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**QND measurements of the Fluxonium artificial atom** NICHOLAS MASLUK, VLADIMIR MANUCHARYAN, ARCHANA KAMAL, JENS KOCH, LEONID GLAZMAN, MICHEL DEVORET, Yale University — We present Quantum Non-Demolition (QND) measurements of a Fluxonium qubit, which utilizes a Josephson junction array inductance to shunt the junction of a Cooper-pair box qubit. The Cooper-pair box is coupled capacitively to a readout cavity, which assesses the state of the qubit through a dispersive shift of the cavity frequency. By sending a microwave pulse at the cavity frequency and monitoring the phase of the reflected signal, a direct measurement of the qubit state is acquired after a preparation pulse. We will discuss the QND nature of the measurement, the use of sideband transitions for preparing the qubit state, and the prospect for single shot QND readout.

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