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Suppression of photon shot noise dephasing in a tunable coupling superconducting qubit GENGYAN ZHANG, YANBING LIU, JAMES RAFTERY, ANDREW HOUCK, Princeton University — We report on the suppression of photon shot noise dephasing in a tunable coupling qubit (TCQ). This is achieved by eliminating the dispersive coupling rate, χ, between the TCQ and the readout cavity. We observe that the coherence time approaches twice the relaxation time and becomes less sensitive to thermal photon noise when χ is tuned close to zero. Experimental results of tunable χ and its impact on qubit coherence will be presented.

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