

Abstract Submitted
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Momentum resolved transport spectroscopy of quantum Hall edges in a bent quantum well¹ LUCIA STEINKE, A. FONTCUBERTA I MORRAL, M. BICHLER, G. ABSTREITER, Tech. Univ. Muenchen, M. GRAYSON, Northwestern University — A new magnetic field orientation is introduced for a bent quantum well, such that momentum-resolved edge-state spectroscopy is possible up to fractional filling factors. A bent quantum well (BQW) provides a unique way of coupling to quantum Hall edges when the junction length is reduced to the mean free path $\sim 10\mu\text{m}$, constituting a weak link between the two facets. With a magnetic field B perpendicular to one facet, the other facet can probe momentum-resolved transport spectroscopy of the edge states even though no barrier is present. We measure the differential conductance dI/dV across the BQW junction as a function of the dc bias voltage V_{dc} at magnetic fields between 0 and 18 T ($\nu < 1/3$). Above 1.5 T a conductance-suppression gap evolves around zero bias, and resonance peaks are observed at the gap edges, reminiscent of previous momentum-resolved work. The gap size increases and at 6 T becomes asymmetric, with one of the flanking resonances becoming stationary and extremely sharp. These main features can be interpreted in terms of momentum resolved coupling, and the positions of these features are in good quantitative agreement with Hartree calculations of this system.

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