

Abstract Submitted  
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**Adiabatic Quantum Anomaly Detection and Machine Learning**<sup>1</sup> KRISTEN PUDENZ, DANIEL LIDAR, University of Southern California — We present methods of anomaly detection and machine learning using adiabatic quantum computing. The machine learning algorithm is a boosting approach which seeks to optimally combine somewhat accurate classification functions to create a unified classifier which is much more accurate than its components. This algorithm then becomes the first part of the larger anomaly detection algorithm. In the anomaly detection routine, we first use adiabatic quantum computing to train two classifiers which detect two sets, the overlap of which forms the anomaly class. We call this the learning phase. Then, in the testing phase, the two learned classification functions are combined to form the final Hamiltonian for an adiabatic quantum computation, the low energy states of which represent the anomalies in a binary vector space.

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