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Photoluminescence up-conversion of single quantum dots in a microcavity. E. B. FLAGG, A. MULLER, X. Y. WANG, Dept. 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, Dept. of Physics, The University of Texas at Austin — We have studied photoluminescence upconversion in single self-assembled InGaAs quantum dots that are embedded in a planar optical microcavity. Upconversion is generally thermal and can be characterized unambiguously due to the absence of inhomogeneous broadening. A side-excitation photoluminescence technique allows us to detect arbitrarily close to the laser line thereby distinguishing otherwise unresolvable energy splittings. This allows the investigation of upconversion as a function of both temperature and energy separation.

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