Title: Quantum Optimization Algorithms Applied in Finance

Abstract: In this paper, I want to discuss the use of quantum computers in finance. Specifically, I want to explore the quantum optimisation algorithms that have or could have potential applications for solving key problems in finance.
Starting from the basics of quantum computing, I will discuss the current problems in finance such as portfolio optimisation, risk management and algorithmic trading. Discuss these problems' classical approaches, and how quantum algorithms could provide a significant advantage. I will also discuss the results of some existing prototypes, and evaluate their performance. Finally, I will provide an overview of the paper, summarising and pointing out the key ideas to construct well-informed conclusions and prospects of quantum computing in the financial sector.

Some literature:

[1] D. J. Egger, C. Gambella, J. Marecek, S. McFaddin, M. Mevissen, R. Raymond, A. Simonetto, S. Woerner, and E. Yndurain, *Quantum Computing for Finance: State-of-the-Art and Future Prospects*, IEEE Trans. Quantum Eng. **1**, 1 (2020).
[2] D. Focardi Sergio, Fabozzi, Frank J. ,. Mazza, *Quantum Option Pricing and Quantum Finance*, [] **[]**, (n.d.).
[3] D. Herman, C. Googin, X. Liu, Y. Sun, A. Galda, I. Safro, M. Pistoia, and Y. Alexeev, *Quantum Computing for Finance*, Nat. Rev. Phys. **5**, 450 (2023).