Contribution ID: **22**                                                        Type: **not specified**

# Investigating solving optimization problems on a circuit based quantum computer

*Tuesday 25 March 2025 15:50 (20 minutes)*

We present a status report of our work on developing algorithms to use circuit based quantum computers to solve Quadratic Unconstrained Binary Optimization (QUBO) problems. The QUBO problems are from two practical use cases. The first example is the optimal placement of wind turbines within a windfarm to maximize the power production (arXiv:2312.13123). The second QUBO problem we investigated is the Nurse scheduling problem and in this study we used Pauli Correlation encoding that allows bigger systems to be simulated. The Qiskit software from IBM was used on the HPC system at the University of Plymouth and the performance compared to classical algorithms in the Gurobi solver.

**Author:**    Dr MCNEILE, Craig (Plymouth University)

**Presenter:**    Dr MCNEILE, Craig (Plymouth University)

**Session Classification:**    Invited Speakers and Contributions