



Quantum Computing and Simulation workshop – 11-13 October 2023 Istituto Veneto - Palazzo Franchetti - Venice

Wednesday October 11th

- 10:00-10:20 Opening
Antonio Zoccoli, INFN President – ICSC Foundation
Fabio Beltram, Coordinator NQSTI-National Quantum Science and Technology Institute
- 10:20-11:00 Tommaso Calarco, Forschungszentrum Jülich
Quantum firmware: optimal control for quantum simulators
- 11:00-11:20 Valter Bonvicini, INFN
INFN activities and contributions within the Quantum Computing Spoke of the ICSC National Research Centre for High Performance Computing, Big Data and Quantum Computing
- 11:20-11:40 Ilaria Siloi, University of Padova
Tensor Network applications to quantum computing
- 11:40-12:00 Daniele Ottaviani, Cineca
Quantum Computing at CINECA: Integrating a Quantum Accelerator into an HPC Environment
- 12:00-12:20 Fabio Sciarrino, University of Rome La Sapienza
Hybrid Photonics Platform for Quantum Computing
- 12:20-14:20 Lunch
- 14:20-15:00 Enrique Rico, Ikerbasque
Two-way communication between high-energy physics and quantum matter
- 15:00-15:20 Paolo Facchi, University of Bari
Real-time simulation of the lattice Schwinger model on NISQ hardware
- 15:20-15:40 Massimo D'Elia, University of Pisa
Activities on Quantum Computing at the University of Pisa
- 15:40-16:10 Coffee break
- 16:10-16:50 Guido Pupillo, Strasburg University
Multi-qubit gates for quantum computing with neutral atoms
- 16:50-17:10 Chiara Macchiavello, University of Pavia
Quantum protocols for image compression and channel reconstruction
- 17:10-17:30 Roberto Scaramella, INAF
Quantum Computing activities at INAF
- 17:30-18:30 QCSC meeting (members only)
- 20:00-20:30 San Marco night visit

Thursday October 12th

- 9:30-10:10 Ferdinand Schmidt-Kaler, Mainz University
Quantum computing with trapped ions
- 10:10-10:30 Sauro Succi, Istituto Italiano di Tecnologia
Quantum computing for classical fluids: where do we stand?
- 10:30-11:00 Coffee break
- 11:00-11:40 Yibin Guo, CQTA/Desy Zeuthen
Computing Excited States for the Schwinger Model with the Concurrent Variational Quantum Eigensolver



- 11:40-12:00 Ugo Dal Lago/Elisa Ercolessi, University of Bologna
On some of UNIBO's Research Contributions to Spoke 10
- 12:00-12:20 Philipp Hauke, University of Trento
Research activities at Trento -- Quantum solutions for quantum field theories and beyond
- 12:20-14:20 Lunch
- 14:20-15:00 Martin Ringbauer, Innsbruck University
Quantum Computation and Simulation with Qudits
- 15:00-15:20 Francesco Tafuri, University of Naples Federico II
The superconducting platform for quantum computation in Napoli: project advances, quantum circuits and experiments
- 15:20-15:40 Giuseppe Falci, University of Catania
Selected topics from the UniCT node
- 15:40-16:10 Coffee break
- 16:10-16:50 Zala Lenarčič, Josef Stefan Institute
Probing anomalous transport of (integrable) spin chains
- 16:50-17:10 Carlo Danieli, CNR
Quantum computing: advances in hardware and software components
- 17:10-17:30 Angelo Nuciotti, University of Milan Bicocca
Contributions to the development of photonic and superconducting quantum processors at the University of Milano-Bicocca
- 17:30-18:30 Poster session
T-NISQ meeting (members only)
- 18:30-19:30 Poster session
ICSC meeting (members only)
- 20:00 Conference dinner at Palazzo Franchetti

Friday October 13th

- 9:00-9:40 Tilman Pfau, Stuttgart University
Introduction to Quantum-Computing and Simulation based on neutral atoms
- 9:40-10:00 Paolo Cremonesi, Politecnico di Milano
Quantum Computing for Information Retrieval Tasks
- 10:00-10:20 Mario Collura, SISSA Trieste
Quantum Magic: from entanglement spectrum to Pauli sampling and Neural Network
- 10:20-10:40 Stefano Corni, University of Padova
Extending the scope of quantum computing for chemical investigations
- 10:40-11:00 Leonardo Guidoni, University of L'Aquila
Compact Quantum Circuits for Quantum Chemistry
- 11:00-11:30 Coffee break
- 11:30-11:45 Marina Natalucci, Politecnico di Milano
Driving Quantum Innovation in Italy: Fostering a Precompetitive Ecosystem. The role of the Quantum Computing & Communication Observatory of the Politecnico di Milano
- 11:45-12:00 Daniele Dragoni, Leonardo S.p.A.
Tackling Partial Differential Equations in Industry with Quantum Computers: A Collaborative Initiative
- 12:00-12:15 Alessia Marruzzo, Eni S.p.A.
Quantum Computing in the energy sector: looking for applications across the whole value chain
- 12:15-12:30 Davide Corbelleto, Intesa San Paolo
Quantum Computing for Fraud Detection and Credit Scoring
- 12:30-12:45 Tommaso Catuogno
Quantum Computing for Earth Observation: A Space Sector Industry perspective



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- 12:45:13:00 Alessia Perissinotto
Cybersecurity and Combinatorial Optimization
- 12:45-14:00 *Lunch*
- 14:00-16:00 Industry session
Simone Brunozzi, Rialto Ventures
Luciano Viverit, BaseSquare
Alessandra Scotti, LIFTT
- 16:00-16:20 Q&A
Closing

