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Evidence for the Collective Nature of the Reentrant Integer Quantum Hall States of the Second Landau Level ASHWANI KUMAR, Monmouth College, IL, NIANPEI DENG, MICHAEL MANFRA, Purdue University, LOREN PFEIFFER, KEN WEST, Princeton University, GABOR CSATHY, Purdue University — At low temperatures and in the presence of magnetic field, high quality two dimensional electron systems exhibit exotic states of matter such as fractional quantum states and the reentrant integer quantum Hall states (RIQHS). In this presentation we report a systematic study of RIQHS in the second Landau level. We observed an unexpected sharp peak in the temperature dependence of the magnetoresistance of the RIQHSs. This peak defines the onset temperature of these states. We find that in different spin branches the onset temperatures of the reentrant states scale with the Coulomb energy. This scaling provides direct evidence that Coulomb interactions play an important role in the formation of these reentrant states evincing their collective nature.

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