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Spin and Charge Relaxations in Magnetic and Non-magnetic Narrow-gap Semiconductors K. NONTAPOT, A. GIFFORD, T. MERRITT, G. A. KHODAPARAST, Department of Physics, Virginia Tech., S. J. CHUNG , N. GOEL , M. B. SANTOS, Department of Physics and Astronomy, University of Oklahoma, T. WOJTOWICZ, X. LIU, J. K. FURDYNA, Department of Physics, University of Notre Dame — In light of the growing interest in spin-related phenomena and devices, there is now renewed interest in the science and engineering of narrow gap semiconductors. Narrow gap semiconductors offer several scientifically unique features such as a small effective mass, a large g-factor, a high intrinsic mobility, and large spin-orbit coupling effects. We will discuss our recent time resolved studies on InSb quantum wells with symmetric and asymmetric confinement potentials and InMnSb ferromagnetic structures with different Mn contents. We have measured the carrier and spin dynamics by degenerate and non-degenerate pump-probe and Kerr effect spectroscopy at different temperatures and laser intensities in these unique structures with strong spin-orbit interaction. Supported by NSF-DMR-0507866, Jeffress-J748, NSF-DMR02-45227, NSF Grant No. DMR-0510056 and DMR-0520550

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