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Symmetries of the Resistance of Mesoscopic Samples in the Quantum Hall Regime EINAT PELED, DAN SHAHAR, The Weizmann Institute of Science, Israel, YONG CHEN, ENRIQUE DIEZ[1], Princeton University, USA, DEBORAH L. SIVCO, ALFRED Y. CHO, Bell Laboratories, USA — We present an experimental study of the symmetries of the resistance of mesoscopic samples in the quantum Hall regime. The samples we use are small Hall-bars, prepared from low-mobility InGaAs/InAlAs wafers. The four-terminal resistances of these samples display large reproducible fluctuations that are unique to the contact configuration used in the measurements. We find that the samples obey new symmetries, in addition to the reciprocity relation, relating the longitudinal and Hall resistances of different contact configurations and magnetic- field (B) polarities. These symmetries include the fine details of the resistance fluctuations. The resistances in the vicinity of all integer quantum Hall transitions are found to follow one of two possible sets of symmetries, one on the low-B side and the other on the high- B side of the transitions.

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