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**Title:** “Quantum machine learning”

**Abstract**

Quantum Computing, relegated for decades as a spooky distant myth, is now becoming a reality. To wit, quantum computers (albeit small in scale) are already available, developed by the likes of IBM, Rigetti, D-Wave, Google, Microsoft. However, a quantum computer is not simply a bigger and more powerful computer, and requires a whole new set of algorithms to be written to perform useful tasks. These, and the underlying technology, draw from the laws of quantum mechanics, fundamentally different from our usual numerical toolbox.

The goal of this mini-course is to provide a mathematical introduction to Quantum Computing and to highlight applications in Quantitative Finance, in particular for Monte Carlo simulations, machine learning and optimisation. Numerical examples (through python) will also be introduced to provide a tangible reality.