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*Rank and Separability*

The problem of determining whether a given quantum state is entangled is  $np$ -hard. By restricting the problem to extensions of a fixed faithful state, the determination of separability becomes a matter of finding the rank of associated operators. But that doesn't seem to make the calculations any easier. This talk will discuss the reasons why and the methods used, in particular how this extends the concept of Schmidt rank to mixed bipartite states.