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| Autore                  | Rauer Bernhard  |
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| Descrizione fisica      | 1 online resource (135 pages) : illustrations   |
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| Disciplina              | 530.144   |
| Soggetti                | Phase transformations (Statistical physics)<br>Condensed materials<br>Quantum physics<br>Low temperature physics<br>Low temperatures<br>Quantum Gases and Condensates<br>Quantum Physics<br>Low Temperature Physics   |
| Lingua di pubblicazione | Inglese   |
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| 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.

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