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Entanglement Capacity of Nonlocal Hamiltonians: A Geometric Approach PRAMOD JOAG, BEHZAD LARI, ALI HASSAN, University of Pune — We develop a geometric approach to quantify the capability of creating entanglement for a general physical interaction acting on two qubits. We use the entanglement measure proposed by us for N-qubit pure states (Phys. Rev. A **77**, 062334 (2008)). This geometric method has the distinct advantage that it gives the experimentally implementable criteria to ensure the optimal entanglement production rate without requiring a detailed knowledge of the state of the two qubit system. For the production of entanglement in practice, we need criteria for optimal entanglement production which can be checked *in situ* without any need to know the state, as experimentally finding out the state of a quantum system is generally a formidable task. Further, we use our method to quantify the entanglement capacity in higher level and multipartite systems. We quantify the entanglement capacity for two qutrits and find the maximal entanglement generation rate and the corresponding state for the general isotropic interaction between qutrits, using the entanglement measure of N-qudit pure states proposed by us (Phys. Rev. A **80**, 042302 (2009)). Next we quantify the genuine three qubit entanglement capacity for a general interaction between qubits. We obtain the maximum entanglement generation rate and the corresponding three qubit state for a general isotropic interaction between qubits.

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