

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Transport in Coherent Quantum Hall Bilayers¹ ALLAN MACDONALD, DMYTRO PESIN, The University of Texas at Austin, Austin, TX — We develop an approach to describe transport in bilayer quantum Hall systems in which coherence is established spontaneously between layers. We use Landauer-Buttiker theory with phenomenological parameters which can be fit to experimental data to describe quasiparticle transport in bilayers with strong coherence. We use the above approach to calculate two-probe conductances for various experimental configurations. We also apply the formalism to describe high-current transport in a bilayer with a time-dependent condensate. To describe the transition from strong to weak coherence, we use a phenomenological single “relaxation length” ansatz for contact-to-contact transmission coefficients. As an application, we consider longitudinal drag, and find a good agreement with experiment in the regime of well-developed Quantum Hall Effect.

¹Supported by Welch Foundation grant F1473, and by the ARO MURI on bioassembled nanoparticle arrays

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Date submitted: 04 Dec 2010

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