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Radhakrishnan Balu* (radhakrishnan.balu.civ@mail.mil), Aberdeen, MD 21005, and **Dale Shires** and **Raju Namburu**. *A quantum algorithm for uniform sampling of models of propositional logic based on non-commutative probability.*

We describe adiabatic quantum annealing algorithms to generate models of propositional logic with equal probability. The algorithms perform quantum diffusion on a binary hypercube and quantum walks on spin chains to evolve the system adiabatically to a ground state that is interpreted as solution for the underlying satisfiability (SAT) problem. We describe the quantum walks using non-commutative quantum probability and discuss results from implementing the algorithms on a quantum annealer. (Received September 15, 2014)