Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Bit-flip error correction in a novel three-qubit superconducting circuit[1] SUMAN KUNDU, TANAY ROY, SUMERU HAZRA, MADHAVI CHAND, A. RANADIVE, MEGHAN P. PATANKAR, R. VIJAY, Tata Institute of Fundamental Research, Mumbai 400005 — We propose implementation of three-qubit bit-flip error correction protocol based on parity measurement using a novel three-qubit system called the "trimon". The pairwise longitudinal coupling between the three qubits enables simple encoding and decoding of the bit-flip error code. Further, the trimon device enables joint readout of the three-qubit state using standard dispersive readout in the 3D circuit-QED architecture. I will describe our dispersive readout technique and the procedure for implementing parity measurements without using ancilla-qubits. I will conclude by presenting some preliminary results and possibility of extending such techniques for other error-correcting codes. Reference: arXiv:1610.07915.

[1]Funding: Department of Atomic Energy, Govt. of India

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Date submitted: 11 Nov 2016 Electronic form version 1.4