

Abstract Submitted
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Electrical and thermal transport in inhomogeneous quantum wires¹ WADE DEGOTTARDI, K.A. MATVEEV, Argonne National Laboratory — We present a theoretical study of the transport properties of long quantum wires. Our theory accounts for long-range disorder and electron interactions of arbitrary strength, both of which are expected to be crucial to an understanding of experimental results. Our approach involves extending the usual bosonization scheme to account for the finite lifetime of the excitations. We cast our results in terms of the thermal conductivity and bulk viscosity of the electron liquid. At sufficiently high temperatures, we show that our results reduce to those expected from classical hydrodynamics.

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