1. Record Nr. UNINA9910452301103321

Titolo	Quantum gases [[electronic resource]] : finite temperature and non-equilibrium dynamics / / editors, Nick Proukakis ... [et al.]
Pubbl/distr/stampa	London, : Imperial College Press Singapore, : Distributed by World Scientific, c2013
ISBN	1-299-46212-X 1-84816-812-8
Descrizione fisica	1 online resource (579 p.)
Collana	Cold Atoms, , 2045-9734 ; ; 1
Altri autori (Persone)	ProukakisNick
Disciplina	530.4/74 539
Soggetti	Cold gases Quantum theory Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 461-537) and indexes.
Nota di contenuto	Preface; Foreword; Participants of FINESS 2009 (Durham); Contents; Common Symbols/Expressions and their Meanings; Part I. Introductory Material; Editorial Notes; I.A. Quantum Gases: The Background; 1. Quantum Gases: Setting the Scene N.P. Proukakis & K. Burnett; 1.1. Introduction: Background to Quantum Fluids and Gases; 1.2. History of Non-Equilibrium and Finite-Temperature Pure BEC Experiments; 1.2.1. The Search for Idealised Systems: Spin-Polarised Hydrogen; 1.2.2. The Twist to an Unlikely Candidate: The Scene Opens up for Alkali Atoms; 1.2.3. Rival Candidates Gaining Ground? 1.3. Modelling Quantum Degenerate Gases1.3.1. The Success of Phenomenology; 1.3.2. Ab Initio Modelling; 1.3.2.1. The Gross-Pitaevskii Equation; 1.3.2.2. Generalised Kinetic Theories; 1.3.3. Classical-Field and Stochastic Approaches; 1.3.4. Modelling Related Systems; 1.4. Unified Features of Quantum Gases; 1.4.1. Non-Equilibrium BECs and the Thermal Phase Transition; 1.4.2. Thermal and Quantum Fluctuations; 1.4.3. Quantum Phase Transitions and Disorder; 1.4.4. The Superfluid Fraction, its Relation to the Condensate and the Issue of Fragmentation; 1.4.5. Strongly Correlated Physics

Sommario/riassunto

The 1995 observation of Bose-Einstein condensation in dilute atomic vapours spawned the field of ultracold, degenerate quantum gases. Unprecedented developments in experimental design and precision control have led to quantum gases becoming the preferred playground for designer quantum many-body systems.This self-contained volume provides a broad overview of the principal theoretical techniques applied to non-equilibrium and finite temperature quantum gases. Covering Bose-Einstein condensates, degenerate Fermi gases, and the more recently realised exciton-polariton condensates, it fills a gap