

Abstract Submitted
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Magnetotransport of a high mobility two-dimensional electron system exhibiting features beyond Anderson localization in the $\nu=1$ integer quantum Hall state¹ SEAN MYERS, HAOYUN HUNG, Purdue University, LOREN PFEIFFER, KEN WEST, Princeton, GABOR CSATHY, Purdue University — Through continual advancements in sample growth procedures, GaAs quantum wells host two-dimensional electron systems with extremely low disorder and remarkably high mobilities. In a sample belonging to the newest generation having record high mobilities, we observe a pattern of structures in the magnetotransport near the integer quantum Hall state at the filling factor $\nu = 1$, which reveals electron localization effects beyond Anderson localization. The range of filling factors displaying the complex structure of magnetotransport overlaps with that of prior microwave absorption features of the Wigner solid in the flanks of integer quantum Hall plateaus. Moreover, the transport signatures are also consistent with the formation of the Wigner solid. Our measurements show that, contrary to the widely held belief, the Wigner solid in the flanks of integer quantum Hall plateaus does have signatures in dc transport in the cleanest electron gases and indicate the possibility of enriched physics in the latest generation of high mobility samples.

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