185. Title: Terahertz nonlinear optics using intra-excitonic quantum well transitions: Sideband generation and AC Stark splitting

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Abstract: We present experiments investigating nonlinear optics in the terahertz (THz) range related to the 1s-2p intra-excitonic heavy-hole transition in GaAs/AlGaAs multiquantum wells (MQWs). Driven by intense THz fields of the Dresden free-electron laser the system exhibits two different phenomena: (i) we observe efficient near-infrared (NIR) sideband generation as a perturbative effect in the transmission of a narrowband NIR laser, and (ii) we present unambiguous evidence for the intra-excitonic Autler-Townes splitting, a non-perturbative effect.