hall

Lecture room B

Lecture room C1

08:00 **Registration** 08:45 **Opening***Chair: F. Benatti*09:00 **G. Morigi - Saarland University**
Search as (quantum) selforganized process10:00 **S. Felicetti – CNR - ISC**
Waveguide QED with Quadratic Light-Matter Interactions10:30 **C. Break***Chair: E. Ercolessi*11:00 **M.A. Ciampini - University of Wien**
Quantum control and quantum interference of a nanoparticle via optical potential control11:30 **L. Giannelli - University of Catania**
Measurement of virtual photons and adiabatic operations in ultra-strongly coupled quantum systems12:00 **M. Di Liberto - University of Padova**
Simulating chiral orbital order without higher bands12:30 **S. Paganelli - University of L'Aquila**
Variational quantum eigensolver for topological systems13:00 **Lunch***Chair: G. Morigi*15:00 **E. Pelucchi - Tyndall National Institute - UCC**
Quantum technologies: the potential of integrated photonics, challenges and perspectives15:30 **D. Fioretto - Université Paris-Saclay, CNRS, Quandela**
High-rate entanglement between a semiconductor spin and indistinguishable photons16:00 **N. Bruno – CNR - INO & LENS Firenze**
Photon-atom interfaces at telecom wavelengths*Chair: F. Franchini*15:00 **V. Vitale - LPMMC, CNRS, Grenoble**
Estimation of the quantum Fisher information on a superconducting devices15:30 **E. Tirrito - ICTP - University of Trento**
Quantifying non-stabilizerness in many-body systems16:00 **V. Gebhart - CNR - INO Firenze**
Causal diagrams in quantum information16:30 **C. Break***Chair: M.A. Ciampini*17:00 **I. Gianani - University of "Roma Tre"**
Ghost spectroscopy metrology and fast remote discrimination of spectral objects17:30 **D. Bajoni - University of Pavia**
Programmable silicon devices for the generation of frequency bin entangled qudit states18:00 **C. Stella – INRIM Torino**
Nanodiamond probes detect local temperature variations in the neuron*Chair: R. Lo Franco*17:00 **L. Razzoli - University of Insubria**
Cooperative effects in a dynamical quantum heat engine17:30 **A. Catalano - Institut Ruđer Bošković**
Frustrating quantum batteries18:00 **D. Chisholm - Queen's University Belfast**
Quantifying quantum objectivity: redundancy, consensus and the average mutual information19:00 **Aperitivo**

Main lecture Hall

Lecture room B

Lecture room C1

	<i>Chair: L. Maccone</i>	
09:00	D. Braun - <i>University of Tübingen</i> Principles of Quantum Functional Testing	
10:00	P. Solinas - <i>University of Genova</i> Quantum non-demolition measures, quasi-probabilities, and their application to the measure of work and heat in quantum systems	
10:30	C. Break	
	<i>Chair: F. Ciccarello</i>	
11:00	S. Hernandez-Gomez - <i>MIT – RLE</i> Measuring Kirkwood-Dirac quasiprobabilities with a solid-state spin defect	
11:30	S. Zippilli - <i>University of Camerino</i> Stationary entanglement in arrays of quantum systems	
12:00	A. Smirne - <i>University of Milan</i> Multi-time correlation functions in open quantum systems: a non-perturbative approach	
12:30	P. Perinotti - <i>University of Pavia</i> Incompatibility and irreversibility: from Heisenberg to post-quantum theories	
13:00	Lunch	
	<i>Chair: M. Genoni</i>	
15:00	S. Lorenzo - <i>University of Palermo</i> On the potential and limitations of quantum extreme learning machines	
15:30	G. Gramegna - <i>University of Bari</i> Storage Capacity of a Quantum Perceptron	
16:00	N. Lo Gullo - <i>University of Calabria</i> Enhancing qubit readout with Bayesian Learning	
	<i>Chair: D. Massarotti</i>	
15:00	A. Meda – <i>INRIM Torino</i> Channel length control for Twin-field QKD in a real-world network	
15:30	V.G. Lucivero - <i>University of Bari</i> Pound-Drever-Hall detection of atomic polarization in a microfabricated vapor cell	
16:00	V. Brosco - <i>University of Rome “La Sapienza”</i> Unconventional superconducting quantum devices	
16:30	C. Break	
	<i>Chair: D. Vitali</i>	
17:00	G. Chesi - <i>INFN Pavia</i> Work fluctuations in ergotropic heat engines	
17:30	F. Carollo - <i>University of Tübingen</i> Thermodynamics of quantum trajectories on a quantum computer	
18:00	S. Cusumano - <i>ICTQT, Gdansk University</i> Collision models with structured ancillae and the thermodynamic cost of coherence	
	<i>Chair: M. Burrello</i>	
17:00	N. Defenu - <i>Institute for theoretical physics, ETH Zurich</i> Stabilization of discrete time-crystalline response on a superconducting quantum computer by increasing the interaction range	
17:30	S. Bandyopadhyay - <i>University of Trento</i> Towards quantum simulation of holographic matter in cavity QED setup	
18:00	G. Lami – <i>SISSA Trieste</i> Quantum magic via perfect Pauli sampling of matrix product states	
18:30	Poster session	20:00 End Poster session

