

Stephen P. Jordan

NIST/U. Maryland

Quantum and stochastic optimization

Quantum and stochastic optimization algorithms are closely related. Loosely speaking, stochastic optimization algorithms can be obtained by removing the i from Schrodinger's equation, yielding a continuous time diffusion process. Here we investigate how quantum and stochastic optimization algorithms compare to each other and inform each other. In particular, we find that, by applying the control-theoretic framework introduced by Yang et al. for the optimization of adiabatic and QAOA algorithms, we obtain an exponential improvement in the performance of classical simulated annealing for certain problems. This is joint work with Aniruddha Bapat, Jake Bringewatt, and Bill Dorland.