

Quantum Nondemolition Measurement of a Kicked Qubit

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A quantum nondemolition measurement using a kicked two-state system is described, and applied to a quantum double-dot qubit measured by a gate-pulsed quantum point contact. By tuning the waiting time between kicks to be a Rabi oscillation period, the kicking measurement apparatus performs a nondemolition measurement. A variation of the kicked qubit measurement is introduced that corresponds to an elementary quantum pump. The results of a sequence of phase shifts and weak kicked measurements is used to formulate and violate a generalized "Bell inequality in time".

References:

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