

Title: Optimizing Accuracy in Quantum Approximation

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Abstract:

Approximating a mixed state to its nearest state is important yet challenging in quantum mechanics. In this talk, we propose a dynamical system approach to address the low-rank approximation of bipartite systems, which offers several advantages:

- (1) A gradient dynamics in the complex space can be succinctly described.
- (2) The approach guarantees global convergence to a local solution from any starting point.
- (3) It ensures that the combination coefficients of pure states must be a probability distribution.
- (4) The rank can be dynamically adjusted.

This talk will present the theory, algorithms, and some numerical experiments.