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Time Dependent Magnetotransport of Imbalanced Bilayer Two Dimensional Hole Systems SHASHANK MISRA, Princeton University, NATHANIEL C. BISHOP, Princeton University, EMANUEL TUTUC, IBM/ T.J. Watson Research Center, MANSOUR SHAYEGAN, Princeton University — The magnetotransport of a two dimensional hole layer in close proximity to a second layer tuned to the $\nu = 1$ quantum Hall state exhibits correlations novel to the bilayer geometry. Previous experiments have shown the resistivity of the detuned layer to be hysteretic when sweeping the magnetic field, and to exhibit jumps as a function of time when staying at a fixed field.[1] We find that allowing the system to relax in middle of taking a hysteresis loop results in the magnetoresistance following a curve in between the two branches of the hysteresis loop, a hallmark of a glassy system. We further find that the seemingly random resistance jumps occur at similar times in separate measurements, each performed upon resetting the bilayer state. Work performed with support from the NSF and DOE.

[1] E. Tutuc *et al.*, PRB **68**, 201308 (2003).

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