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JOHANNES GUTENBERG UNIVERSITÄT MAINZ

Theory of Condensed Matter: Hard Condensed Matter

May 27, 2014 at 10 a.m.
Seminar Room K, Building 2/413

J.-Prof Dr. Matteo Rizzi
Mainz

Optimal persistent currents for interacting bosons on a 1D ring with a gauge field

We study persistent currents for interacting one-dimensional (1D) bosons on a tight ring trap, subjected to a rotating barrier potential, which induces an artificial $U(1)$ gauge field.
We show that, at intermediate interactions, the persistent current response is maximal, due to a subtle interplay of effects due to the barrier, the interaction and quantum fluctuations.
These results are relevant for ongoing experiments with ultracold atomic gases on mesoscopic rings.

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