

Abstract for an Invited Paper
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The classical limit of quantum transport¹

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Weak localization and conductance fluctuations are manifestations of quantum interference on transport. These quantum effects take a finite time, the Ehrenfest time, to appear. We present a semiclassical calculation of the Ehrenfest time dependence of weak localization and conductance fluctuations for ballistic quantum dots. Weak localization is found to be suppressed when the Ehrenfest time is larger than the typical dwell time in the dot. In contrast, the conductance fluctuations are found to be Ehrenfest time independent. The calculated Ehrenfest time dependences are consistent with numerical results.

¹Work done in collaboration with Piet W. Brouwer, Cornell University.