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Theory of the quantum Hall nematic transition[1]

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The discovery of novel types of macroscopic order in quantum many-particle systems is an important goal of condensed matter physics. The fractional quantum Hall (FQH) nematic is a conjectured state of matter in which a fractional quantized Hall conductivity indicative of topological order coexists with the spontaneous breaking of rotational symmetry characteristic of a nematic liquid crystal. Recent experiments suggest that this state may form in 2D electron gases in the first Landau level. In this talk I will present a theory of the quantum phase transition between an isotropic FQH liquid and a FQH nematic state.

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