Abstract Submitted
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Coherent excitonic resonances of natural quantum dots studied with optical 2D Fourier transform spectroscopy[1] GALAN MOODY, ALAN BRISTOW, MARK SIEMENS, XINGCAN DAI, JILA, National Institute of Standards and Technology, and University of Colorado, DENIS KARAISKAJ, JILA, National Institute of Standards and Technology, University of Colorado, and University of South Florida, STEVEN CUNDIFF, JILA, National Institute of Standards and Technology, and University of Colorado — Optical 2D Fourier transform spectroscopy [1] is used to study the coherent nonlinear response from interfacial (or "natural") GaAs quantum dots [2], found within the monolayer fluctuations of a quantum well. The low temperature ($\sim$6K) spectra show excitonic resonances from both the quantum dots and the quantum well, the former having a larger inhomogeneous distribution and narrower homogeneous linewidth. Variation of the population time delay (of the excitation sequence) and lattice temperature reveals a coupling associated with the phonon mediated, incoherent relaxation from the quantum well states to the lower energy quantum dots. [1] S. T. Cundiff, T. Zhang, A. D. Bristow, D. Karaiskaj, X. Dai, Acc. Chem. Res. **42**, 1423 (2009). [2] D. Gammon, E.S. Snow, B.V. Shanabrook, D.S. Katzer, and D. Park, PRL **76**, 3005 (1996).

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Galan Moody
JILA, National Institute of Standards and Technology
and University of Colorado

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