

Abstract Submitted
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Idling error and SWAP/MOVE operation in RezQu architecture for phase qubits¹ ANDREI GALIAUTDINOV, ALEXANDER KOROTKOV, University of California - Riverside — We analyze several basic operations in the RezQu architecture for superconducting phase qubits recently proposed by John Martinis, concentrating on the idling error, generation of single-excitation states, and the single-excitation transfer (which we call MOVE) between a phase qubit and its memory. We show that the idling error is negligible, being proportional to the sixth power of the coupling strength. We also show that in the rotating wave approximation the MOVE operation, which is simpler than the usual SWAP, can be realized perfectly using a tune/detune pulse with four adjustable parameters. The pulse consists of the front ramp (with proper shaping), a constant near-resonant overshoot, and an arbitrary rear ramp.

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