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Finite Temperature Effects of the Pressure-Driven Quantum Hall to Nematic Phase Transition in the Second Landau Level[1] KATHERINE SCHREIBER, NODAR SAMKHARADZE[2], GEOFFREY GARDNER, MICHAEL MANFRA, RUDRO BISWAS, GABOR CSATHY, Purdue University — The second Landau level of a two-dimensional electron gas is known to exhibit a rich variety of electronic phases which are close in energy. Within the second Landau level we have recently reported a pressure-driven quantum phase transition from a fractional quantum Hall state to an electronic nematic, or stripe, phase occurring at the Landau level filling factor 5/2. This phase transition is special as it is one of the very few known examples of a transition between a topologically ordered phase and a traditional Landau phase. We now report on the temperature dependence of the fractional quantum Hall state and the nematic phase at filling factor 5/2 as they evolve with pressure. In particular, we trace the energy gap of the fractional quantum Hall state and the onset temperature of the nematic state. From these measurements, we obtain a phase diagram of competing phases with topological and nematic orders.

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