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Boundary Green's Function for Spin-incoherent Interacting Electrons in One Dimension PAATA KAKASHVILI, Chalmers University of Technology, HENRIK JOHANNESSON, Göteborg University — Recently the spin-incoherent regime of 1D strongly interacting, very low density electrons has attracted a lot of interest[1,2]. For sufficiently low densities the potential energy dominates the kinetic energy, driving the system towards a Wigner crystal and leading to an exponentially small spin exchange energy. One can then easily reach the spin-incoherent regime where the exchange energy is much less than the temperature. The physics of the spin-incoherent regime has been addressed using Bethe's Ansatz and a bosonized path integral approach, revealing that the spin incoherence dramatically influences the correlations of charge excitations. We have generalized the description to account for the presence of a boundary. By calculating the exact Green's function we find that the charge sector exponent is highly sensitive to the boundary, strongly modifying the tunneling of electrons close to it. Our approach also allows for a detailed description of the crossover between boundary and bulk regimes.

1. V.V. Cheianov and M.B. Zvonarev, PRL 92, 176401 (2004)
2. G.A. Fiete and L. Balents, PRL 93, 226401 (2004)

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