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Measurement of integer and fractional quantum Hall states in electronic Fabry-Perot interferometers. JAMES NAKAMURA, QI QIAN, MICHAEL MANFRA, Purdue University, ROBERT WILLETT, Bell Laboratories, SAEED FALLAHI, GEOFFREY GARDNER, Purdue University — Here we present measurements of electronic Fabry-Perot interferometers operating in the quantum Hall regime. Fabry-Perot interferometry can be used to extract the effective charge and statistics of quasiparticles at fractional states. The devices are fabricated on high mobility GaAs/AlGaAs heterostructures and are measured in a dilution refrigerator at T˜10mK. We have measured Coulomb blockade oscillations at numerous integer states as well as at the ν =5/3 fractional quantum Hall state; this allowed us to extract an effect charge e* = e/3 at ν = 5/3. Efforts are underway to fabricate interferometers which can operate in the pure Aharonov-Bohm regime, where quasiparticle statistics can be probed, and to extend these results to fractional states in the 2nd Landau level.

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