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Distinct Signatures For Coulomb Blockade and Aharonov-Bohm Interference in Electronic Fabry-Perot Interferometers[1] YIMING ZHANG, DOUGLAS MCCLURE, ELI LEVENSON-FALK, CHARLES MARCUS, Harvard University, LOREN PFEIFFER, KEN WEST, Bell Labs, Alcatel-Lucent — Two different types of resistance oscillations are observed in two electronic Fabry-Perot interferometers of different sizes. Measuring these oscillations as a function of magnetic field, gate voltage, or both, we observe three signatures that distinguish the two types. The oscillations observed in a 2 μm^2 device are understood to arise from Coulomb blockade, and those observed in an 18 μm^2 device from Aharonov-Bohm interference. This work clarifies, provides ways to distinguish, and demonstrates control over, the physical origins of resistance oscillations seen in electronic Fabry-Perot interferometers.

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