

1. Record Nr.	UNINA9910254299503321
Titolo	Advances in Quantum Mechanics : Contemporary Trends and Open Problems // edited by Alessandro Michelangeli, Gianfausto Dell'Antonio
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
ISBN	3-319-58904-0
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (292 pages)
Collana	Springer INdAM Series, , 2281-518X ; ; 18
Disciplina	530.12
Soggetti	Functional analysis Mathematical physics Operator theory Applied mathematics Engineering mathematics Functional Analysis Mathematical Physics Operator Theory Theoretical, Mathematical and Computational Physics Applications of Mathematics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	1 Shell interactions for Dirac operators -- 2 Correlation inequalities for classical and quantum XY models -- 3 Dissipatively generated entanglement -- 4 Abelian gauge potentials on cubic lattices -- 5 Relative-Zeta and Casimir energy for a semitransparent hyperplane selecting transverse modes -- 6 Analysis of fluctuations around non-linear effective dynamics -- 7 Logarithmic Sobolev inequalities for an ideal Bose gas -- 8 Spherical Schrödinger Hamiltonians: spectral analysis and time decay -- 9 On the Ground state for the NLS equation on a general graph -- 10 Self-adjoint extensions of the Dirac operator with Coulomb potential -- 11 Dispersive estimates for Schrödinger operators with point interactions in \mathbb{R}^3 -- 12 Chern and Fu–Kane–Mele invariants as topological obstructions -- 13 Norm approximation for

many-body quantum dynamics and Bogoliubov theory -- 14 Effective non-linear dynamics of binary condensates and open problems -- 15 Remarks on the derivation of the Gross-Pitaevskii equation with magnetic Laplacian -- 16 On the inverse spectral problems for quantum graphs -- 17 Double-barrier resonances and time decay of the survival probability: a toy model.

Sommario/riassunto

This volume collects recent contributions on the contemporary trends in the mathematics of quantum mechanics, and more specifically in mathematical problems arising in quantum many-body dynamics, quantum graph theory, cold atoms, unitary gases, with particular emphasis on the developments of the specific mathematical tools needed, including: linear and non-linear Schrödinger equations, topological invariants, non-commutative geometry, resonances and operator extension theory, among others. Most of contributors are international leading experts or respected young researchers in mathematical physics, PDE, and operator theory. All their material is the fruit of recent studies that have already become a reference in the community. Offering a unified perspective of the mathematics of quantum mechanics, it is a valuable resource for researchers in the field.
