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Title: **Persistent currents for ultracold fermions on a ring**

We study the persistent currents of an interacting Fermi gas confined in a tightly confining ring trap and subjected to an artificial gauge field. For attractive interactions, we study the currents all through the BCS-BEC crossover. At weak attractions, on the BCS side, fermions display a parity effect in the persistent currents, i.e. their response to the gauge field is paramagnetic or diamagnetic depending on the number of pairs on the ring. At resonance and on the BEC side of the crossover, we find a halving of the periodicity of the ground-state energy as a function of the artificial gauge field and disappearance of the parity effect, indicating that persistent currents can be used to infer the formation of tightly-bound bosonic pairs. We analyze then the readout of current states by spiral interferograms, showing that Fermi gases display an intrinsic reduction of coherence. Finally we show that the spin-resolved density-density correlator obtained from the expanding fermions at long times allows to probe the halving of the periodicity of the persistent currents and also yields information on quasi-off diagonal long range order.