Measurement of integer and fractional quantum Hall states in electronic Fabry-Perot interferometers. JAMES NAKAMURA, QI QIAN, MICHAEL MANFRA, Purdue University, ROBERT WILLET, Bell Laboratories, SAEED FALLAHII, 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 $\nu = 5/3$ fractional quantum Hall state; this allowed us to extract an effect charge $e^* = e/3$ at $\nu = 5/3$. 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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