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Transport measurements of GaAs/AlGaAs devices in the "anti-Hall-bar within a Hall bar" geometry[1] ANNIKA KRIISA, Emory University, RAMESH MANI, Georgia State University — Hall effect measurements are often carried out in the Hall geometry, which is a thin rectangular plate with current and Hall voltage contacts at the external boundary. The motivation of this study is to further understand the impact on Hall effect when a hole is inserted inside the Hall geometry. One way on conducting this investigation is to superimpose an "anti-Hall bar" inside the standard Hall bar, where the anti Hall bar is actually the hole inside the Hall device with contacts on the inside boundary of this hole. This configuration is thought to generate an ordinary Hall effect within the interior boundary. One believes that it might also be possible to simultaneously realize multiple independent Hall effects by injecting multiple currents into the multiply connected device [1]. We have experimentally studied the Hall effect in the doubly connected "anti-Hall bar within a Hall bar" geometry fabricated out of the GaAs/AlGaAs semiconductor system, and convey the results in this presentation.

[1] R. G. Mani and K. von Klitzing, Z. Phys. B 92, 335 (1993).

[1]ARO W911NF-07-01-0158

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