Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Reflection Geometry Electronic Two-dimensional Fourier Transform Spectroscopy[1] THOMAS W. JARVIS, ZHENG SUN, XIAOQIN LI, Department of Physics, University of Texas at Austin, Austin, Texas 78712, MIKHAIL EREMENTCHOUK, MICHAEL N. LEUENBERGER, NanoScience Technology Center & Department of Physics, University of Central Florida, Orlando, Florida 32826 — Studying dynamics in nanostructures is vital to develop new opto-electronic devices and to understand fundamental processes in the solid state. Electronic Two-dimensional Fourier Transform Spectroscopy (2DFTS) is a powerful technique that coherently probes the nonlinear optical polarization, establishing correlations between absorption and subsequent emission or dispersion. We perform 2DFTS in reflection, a novel experimental geometry that allows us to probe structured materials. The coupling features and dimensionally extended lineshapes revealed by 2DFTS provide a description of decoherence and dephasing processes, coherent and incoherent energy transfer, and relaxation.

[1]This work is supported financially by ARO, NSF, ONR, Welch Foundation, Texas-ARP, and the Alfred P. Sloan Foundation.

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Date submitted: 26 Nov 2010 Electronic form version 1.4