Abstract Submitted
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Ising Nematic in High Landau Levels[1] SAYAN BASAK, ERICA CARLSON, Purdue Univ — At low temperatures in ultraclean AlAs-AlGaAs heterojunctions, high fractional Landau levels break rotational symmetry. Lilly et al. [1] find that the transport properties are highly anisotropic at high Landau levels and low temperatures. Fradkin et al. [2] characterize the temperature dependence of the resistivity anisotropy as being in the Kosterlitz-Thouless universality class in the presence of a weak orientational symmetry breaking term. The weak symmetry breaking term rounds the transition and also allows for the development of a net resistivity anisotropy. Whereas a reasonably good match between the experiment and theory was found near and above the transition temperature (Fig. 2 of Ref. [2]), the simulation deviates significantly from the experimental data at low temperatures. We find that an Ising nematic in the presence of a weak symmetry breaking term captures the full temperature dependence.
[1] M. P. Lilly, K. B. Cooper, J. P. Eisenstein, L. N. Pfeiffer, and K. W. West, Phys. Rev. Lett. 82, 394 (1999).
[2] E. Fradkin, S. A. Kivelson, E. Manousakis, and K. Nho, Phys. Rev. Lett. 84, 1982 (2000).

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