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Coulomb drag from spinon-holon coupling RODRIGO PEREIRA, KITP - Santa Barbara, ERAN SELA, University of Cologne — We discuss the density and temperature dependence of the Coulomb drag resistivity due to long-wavelength scattering between quantum wires, based on an approximation for the dynamic charge response of nonlinear spin-1/2 Luttinger liquids. Besides accounting for the broadening of the charge peak in the dynamic charge response due to two-holon excitations, the nonlinearity of the dispersion gives rise to a two-spinon peak, which at zero temperature has an asymmetric line shape. When the charge velocity of one wire matches the spin velocity of the other wire, the drag resistivity is enhanced by holon-spinon scattering, and its temperature dependence has signatures of spin diffusion. This effect opens the possibility of observing spin-charge separation in Coulomb drag experiments.

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