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Pricing lookback options on quantum computers

Quantum computing promises computational speed up that could have a significant impact across industries. In this presentation, we explore the application of VarQITE, a quantum time evolution algorithm, to option pricing. Extending the work of Fontanela et al. (2021), we consider discretely monitored lookback options and use VarQITE to solve a partial differential equation associated to its price. To address the jump condition in the PDE, which poses a significant challenge in the quantum implementation, we re-write it in terms of multiple continuous equations, thus improving the accuracy of the results. A brief introduction to quantum computing will also be presented.