

On the Convergence of MCMCs with Quantum Speedup

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Quantum computing has emerged as a promising avenue for accelerating various computational tasks, including optimization and sampling problems. One particularly intriguing application lies in the realm of Markov Chain Monte Carlo (MCMC) algorithms, fundamental tools widely used in Bayesian inference, statistical physics, and machine learning. This talk delves into the convergence properties of MCMCs enhanced with quantum speedup. We investigate how quantum computing techniques can potentially expedite the convergence of MCMC algorithms, leading to more efficient sampling from complex probability distributions. We explore key theoretical concepts underlying quantum-enhanced MCMCs, examining the impact of quantum resources on convergence rates and sampling quality.