Main lecture Hall

Lecture room B

Lecture room C1

	<i>Chair: F. Scazza</i>
09:00	G. Pupillo - <i>University of Strasbourg</i> Multi-qubit gates for quantum computing with neutral atoms
10:00	A. Ferraro - <i>University of Milan</i> Quantum computation with bosonic codes: quantum resources and classical simulation

10:30 **C. Break**

	<i>Chair: C. Macchiavello</i>
11:00	I. Siloi - <i>University of Padova</i> Applications of tensor network methods to quantum emulators and optimization problems
11:30	L. Piroli - <i>University of Bologna</i> Stabilizer entropies and nonstabilizerness monotones
12:00	D. Massarotti - <i>University of Napoli</i> Hybrid Josephson junctions and unconventional circuits for quantum hardware
12:30	A. Chiesa - <i>University of Parma</i> Molecular spin qudits: a viable path for quantum information processing

13:00 **Lunch**

14:30	SISTEQ Plenary Meeting
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16:30 **C. Break**

17:00 **Free time or city tour**

20:00 **Dinner**

	<i>Chair: C. Toninelli</i>	
09:00	P. Lodahl - <i>University of Copenhagen</i> Deterministic photon-emitter interfaces	
10:00	T. Giordani - <i>University of Rome "Sapienza"</i> Generation of entangled photonic states in different degrees of freedom exploiting semiconductor quantum dots	
10:30	C. Break	
	<i>Chair: G. Falci</i>	
11:00	P. Scarlino - <i>EPFL</i> High impedance superconducting technology for hybrid devices	
11:30	M. Rota - <i>University of Rome "Sapienza"</i> Bright and tunable entangled-photon emitters based on cavity-enhanced GaAs quantum dots on micromachined piezoelectric actuators	
12:00	E. Distante - <i>Max Planck Institute of Quantum Optics</i> A quantum network module based on single-atom arrays in an optical cavity	
12:30	A. Carollo - <i>University of Palermo</i> Exotic effects in non-Hermitian quantum optics	
13:00	Lunch	
	<i>Chair: V. Parigi</i>	
15:00	B. Bellomo - <i>UTINAM - Université de Franche-Comté</i> Optimal control of qubits interacting with a dissipative cavity	
15:30	G. Cappelini - <i>CNR - INO & LENS</i> A programmable quantum simulator with Rydberg strontium atoms in optical tweezer arrays	
16:00	V. Viggiano - <i>University of Bari – INFN Bari</i> Cooperative decay rates in random atomic clouds	
	<i>Chair: B. Vacchini</i>	
15:00	G. Ortolano – <i>INRIM Torino</i> Recent progresses in optical quantum metrology and hypothesis testing, from wide-field phase retrieval to pattern recognition	
15:30	R. Moretti - <i>INFN Milan Bicocca</i> Enhancing Microwave Photon Counting: Superconducting Qubits and Traveling Wave Amplifiers in Quantum Sensing	
16:00	M. Piccolini - <i>University of Palermo</i> Interferometric robust engineering of maximally entangled states of identical particles	
16:30	C. Break	
	<i>Chair: A. Trombettoni</i>	
17:00	M. Brunelli - <i>University of Basel</i> Optomechanical realization of the bosonic Kitaev-Majorana chain	
17:30	L. Leonforte - <i>University of Salerno</i> The quantum conditional mutual information: detecting, characterizing, and discriminating topological and non-topological phase transitions	
18:00	M. Burrello - <i>University of Copenhagen</i> Readout of parafermionic states by transport measurements	
	<i>Chair: F. Plastina</i>	
17:00	G. Di Bello - <i>University of Napoli</i> Dynamics of open quantum systems: from the quantum Rabi model to coupled qubits	
17:30	I. Svampa - <i>University of Camerino</i> p-Adic Lie groups: towards the p-adic qubit via representations of the p-adic rotation group	
18:00	L. Lepori - <i>University of Parma</i> Maximally-entangled states via drive spin molecules	
18:30	Poster session	20:00 End Poster session

Main lecture Hall

Lecture room B

Lecture room C1

Chair: P. Villorresi

09:00 **V. Parigi** - *Laboratoire Kastler Brossel, Sorbonne Université*
Spectrally shaped and pulse-by-pulse multiplexed CV quantum networks

10:00 **A. Zavatta** - *CNR – INO Firenze*
Recent developments in fibre-based quantum communications

10:30 **Poster awards**

10:45 **C. Break**

Chair: N. Bruno

11:15 **A. Allevi** - *University of Insubria*
Mutual information of a homodyne-like detection scheme for binary phase-shift keyed communication protocols

11:45 **F. Di Colandrea** - *University of Ottawa*
Ultra-long quantum walks via spin-orbit photonics

12:15 **G. Foletto** - *University of Padova*
Sequential quantum information protocols

12:45 **P. Faccioli** - *University of Milan Bicocca*
All-atom simulation of rare protein conformational transitions and folding, using a quantum computer

13:15 **Closing**