Abstract Submitted
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Spin Coulomb Drag in the Hubbard Chain[1] PEDRO SCHLOTTMANN, Florida State University — The spin Coulomb drag is the decay of the spin current in a metal as a consequence of the Coulomb interaction between up- and down-spin carriers and is a distinctive feature of spin- polarized transport. The current of majority spins can induce a current of minority spin carriers via the transresistivity. This friction reduces the current but does not change the spin- polarization.[2] We calculate the critical exponents of the resistivity for up- and down-spin electrons and the transresistivity for the spin-polarized Hubbard chain with nonmagnetic impurities within the Kubo formalism using (1) bosonization techniques[3] and (2) the Bethe ansatz solution and conformal invariance.[4] The charge-spin separation in 1D is strictly valid only in the absence of spin-polarization. Due to the Luttinger liquid properties the temperature dependence of the transport correlation functions follow power laws of T with non-universal exponents. A large spin polarization is more favorable for a sustained spin current than a small magnetization.

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[3]P. Schlottmann, Phys. Rev. B **80**, 205110 (2009).
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