Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

**Dephasing of excitons in single ZnSe quantum wells using 30 fs pulses** PRADEEP BAJRACHARYA, HANS-PETER WAGNER, SUVRANTA K. TRIPATHY, HANS-PETER TRANITZ, Department of Physics, University of Cincinnati, Cincinnati, Oh, 45221 — The dephasing of excitons in homogenously broadened 10nm wide ZnMgSe/ZnSe single quantum wells is investigated using ultra short (<30fs) light pulses in two beam and three beam four wave mixing (FWM) configuration. The observed FWM traces show marked quantum beats due to excitation of higher exciton transitions within the 80 meV spectrally broad pulses. For pulse delay times shorter than 500 fs, non-Markovian signal decay is observed. For longer delay times the exciton dephasing becomes single exponential indicating the transition from quantum kinetics to classical Boltzmann kinetics. Intensity and polarization dependent FWM measurements give further information on the physical nature and scattering processes that take place in both time regimes. This work is supported by the National Science Foundation (DMR-0305076).

Pradeep bajracharya
Department of Physics, University of Cincinnati, Cincinnati, Oh, 45221

Date submitted: 30 Nov 2005 Electronic form version 1.4