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Preservers of Unextendible Product Bases and the Local Distinguishability of Quantum States

In quantum information theory, unextendible product bases (UPBs) are sets of quantum states that exhibit strange entanglement properties. For example, although the states in a UPB contain no entanglement, they exhibit nonlocal properties such as the fact that they can not be distinguished with local operations and classical communication. In this talk, we investigate the preservers of UPBs (i.e., given a UPB, we ask the question of which local operators map it to a UPB). In many cases, the only such preservers are the local unitary operators, and in these cases a stronger form of local indistinguishability can be proved.