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Local Unitary Equivalence and Entanglement of Multipartite Pure States

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Abstract:

In this talk, I will discuss two different approaches to tackle the important problem of multipartite entanglement. In the first approach certain classes of multipartite states are considered and the entanglement properties and the applications of those states are studied. The second approach to gain insight into the entanglement properties of multipartite states is to investigate which states can be transformed into each other by local operations. One particularly interesting case, which I will focus on in this talk, is the local unitary equivalence of multipartite states. I will present necessary and sufficient conditions for local unitary equivalence of arbitrary pure multipartite states. Those investigations lead to a new insight into the general problem of characterizing the different types of entangled quantum states.