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Electromagnetically induced transparency in circuit quantum electrodynamics HSIANG-SHENG KU, JUNLING LONG, XIAN WU, RUSSELL LAKE, NIST, XIU GU, YU-XI LIU, Institute of Microelectronics, Tsinghua University, China, DAVID PAPPAS, NIST — Electromagnetically induced transparency (EIT) is a phenomenon caused by quantum interference between distinct transition paths in a three-level system. In general, it is difficult to realize EIT in a system of three-level superconducting quantum circuit, because the decay rates and the Rabi frequency of the driving field do not normally satisfy the conditions for EIT. However, we propose to achieve EIT within a driven circuit quantum electrodynamics (cQED) system by creating polariton states and engineering the decay rates of their levels with the driving field. In this talk we present spectroscopic measurements of the polariton states that will enable demonstration of EIT within cQED.

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