183. Title: All-optical generation of coherent in-plane charge oscillations in GaAs quantum wells

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Abstract: We have induced ultrafast charge oscillations in the plane of an unbiased and undoped (110)-oriented GaAs quantum well by coherent optical excitation of heavy-hole and light-hole exciton transitions. The oscillations arise from an in-plane charge displacement between heavy-hole and light-hole states, which results from the periodic parts of the Bloch wave functions and the (110) orientation. The observations are evidence for the existence of a substantial far-infrared transition-dipole moment between heavy- and light-hole subbands for in-plane wave vectors, which we estimate to be similar to 0.5 e angstrom for the quantum well under study. Our findings might prove important for designs of far-infrared detectors and emitters.