
Unconventional dynamics and the self-organization of a chiral current in dissipative ultracold gases

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Abstract

Atomic gases cooled to Nanokelvin temperatures are a new exciting tool to study a broad range of quantum phenomena. The outstanding tunability of cold gases allows to rapidly change the system parameters and to observe the subsequent quantum evolution.

Also the coupling of quantum gases to environments can be engineered. I will report on recent progress on the dynamics of quantum gases under the influence of controlled dissipative coupling. One focus will be the occurrence of critical dynamics and aging behaviour in bosonic gases coupled to light fields. Another focus will be the self-organization of a chiral current of a fermionic gas coupled to an optical cavity mode.

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