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Quantitative Theory of Tunneling in a Bilayer System in a Strong Magnetic Field[1] YUHE ZHANG, JAINENDRA K. JAIN, Pennsylvania State Univ, J. P. EISENSTEIN, California Institute of Technology — Tunnel transport in a bilayer system provides valuable insight into the strongly correlated non-Fermi liquid nature of the composite fermion Fermi sea and FQH states. We identify the peak current with a "hard" interlayer exciton, in which the tunneling electron is uncorrelated, modulo the Pauli avoidance, with the background state. This identification is supported by an accurate quantitative agreement of the calculated energy of the hard exciton with the experimentally measured value. The dependence of this energy on an additional parallel magnetic field is also quantitatively explained in terms of a lateral offset in the positions of the electron and hole of the exciton. We further estimate the critical Zeeman energy where transition occurs from a fully spin polarized composite fermion Fermi sea to a partially spin polarized one, carefully incorporating corrections due to finite width and Landau level mixing, and find it to be in very good agreement with the Zeeman energy where a qualitative change has been observed at small bias voltage in a recent experiment [Eisenstein *et al.*, Phys. Rev. B **94**, 125409 (2016)].

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