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Transition from Coulomb Diamonds to Checherboard-like Spectroscopies in a Mesoscopic Quantum Hall Interferometer S. FANIEL, F. MARTINS, V. BAYOT, B. HACKENS, NAPS/IMCN, Universite catholique de Louvain, Belgium, L. DESPLANQUE, X. WALLART, IEMN, Villeneuve d'Ascq, France, B. ROSENOW, Institute for Theoretical Physics, Leipzig University, Germany, S. MELINTE, ELEN/ICTM, Universite catholique de Louvain, Belgium — We report low temperature ($\sim$ 100 mK) magnetotransport, scanning gate microscopy and scanning gate spectroscopy measurements in an $In_{0.7}Ga_{0.3}As/In_{0.52}Al_{0.48}As$ quantum point contact (QPC). The magnetoresistance of the QPC shows oscillations in the vicinity of integer quantum Hall states. We attribute these magnetoresistance oscillations to the formation of an electron interferometer around a small, disorder-induced quantum Hall island located within the constriction. The magnetic field B tunes the edge states configuration in the QPC, leading to different signatures in the transport measurements. Interestingly, near the Landau level filling factor $\nu = 3$, the spectroscopy measurements performed on the quantum Hall interferometer, as a function of B or scanning gate tip voltage, exhibit a smooth transition from Coulomb diamonds to a checkerboard pattern.

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