

Abstract for an Invited Paper
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Spin and charge transport in a carbon nanotube spin diode¹

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I will describe the measurements of asymmetric conductance and the current shot noise through a carbon nanotube quantum dot with one ferromagnetic and one normal-metal lead. The observed asymmetry is spin-dependent, and stems from the interplay between the spin accumulation and the Coulomb blockade on the quantum dot. The results imply that the current is spin-polarized for one direction of the bias, and that the degree of spin polarization is fully and precisely tunable using the gate and bias voltages. As the operation of this spin diode does not require magnetic fields or optics, it could be used as a building block for electrically controlled spintronic devices.

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