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Decoherence in Ballistic Mesoscopic Interferometers

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**Abstract:** We provide a theoretical explanation for two recent experiments on decoherence of Aharonov-Bohm oscillations in two- and multi-terminal ballistic rings. We consider decoherence due to charge fluctuations and emphasize the role of charge exchange between the system and the reservoir or nearby gates. A time-dependent scattering matrix approach is shown to be a convenient tool for the discussion of decoherence in ballistic conductors.

 [Keywords](#)  
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**Key Words:** Charge fluctuations, decoherence



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