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(54) Title: MEASUREMENT-BASED FAULT TOLERANT ARCHITECTURE FOR THE 4-LEGGED CAT CODE

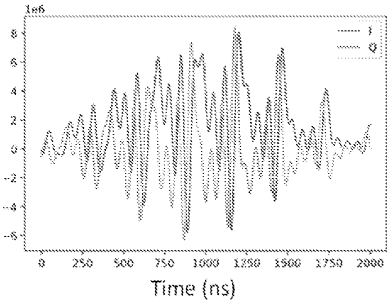

FIG. 22A

(57) Abstract: Systems and methods for performing fault tolerant quantum operations for the 4- legged cat code are provided. The quantum systems include an ancilla qubit dispersively coupled to a first logical qubit, and the quantum system may be operated at least in part by: generating and applying a first drive waveform to the ancilla qubit, the first drive waveform comprising a first comb of 7t-pulses having selective frequencies corresponding to a first selection of even and odd cavity resonance frequencies of the first logical qubit; and reading out a state of the ancilla qubit.

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