

Abstract Submitted  
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**Spectral Road Map of Strain-Split Bulk GaAs Excitons: Evidence of Excitation-Induced Dephasing** DANIEL WEBBER, KIMBERLEY HALL, Dalhousie University, BRIAN WILMER, ALAN BRISTOW, West Virginia University, XINYU LIU, MARGARET DOBROWOLSKA, JACEK FURDYNA, University of Notre Dame — Thin films of bulk GaAs studied with two-dimensional coherent spectroscopy reveal strain-split heavy- (HH) and light-hole (LH) excitons with quantum interference. Excitation overlapping the HH continuum show strong excitation-induced dephasing (EID) and emission at the HH exciton for collinear polarization. The results are consistent with excitations beyond the perturbative  $\chi^{(3)}$  regime. Cross-linear polarization suppresses the HH emission and enhances the LH exciton as well as HH biexciton emission. Two-quantum spectra at low excitation concentrations are also consistent with HH and LH exciton interference and EID. Results are compared to four-wave mixing transients that require modelling for interpretation.

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