

Abstract Submitted
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Theory of Electron Spin Relaxation in n-Doped Quantum Wells¹ NICHOLAS HARMON, WILLIAM PUTIKKA, The Ohio State University, ROBERT JOYNT, University of Wisconsin — Recent experiments have demonstrated long spin lifetimes in uniformly n-doped quantum wells. The spin dynamics of exciton, localized, and conduction spins are important for understanding these systems. We explain experimental behavior by invoking spin exchange between all spin species. By doing so we explain quantitatively and qualitatively the striking and unusual temperature dependence in (110)-GaAs quantum wells. We discuss possible future experiments to resolve the pertinent localized spin relaxation mechanisms. Our analysis allows us to suggest possible experimental scenarios that will optimize spin relaxation times in GaAs and CdTe quantum wells.

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