Mesoscopic transport with cold atoms

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Abstract

I will present transport experiments with cold Fermi gases in a two terminal Landauer-type configuration. I will describe measurements of conductances and thermoelectric power in a semi-classical, multimode regime. There, we observed a large enhancement of the thermopower with the controlled addition of disorder. We measured the thermodynamic efficiency of the thermoelectric element as a function of geometry and disorder, showing a high figure of merit. I will then describe new results obtained for particle transport in the single-mode regime, with various geometries and interaction strength, demonstrating the ability to control quantum transport of cold atoms at the microscopic level.

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