1.	Record Nr.	UNINA9910299975403321
	Autore	Chulaevsky Victor
	Titolo	Multi-scale Analysis for Random Quantum Systems with Interaction / / by Victor Chulaevsky, Yuri Suhov
	Pubbl/distr/stampa	New York, NY : , : Springer New York : , : Imprint : Birkhäuser, , 2014
	ISBN	1-4614-8226-7
	Edizione	[1st ed. 2014.]
	Descrizione fisica	1 online resource (XI, 238 p. 5 illus.) : online resource
	Collana	Progress in Mathematical Physics, , 1544-9998 ; ; 65
	Disciplina	515.7
	Soggetti	Functional analysis
		Physics
		Probabilities
		Applied mathematics
		Engineering mathematics
		Solid state physics
		Spectrum analysis
		Microscopy
		Functional Analysis
		Mathematical Methods in Physics
		Probability Theory and Stochastic Processes
		Applications of Mathematics
		Solid State Physics
		Spectroscopy and Microscopy
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Note generali	Bibliographic Level Mode of Issuance: Monograph
	Nota di bibliografia	Includes bibliographical references (pages [229]-235) and index.
	Nota di contenuto	Preface -- Part I Single-particle Localisation -- A Brief History of Anderson Localization.- Single-Particle MSA Techniques -- Part II Multi-particle Localization -- Multi-particle Eigenvalue Concentration Bounds -- Multi-particle MSA Techniques -- References -- Index.
	Sommario/riassunto	The study of quantum disorder has generated considerable research activity in mathematics and physics over past 40 years. While single-particle models have been extensively studied at a rigorous mathematical level, little was known about systems of several interacting particles, let alone systems with positive spatial particle

density. Creating a consistent theory of disorder in multi-particle quantum systems is an important and challenging problem that largely remains open. Multi-scale Analysis for Random Quantum Systems with Interaction presents the progress that had been recently achieved in this area.   The main focus of the book is on a rigorous derivation of the multi-particle localization in a strong random external potential field. To make the presentation accessible to a wider audience, the authors restrict attention to a relatively simple tight-binding Anderson model on a cubic lattice Zd.   This book includes the following cutting-edge features: * an introduction to the state-of-the-art single-particle localization theory * an extensive discussion of relevant technical aspects of the localization theory * a thorough comparison of the multi-particle model with its single-particle counterpart * a self-contained rigorous derivation of both spectral and dynamical localization in the multi-particle tight-binding Anderson model.   Required mathematical background for the book includes a knowledge of functional calculus, spectral theory (essentially reduced to the case of finite matrices) and basic probability theory. This is an excellent text for a year-long graduate course or seminar in mathematical physics. It also can serve as a standard reference for specialists.