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Quantum Nonlocality and Generation of Multi-mode Schrodinger Cat States

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Abstract: We describe the Greenberger-Horne-Zeilinger (GHZ) paradox in the multi-mode Schrodinger cat states. We also show that the multi-mode cat states violate the Bell's inequality by an amount that grows exponentially with number of modes. The test of quantum nonlocality is based on parity measurement and displacement operation, which are experimentally feasible. We also describe a scheme for the generation of the cat states in cavity QED.

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