

Quantum Computing and High Performance Computing
CINECA – 19/12/2019 – Casalecchio di Reno (BO)
Agenda

10:00 – 10:15 Registration
10:15 – 10:25 Welcome

10:25 – 10:40 – CNR – Enrico Prati – Introduction to Quantum Computing

Industries (10:40 – 11:40) : Chairman Carlo Cavazzoni

- IBM – Ingolf Wittmann – IBM Q Technology and Network update - Whats new in the IBM Quantum Community
- D-Wave – Andy Mason – Practical Quantum Computing
- Xanadu Quantum Technologies – Andrea Mari – Machine Learning with Hybrid Quantum-Classical Systems

11:40 – 12:00 – Coffee Break

Industries (12:00 – 13:00) : Chairman Carlo Cavazzoni

- Intel – Fabio Baruffa – Quantum Computing Simulations with the Intel® Quantum Simulator
- Atos – Ivano Pullano – Advancements on Atos Quantum Project
- Data Reply – Luca Asproni – Accuracy and minor embedding in subqubo decomposition

13:00 – 13:55 – Lunch

General Purpose Quantum Computing (13:55 – 15:30) : Chairman Enrico Prati

- University of Padova – Simone Montangero – Quantum technologies for high-energy physics
- University of Naples “Federico II” – Marcello Caleffi – Quantum Trajectories for the Quantum Internet: Noiseless Communications through Noisy Channels
- University of Bologna – Davide Vodola – Fighting Qubit Loss in Quantum Topological Memories
- Polytechnic University of Turin/LINKS Foundation – Bartolomeo Montrucchio – Engineering Quantum Computing at Politecnico di Torino: from technological modelling to industrial software applications
- University of Bologna/CNR - Marco Maronese – Quantum Activation Functions for qubit-based Feedforward Neural Networks

15:30 – 15:40 – Coffee Break

General Purpose Quantum Computing 2 (15:40 – 16:55) : Chairman Enrico Prati

- University of Bologna – Elisa Ercolessi – Quantum Simulations: a bridge between quantum computing and modelling in physics
- University of L’Aquila – Leonardo Guidoni – Quantum Chemistry Calculations using generalised Variational Quantum Eigensolver algorithms
- University of Parma – Michele Amoretti – Recent Approaches for Efficient Compiling of Quantum Circuits
- Polytechnic University of Milan/CNR – Lorenzo Moro – Managing quantum compiling by deep learning

16:55 – 17:05 – Coffee Break

Quantum Annealing (17:05 – 18:00) : Chairman Daniele Ottaviani

- University of Modena and Reggio Emilia/CNR – Rosa Di Felice – Materials science and chemistry applications on a D-Wave quantum annealer
- University of Trento – Davide Pastorello – Hybrid Quantum-Classical Algorithms for Solving Optimization Problems
- University of Bologna/CNR – Lorenzo Rocutto – Unsupervised Learning on a D-Wave AQC

Closing of the Workshop (18:00 – 18:05)