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Resonance photoluminescence from a single semiconductor quantum dot in a microcavity. A. MULLER, E.B. FLAGG, X.Y. WANG, Department of Physics, The University of Texas at Austin, D.G. DEPPE, College of Optics and Photonics (CREOL), University of Central Florida, W. MA, J. ZHANG, G.J. SALAMO, M. XIAO, Department of Physics, University of Arkansas, C.K. SHIH, Department of Physics, The University of Texas at Austin — The analogue of resonance fluorescence in atomic physics is demonstrated for the first time in a zero-dimensional solid-state system consisting of self-assembled InGaAs quantum dots. The dots were embedded in a planar microcavity so that the quantum dot emission, coupled to the resonant cavity modes, was effectively decoupled from the excitation field. The latter was introduced via waveguide modes with a fiber in a side-excitation configuration. The result is a background-free detection of a single quantum dot's photoluminescence which shows antibunched photon emission and can be driven into Rabi oscillations using pulsed excitation.

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