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Pratibha Raghupati Hegde - An evolutionary strategy for finding effective quantum 2-body Hamiltonians of p-body interacting systems

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Quantum annealing can be used to solve optimization prob- lems. Quantum processors, performing quantum annealing, operate mini- mizing a cost function. The central issue is to map the cost function which has p-body interactions into a function with at most 2-body interactions. In the already existing method of minor embedding, xing the number of ancillae qubits for highly interacting models becomes impractical. Here we propose a technique for obtaining approximate mapping based on ge- netic algorithms. We verify the feasibility of this procedure by mapping ferromagnetic p-spin model in two analytically solvable cases.

Based on the manuscript submitted to the journal of Quantum Machine Intelligence- Passarelli, G. et. al, An evolutionary strategy for nding eective quantum 2-body Hamiltonians of p-body interacting systems.