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Ultrafast intensity-dependent dephasing in CdSe nanocrystals¹ JESSICA FREEMAN, QIGUANG YANG, JAETAE SEO, Department of Physics, Hampton University, Hampton, VA 23668, WILLIAM YU, Department of Chemistry and Biochemistry, Worcester Polytechnic Institute, Worcester, MA 01609, SUNG-SOO JUNG, Korea Research Institute of Standards and Science, Daejeon, 305-600, South Korea, BAGHER TABIBI, DOYLE TEMPLE, Department of Physics, Hampton University, Hampton, VA 23668 — The intensity-dependent photon-echo relaxation time in CdSe nanocrystals at room temperature was investigated using femtosecond-resolved forward degenerate four-wave mixing (DFWM) at 775 nm. Our studies show that as the intensity of the excitation pulse increased the dephasing time of CdSe decreased. The dependency of the dephasing time on the pump intensity is due to instantaneous spectral diffusion which may be caused by collision of the light generated excitons with other excitons, phonons, and/or surface defects. The third-order nonlinear susceptibility of the sample was also measured and will be discussed.

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