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# Measuring quantum correlations with relative quantum Rényi entropies

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Quantum correlations in bipartite quantum systems can be quantified by the minimal relative entropy between the bipartite system's state and a separable state (measures of entanglement) or between the system's state and a classical state (measures of quantum discord). We study the properties of these measures of quantum correlations using the generalized quantum Rényi relative entropies defined recently in the context of out-of-equilibrium statistical physics and quantum information theory. For pure states, all measures coincide with the Rényi entropy of the reduced density matrix. For mixed states, we show that the measures of entanglement and discord are "dual", in the sense that the discord is equal to the minimal entanglement between the bipartite system $AB$ and a pointer $P$ of a measurement apparatus performing a local measurement on $AB$.

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