

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

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.

[1] N. Kumada, K. Muraki, and Y. Hirayama, *Science* 313, 329 (2006).

[2] X. C. Zhang, G. D. Scott and H. W. Jiang, *Phys. Rev. Lett.* 98,246802 (2007).

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Date submitted: 14 Dec 2009

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