Transport of strongly interacting Fermions through a quantum point contact

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Abstract

We investigated the transport of interacting Fermions at a quantum point contact, as a function of temperature and interaction strength. The weakly interacting Fermi gas shows universal conductance quantization in units of 1/h. For moderate interaction strength or finite temperature at unitarity, we observe significant departures from the predictions of the Landauer formula, indicating a non Fermi liquid character of the gas. The superfluid behaviour at unitarity is characterized by a non-linear I-V characteristic, which is well reproduced by a model based on Andreev reflections.

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