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Experimental investigation of a nonequilibrium delocalization-localization crossover of photons in circuit quantum electrodynamics JAMES RAFTERY, DARIUS SADRI, MYKOLA BORDYUH, DEVIN UNDERWOOD, WILLIAM SHANKS, SRIKANTH SRINIVASAN, Princeton University, SEBASTIAN SCHMIDT, ETH Zurich, HAKAN TURECI, ANDREW HOUCK, Princeton University — We report measurements of the time-dynamics of a Jaynes-Cummings dimer. The dimer is fabricated in the circuit quantum electrodynamics (cQED) architecture, with two coupled resonators each coupled to a single transmon qubit. Such a system is predicted to exhibit three distinct behavioral regimes: delocalized, in which photons can oscillate between the two cavities; localized, in which photons are locked into a single cavity; and exiguous, in which extremely low photon numbers lead to the disappearance of locking. Dissipation in the system drives crossovers between the regimes. The experimental measurements of the on and off-site correlation functions will be presented.

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