

Abstract Submitted
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Towards Electromagnetically Induced Transparency in a Transmon SERGEY NOVIKOV, University of Maryland, Laboratory for Physical Sciences, J.E. ROBINSON, Laboratory for Physical Sciences, Z.K. KEANE, B. SURI, University of Maryland, Laboratory for Physical Sciences, F.C. WELLSTOOD, JQI, CNAM, University of Maryland, B.S. PALMER, Laboratory for Physical Sciences — We have observed the Autler-Townes (AT) doublet in a superconducting Al/AlO_x/Al transmon qubit that acts as an artificial atom embedded in a three-dimensional Cu microwave cavity at a temperature of 22 mK.¹ The long coherence time ($\sim 40 \mu\text{s}$) of the transmon enables us to observe a clear AT splitting, such that three-level density matrix simulations with no free parameters provide excellent fits to the data. Due to specifics of inter-level transition rates in the transmon, the regime of electromagnetically induced transparency (EIT) was not achievable. We will discuss our progress towards engineering the decay rates of the system with the goal of crossing over from the AT to EIT regime.

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