

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Time Resolved Spectroscopy of InSb Quantum Wells Using Differential Transmission Technique¹ K. NONTAPOT, M. BHOWMICK, G.A. KHODAPARAST, Virginia Tech, S.J. CHUNG, M.B. SANTOS, University of Oklahoma — The growing interest in spin-related phenomena and devices has prompted intense activity in the science and engineering of narrow gap semiconductors (NGS). NGS offer several scientifically unique features such as small effective masses, large g-factors, high intrinsic mobilities, and large spin-orbit coupling effects. In this work we report the dynamics of photo-excited carrier/spin in several InSb/ $\text{Al}_x\text{In}_{1-x}\text{Sb}$ based quantum wells (QWs) using differential transmission spectroscopy. The InSb QW layers were selectively pumped and probed by mid-infrared pulses to avoid possible contributions from the barrier materials. We compare our results with the earlier measurements using magneto-optical Kerr (MOKE) effect. Our results are important to understand different relaxation mechanisms in NGS with strong-spin orbit interactions.

¹Supported by: NSF-DMR-0507866, NSF-DMR-0520550.

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Date submitted: 20 Nov 2008

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