Abstract Submitted
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**State dragging using the quantum Zeno effect**[1] SHAY HACOHEN-GOURGY, LEIGH MARTIN, University of California, LUIS PEDRO GARCA-PINTOS, JUSTIN DRESSEL, Chapman University, IRFAN SIDDIQI, University of California — The quantum Zeno effect is the suppression of Hamiltonian evolution by continuous measurement. It arises as a consequence of the quantum back-action pushing the state towards an eigenstate of the measurement operator. Rotating the operator at a rate much slower than the measurement rate will effectively drag the state with it. We use our recently developed scheme, which enables dynamic control of the measurement operator, to demonstrate this dragging effect on a superconducting transmon qubit. Since the system is continuously measured, the deterministic trajectory can be monitored, and quantum jumps can be detected in real-time. Furthermore, we perform this with two observables that are set to be either commuting or non-commuting, demonstrating new quantum dynamics.

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