

Abstract Submitted
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Adiabatic Quantum Computing with Neutral Atoms¹ AARON HANKIN, University of New Mexico, GRANT BIEDERMANN, GEORGE BURNS, YUAN-YU JAU, CORT JOHNSON, SHANALYN KEMME, ANDREW LANDAHL, MICHAEL MANGAN, L. PAUL PARAZZOLI, PETER SCHWINDT, DARRELL ARMSTRONG, Sandia National Laboratories, IVAN DEUTSCH TEAM², MARK SAFFMAN TEAM³ — We are developing, both theoretically and experimentally, a neutral atom qubit approach to adiabatic quantum computation. Using our microfabricated diffractive optical elements, we plan to implement an array of optical traps for cesium atoms and use Rydberg-dressed ground states to provide a controlled atom-atom interaction. We will develop this experimental capability to generate a two-qubit adiabatic evolution aimed specifically toward demonstrating the two-qubit quadratic unconstrained binary optimization (QUBO) routine.

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