

Quantum Physics

Controlled-NOT logic with nonresonant Josephson phase qubits

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(Submitted on 30 Dec 2008)

We establish theoretical bounds on qubit detuning for high fidelity controlled-NOT logic gate implementations with weakly coupled Josephson phase qubits. It is found that the value of qubit detuning during the entangling pulses must not exceed $2g$ for two-step, and g for single-step control sequences, where g is the relevant coupling constant.

Comments: 7 pages, 4 figures

Subjects: **Quantum Physics (quant-ph)**

Cite as: **arXiv:0901.0001v1 [quant-ph]**

Submission history

From: Andrei Galiutdinov [[view email](#)]

[v1] Tue, 30 Dec 2008 21:10:08 GMT (19kb)

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