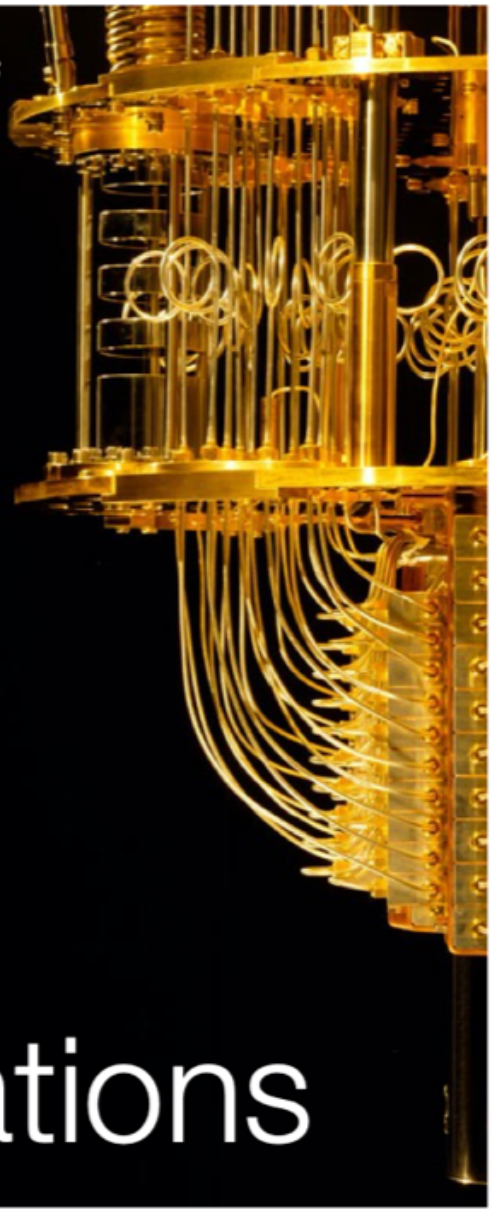
Colloquium Series in Theoretical and Computational Physics at the Physics Department of the University of Trieste

UNIVERSITÀ DEGLI STUDI DI TRIESTE



Introduction to Quantum Algorithms for Physics Applications

Dr. Guglielmo Mazzola
IBM Quantum &
IBM Zurich Research Lab

Wednesday May 26th 2021
16:00-17:00

Zoom Meeting

Link: https://tinyurl.com/colloquium-quantum-algorithms
Meeting ID: 956 7657 6295
Passcode: TheorPhys

I will introduce basic concepts of quantum computation, highlighting the key properties of a typical quantum algorithm compared to its classical counterpart.

I will provide concrete examples of quantum primitives (i.e. hamiltonian simulation, quantum phase estimation) that will enable solving important physical problems (in quantum chemistry, electronic structure, or lattice gauge theories), with an exponential speedup, or that can be used in quantum machine learning for classification problems.

Finally, I will discuss challenges and prospects in achieving a practical quantum advantage in the near future.