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Conductance of a fully equilibrated quantum wire[1] TOBIAS MICKLITZ, JEROME RECH, K. A. MATVEEV, Argonne National Laboratory — We study electronic transport properties of a long weakly interacting homogeneous quantum wire, connected to non-interacting leads. From Galilean invariance of the system we infer that in a state with a finite electric current, the electrons reach thermal equilibrium in a frame moving with their drift velocity. At non-zero temperature the resulting distribution function inside the wire is slightly different from the distribution supplied by the leads. This gives rise to a small correction to the quantized value of conductance $2e^2/h$, which can be found by performing a careful analysis of the conservation laws. The correction is of the order of $(T/E_F)^2$ and does not depend on the details of the electron-electron interaction.

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