

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Resonant Enhancement of Inelastic Light Scattering in the Fractional Quantum Hall Regime at  $\nu = 1/3$**  C.F. HIRJIBEHEDIN, IRENE DUJOVNE, Columbia U. and Bell Labs, I. BAR-JOSEPH, Weizmann Inst., A. PINCZUK, Columbia U. and Bell Labs, B.S. DENNIS, L.N. PFEIFFER, K.W. WEST, Bell Labs — Strong resonant enhancement of the inelastic light scattering cross-section is essential in obtaining the sensitivity required to observe inter-Landau level and the intra-Landau level charge and spin density excitations in fractional quantum Hall liquids. We find that at  $\nu = 1/3$  the energies of the sharp peaks in the resonant enhancement profiles of inelastic light scattering intensities coincide with the energies of optical excitations measured in photoluminescence, which recently have been assigned to negatively charged excitons. To interpret the observed enhancement profiles, we propose light scattering mechanisms in which the intermediate resonant transitions are to states with charged excitonic excitations. This work is supported by the NSF under Award Number DMR-03- 52738 and by the DoE award DE-AIO2-04ER46133. It is also supported by a research grant of the W. M. Keck Foundation. \*Present address: IBM-Almaden Research Center

Cyrus Hirjibehedin  
IBM

Date submitted: 30 Nov 2004

Electronic form version 1.4