Seminar

Estimating quantum entanglement in a class of N-qudit states

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Abstract：

Quantum states are characterized by a set of parameters, in general, and accordingly it is of significant importance to estimate their values as precisely as possible. This leads to a quantum-mechanical counterpart of statistical estimation theory. Recent relevant examples are estimations of outputs of quantum channels, coupling parameters in quantum critical systems, parameters in quantum optical states, thermal degree of freedom in thermofield dynamics, and so on. Its fundamental importance for quantum information technology is also widely appreciated today.

Here, the problem of estimating the entanglement parameters in a class of the Werner-type N-qudit states is studied. The largest value of the lower bound to the error of estimate by the quantum Fisher information associated with the quantum Cramer-Rao bound is found to coincide with the separability point only in the case of two qubits. It is shown that, on the other hand, such largest values give rise to the universal value of the fidelity in the sense that it is independent of the system size.

A (seemingly new) formula is also presented for the quantum score, which is the logarithmic derivative of a density matrix.

In this seminar, most of technical notions will be explained in simple ways.

时间：**2:30-3:30 pm, Oct. 31, 2017**
地点：**Room B430, Mechatronics Building**
（机电信息实验大楼B430）