

1. Record Nr.	UNINA9910337879603321
Autore	Rauer Bernhard
Titolo	Non-Equilibrium Dynamics Beyond Dephasing : Recurrences and Loss Induced Cooling in One-dimensional Bose Gases / / by Bernhard Rauer
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2019
ISBN	3-030-18236-3
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (135 pages) : illustrations
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	530.144
Soggetti	Phase transformations (Statistical physics) Condensed matter Quantum theory Low temperatures Quantum Gases and Condensates Quantum Physics Low Temperature Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Theoretical basics -- Experimental setup and probing -- Cooling through uniform loss -- Recurrences -- Outlook -- Appendices.
Sommario/riassunto	Cold atomic gases trapped and manipulated on atom chips allow the realization of seminal one-dimensional (1d) quantum many-body problems in an isolated and well controlled environment. In this context, this thesis presents an extensive experimental study of non-equilibrium dynamics in 1d Bose gases, with a focus on processes that go beyond simple dephasing dynamics. It reports on the observation of recurrences of coherence in the post-quench dynamics of a pair of 1d Bose gases and presents a detailed study of their decay. The latter represents the first observation of phonon-phonon scattering in these systems. Furthermore, the thesis investigates a novel cooling mechanism occurring in Bose gases subjected to a uniform loss of particles. Together, the results presented show a wide range of non-

equilibrium phenomena occurring in 1d Bose gases and establish them as an ideal testbed for many-body physics beyond equilibrium.

---