Test of Nonlocality with an Atom-Field Entangled State

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Abstract: We propose a scheme for the test of nonlocality with atom-field entanglement. An atom is sent through a cavity filled with a coherent field with a small amplitude. The dispersive interaction leads to atom-field entanglement. Then the field is driven by a classical current. The Bell inequality can be tested by the joint measurement of the parity of the field and the atomic state.

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