Pump-and-probe measurements of the nuclear spin relaxation time in a two-subband electron system
HONG PAN, HONGWEN JIANG,
Department of Physics and Astronomy, University of California at Los angeles —
Nuclear spin relaxation measurements are emerging as an effective tool to study the low-frequency spin dynamics of two-dimensional electrons in quantum Hall systems. We present such a measurement in a two-dimensional electron system consisting of two filled subbands. A recently developed pump-and-probe technique [1] was used to obtain the nuclear spin relaxation time in a region where the two sets of Landau levels, corresponding to the two subbands, were nearly degenerate. The pump-and-probe technique allowed us to measure the relaxation time over a much broader range of magnetic fields and electron densities than that in an earlier nuclear magnetic resonance study [2]. An array of interesting observations will be reported, including phase space and temperature dependence study. The project is supported by the NSF under Grant No. DMR-0804794.