中国科学院数学与系统科学研究院

量子论与信息论

学术报告

报告题目： **Efficient Estimation of Quantum Coherence**

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时　　间： **2024 年 1 月 4 日 (星期四) 下午 14:30--15:30**

地　　点： 数学与系统科学研究院 南楼 N613

摘　　要： Quantification of coherence lies at the heart of quantum information processing and fundamental physics. Exact evaluation of coherence measures generally needs a full reconstruction of the density matrix, which becomes intractable for large-scale multipartite systems. In this talk, we will share a systematic theoretical approach to efficiently estimating lower and upper bounds of coherence in multipartite states. Under the stabilizer formalism, the lower bound is determined by the spectrum estimation method with a small number of measurements, and the upper bound is determined by a single measurement. We also verify our theory with a four-qubit optical quantum system. We experimentally implement various multiqubit entangled states, including the Greenberger-Horne-Zeilinger state, the cluster state, and the W state, and show how their coherences are efficiently inferred from measuring a few observables.