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The effects of quenched disorder on high-order sideband generation in GaAs/AlGaAs quantum wells[1] HUNTER BANKS, DARREN VALOVCIN, Physics Department, UCSB, SHAWN MACK, Naval Research Lab, ARTHUR GOSSARD, Materials Department, UCSB, LOREN PFEIFFER, Department of Electrical Engineering, Princeton University, MARK SHERWIN, Physics Department, UCSB — When a near-IR laser resonantly pumps excitons into a strong terahertz field, individual excitons tunnel ionize and the resulting electrons and holes are driven apart and then back together by the terahertz field. Resulting recollisions create a large number of sidebands around the pump frequency, in the process of high-order sideband generation (HSG) [1]. The high kinetic energy of the electron-hole recollisions yields substantial information about the underlying structure of the individual excitons as well as the interaction of energetic single electrons and holes with each other, the lattice, and quenched disorder at sub-micron length scales. We present a comparison of smooth-walled GaAs quantum wells with 5[1] B. Zaks, et al., Nature 483 (7391), 580 (2012) and H. Banks, et al., Physical Review Letters 111, 267402 (2013)

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