Combining QUBO with classical approach to particle tracking

Thursday 26 October 2023 10:00 (30 minutes)

The use of quadratic unconstrained binary optimisation (QUBO) for charged particle track reconstruction has been studied alongside a classical tracking algorithm using combinatorial Kalman Filter (CKF). QUBO can be efficiently solved on quantum computers through methods like quantum annealing or variational quantum eigensolver. The QUBO and CKF tracking methods not only differ in terms of the type of computers they can run on but also in their fundamental approaches to solving tracking problems. Consequently, there is potential for leveraging the advantages of both techniques. In this presentation, I will delve into the complementarity of these two approaches and explore various strategies to integrate the two.

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