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Entanglement controlling by a local manipulation[1] SHI-JIAN GU, HAI-QING LIN, The Chinese University of Hong Kong — Since the entanglement plays an important role in quantum teleportation and quantum cryptography, how to control the entanglement is a key issue in quantum information processing. In this work, we propose a scheme of controlling the entanglement for a two-qubit system by a local manipulation. By introducing a local magnetic resonance which is used to establish a coherent state in an accessorial degree of freedom, the entanglement of a pure state, such as $\cos\theta|\uparrow\uparrow\rangle + \sin\theta|\downarrow\downarrow\rangle$, can be controlled by the magnitude, the frequency, and the phase of the resonance. We also show that the entanglement of two target-qubit could be increased by sacrificing the coherence in accessorial degree of freedom via a positive operator-value measurement (POVM).

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