

Phenomenology 2023 Symposium



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Resolving Combinatorial Ambiguities in the $t\bar{t}$ Event Topologies with Quantum Algorithms

Monday 8 May 2023 17:00 (15 minutes)

We revisit the combinatorial problem at the LHC, taking $t\bar{t}$ production as an example. The combinatorial ambiguity in this case can be reformulated in terms of a quadratic unconstrained binary optimization problem. Finding the solution to the combinatorial problem becomes equivalent to finding the ground state of the Ising Hamiltonian. We explore several variational quantum algorithms to find the global minimum of the problem Hamiltonian and compare our results against the existing methods.

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