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[505] Entanglement in Quantum Networks

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Advances in quantum information processing and technologies lead to promising developments towards a quantum network. The latter would feature local quantum processors exchanging information and entanglement via quantum links, enabling, for instance, long-distance quantum communication. The focus of this contribution is to investigate quantum correlations in networks from the point of view of entanglement. We will discuss the possibilities and limitations for entanglement generation, given the constraints of the network topology. We discuss networks featuring independent or classically correlated sources, and derive conditions for a quantum state to be preparable in the network. This shows that network structures impose strong and nontrivial constraints on the set of preparable quantum states.

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