Abstract Submitted
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Noise-Induced Looping on the Bloch Sphere[1] ROBERT JOYNT, DONG ZHOU, University of Wisconsin-Madison — For many implementations of quantum computing, 1/f and other types of broad-spectrum noise are an important source of decoherence. An important step forward would be the ability to back out the characteristics of this noise from qubit measurements and to see if it leads to new physical effects. For certain types of qubits, the working point of the qubit can be varied. Using a new mathematical method that is suited to treat all working points, we present theoretical results that show how this degree of freedom can be used to extract noise parameters and to predict a new effect: noise-induced looping on the Bloch sphere. We analyze data on superconducting qubits to that they are very near the parameter regime where this looping should be observed. In addition, we show that the number of noise sources in the experiments is small: of order about 30.

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