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**Clausius-Clayperon relation for onset of the coherent  $\nu = 1$  phase in bilayer quantum hall systems** YUE ZOU, GIL REFAEL, JAMES EISENSTEIN, Department of Physics, California Institute of Technology, Pasadena, CA 91125, USA, ADY STERN, Department of Condensed Matter Physics, Weizmann Institute of Science, Rehovot, Israel 76100 — A bilayer system of two-dimensional electron gases in a perpendicular magnetic field exhibits extremely rich phenomena. At total filling factor  $\nu = 1$ , as one increases the layer separation, the bilayer system goes from an interlayer coherent exciton condensed state to an incoherent phase of two decoupled composite fermion Fermi liquids. Many question still remain as to the nature of the transition between these two phases. Recent experiments investigated the phase boundary as a function of both in plane magnetic field and density imbalance. We compare these experimental results, e.g., the curvature of the phase boundary, with respect to the interlayer density imbalance, with a theoretical calculation based on the assumption that there is a direct first order transition between the two phases.

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