

Abstract Submitted
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A study in the optimal fidelity of continuous-variable teleportation.¹ LIYUN HU, ZEYANG LIAO, SHENGLI MA, M. SUHAIL ZUBAIRY, Department of Physics and Institute of Quantum Studies, Texas A M University, JIANGXI NORMAL UNIVERSITY COLLABORATION, TEXAS AM UNIVERSITY COLLABORATION — We introduce three tunable parameters to optimize the fidelity of quantum teleportation with continuous-variable in nonideal scheme. Using the characteristic function formalism, we present the condition that the teleportation fidelity is independent of the amplitude of input coherent states for any entangled resource. Then we investigate the effects of tunable parameters on the fidelity with or without the presence of environment and imperfect measurements, by analytically deriving the expression of fidelity for three different input coherent state distributions. It is shown that, for the linear distribution, the optimization with three tunable parameters is the best one with respect to single- and two-parameter optimization. Our results reveal the usefulness of tunable parameters for improving the fidelity of teleportation and the ability against the decoherence.

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LiYun Hu
Texas A
M University, College Station

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