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Entanglement witness operator for quantum teleportation[1]
ARCHAN S. MAJUMDAR, S. N. Bose National Centre for Basic Sciences, Kolkata, SATYABARTA ADHIKARI, Institute of Physics, Bhubaneshwar, NIRMAN GANGULY, JYOTISHMAN CHATTERJEE, Dept. of Mathematics, Heritage Institute of Technology, Kolkata — The ability of entangled states to act as resource for teleportation is linked to a property of the fully entangled fraction. We show that the set of states with their fully entangled fraction bounded by a threshold value required for performing teleportation is both convex and compact. This feature enables for the existence of hermitian witness operators the measurement of which could distinguish unknown states useful for performing teleportation. We present an example of such a witness operator illustrating it for different classes of states. We further discuss the experimental measurability of the witness operator. (arXiv:1108.1493v2 [quant-ph]; to appear in Phys. Rev. Lett.)

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