Adiabatic Quantum Computation with Neutral Cesium

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We are implementing a new platform for adiabatic quantum computation (AQC) [1] based on trapped neutral atoms whose coupling is mediated by the dipole-dipole interactions of Rydberg states. Ground state cesium atoms are dressed by laser fields in a manner conditional on the Rydberg blockade mechanism [2,3], thereby providing the requisite entangling interactions. As a benchmark we study a Quadratic Unconstrained Binary Optimization (QUBO) problem whose solution is found in the ground state spin configuration of an Ising-like model.


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