报告题目：Probability Density Function of Uncertainty, Uncertainty Regions of Observables and State-Independent Uncertainty Relations

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报告摘要：

The optimal state-independent lower bounds for the sum of variances or deviations of observables are of significance for the growing number of experiments that reach the uncertainty limited regime. We present a framework for computing the tight uncertainty relations of variance or deviation via determining the uncertainty regions, which are formed by the tuples of two or more of quantum observables in random quantum states induced from the uniform Haar measure on the purified states. From the analytic formulae of these uncertainty regions, we present state-independent uncertainty inequalities satisfied by the sum of variances or deviations of two, three and arbitrary many observables, from which experimentally friend entanglement detection criteria are derived for bipartite and tripartite systems.
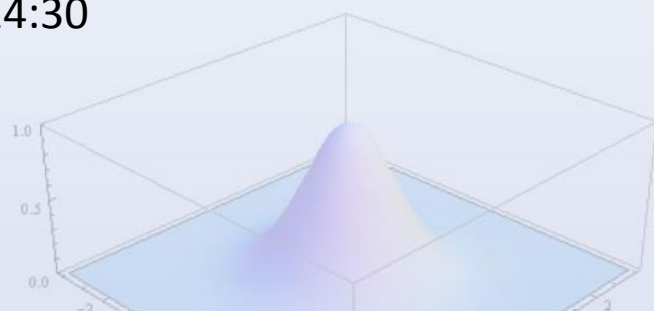
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