

Abstract Submitted
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Observation of a Fractional Quantum Hall State in the second Landau level of a two-dimensional hole system A. KUMAR, N. SAMKHARADZE, M. J. MANFRA, Department of Physics, Purdue University, L. N. PFEIFFER, K. W. WEST, Princeton University, G. A. CSATHY, Department of Physics, Purdue University — We report on a dc transport measurement of an exceptional two-dimensional hole system in a Carbon-doped GaAs/AlGaAs quantum well. In a setup which is similar to that of Ref.[1] our sample and the attached sintered silver heat exchangers are immersed into a He-3 bath which can be cooled to 5 mK. The most striking feature of this sample is the presence of a fractional quantum Hall state at Landau level filling factor $\nu=2+2/3$ with an energy gap of 40mK. This state has only been observed in electron samples so far. While in electron samples the $\nu=2+2/3$ state is always observed together with the $\nu=2+1/3$ state, the latter one is not present in our hole sample. We compare our results with results of previous studies in electron systems and we examine the role of the disorder and of the Landau level mixing on the activation energy gap. [1] W. Pan, J.-S. Xia, V. Shvarts, D. E. Adams, H. L. Stormer, D. C. Tsui, L. N. Pfeiffer, K. W. Baldwin, and K. W. West, Phys. Rev. Lett. **83**, 3530 (1999)

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