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Transport through chaotic cavities: random matrix theory results reproduced from semiclassics

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Abstract

Transport properties (conductance and its variance, shot noise, Ericsson fluctuations) are expressed in the semiclassical limit as sums over correlated pairs or quadruplets of the entrance-to-exit trajectories ("bunches"). Diagrammatic rules are formulated for contributions of topological elements of the bunches. Expansions are obtained in inverse powers of the number of open channels. Both pure symmetry classes and crossover in the external magnetic field are considered; summation over all orders leads to closed expressions agreeing with RMT.