

Strongly excited Josephson-junctions qubits - classical vs. quantum

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We consider the dynamics of many-quanta excitations in a system of two capacitively coupled Josephson-junction qubits, both classical and quantum mechanically. We discuss the appearance of nonlinear localized modes (breathers) in the classical and quantum regime -which manifest as the localization and tunneling of the excitation on the qubits- and the possibility for their experimental observation.