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Absolutely k-Incoherent Quantum States and Spectral Inequalities for Factor Width of a Matrix

Coherence quantifies the amount of superposition and quantum states, k-incoherence is a refinement of this property. Based on the eigenvalues, we investigate the set of quantum states that can be shown to be k-incoherent. The absolute separability problem asks for a characterization of which quantum states can be determined to be separable based only on their eigenvalues, we introduce the corresponding "absolute" question for the resource theory of k-coherence. To this end, absolutely k-incoherent quantum states are introduced, and several necessary and sufficient conditions for them are derived.

This is joint work with Dr. Nathaniel Johnston, Dr. Rajesh Pereira, and Dr. Sarah Plosker.