Aharonov-Bohm ring with fluctuating flux

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We consider a noninteracting system of electrons on a clean one-channel Aharonov-Bohm ring that is threaded by a fluctuating magnetic flux. The flux derives from a Caldeira-Leggett bath of harmonic oscillators. We address the influence of the bath on the following properties: one- and two-particle Green's functions, dephasing, persistent current, and visibility of the Aharonov-Bohm effect in cotunneling transport through the ring. For the bath spectra considered here (including Nyquist noise of an external coil), we find no dephasing in the linear transport regime at zero temperature.

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