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Coulomb drag in quantum circuits¹ ALEX LEVCHENKO, Argonne National Laboratory, ALEX KAMENEV, University of Minnesota — We study drag effect in a system of two electrically isolated quantum point contacts (QPC), coupled by Coulomb interactions. Drag current exhibits maxima as a function of QPC gate voltages when the latter are tuned to the transitions between quantized conductance plateaus. In the linear regime this behavior is due to enhanced electron-hole asymmetry near an opening of a new conductance channel. In the nonlinear regime the drag current is proportional to the shot noise of the driving circuit, suggesting that the Coulomb drag experiments may be a convenient way to measure the quantum shot noise. Remarkably, the transition to the nonlinear regime may occur at driving voltages substantially smaller than the temperature.

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