1.	Record Nr.	UNINA9910254306603321
	Autore	Woit Peter
	Titolo	Quantum Theory, Groups and Representations : An Introduction / / by Peter Woit
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
	ISBN	3-319-64612-5
	Edizione	[1st ed. 2017.]
	Descrizione fisica	1 online resource (XXII, 668 p. 27 illus.)
	Disciplina	530.12
	Soggetti	Mathematical physics
		Group theory
		Topological groups
		Lie groups
		Quantum theory
		Mathematical Physics
		Group Theory and Generalizations
		Topological Groups, Lie Groups
		Quantum Physics
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Note generali	Includes index.
	Nota di contenuto	Preface -- 1 Introduction and Overview -- 2 The Group U(1) and its Representations -- 3 Two-state Systems and SU(2) -- 4 Linear Algebra Review, Unitary and Orthogonal Groups -- 5 Lie Algebras and Lie Algebra Representations -- 6 The Rotation and Spin Groups in 3 and 4 Dimensions -- 7 Rotations and the Spin 1/2 Particle in a Magnetic Field -- 8 Representations of SU(2) and SO(3) -- 9 Tensor Products, Entanglement, and Addition of Spin -- 10 Momentum and the Free Particle -- 11 Fourier Analysis and the Free Particle -- 12 Position and the Free Particle -- 13 The Heisenberg group and the Schrödinger Representation -- 14 The Poisson Bracket and Symplectic Geometry -- 15 Hamiltonian Vector Fields and the Moment Map -- 16 Quadratic Polynomials and the Symplectic Group -- 17 Quantization -- 18 Semi-direct Products -- 19 The Quantum Free Particle as a Representation of the Euclidean Group -- 20 Representations of Semi-direct Products --

21 Central Potentials and the Hydrogen Atom -- 22 The Harmonic Oscillator -- 23 Coherent States and the Propagator for the Harmonic Oscillator -- 24 The Metaplectic Representation and Annihilation and Creation Operators, d = 1 -- 25 The Metaplectic Representation and Annihilation and Creation Operators, arbitrary d -- 26 Complex Structures and Quantization -- 27 The Fermionic Oscillator -- 28 Weyl and Clifford Algebras -- 29 Clifford Algebras and Geometry -- 30 Anticommuting Variables and Pseudo-classical Mechanics -- 31 Fermionic Quantization and Spinors -- 32 A Summary: Parallels Between Bosonic and Fermionic Quantization -- 33 Supersymmetry, Some Simple Examples -- 34 The Pauli Equation and the Dirac Operator -- 35 Lagrangian Methods and the Path Integral -- 36 Multi-particle Systems: Momentum Space Description -- 37 Multi-particle Systems and Field Quantization -- 38 Symmetries and Non-relativistic Quantum Fields -- 39 Quantization of Infinite dimensional Phase Spaces -- 40 Minkowski Space and the Lorentz Group -- 41 Representations of the Lorentz Group -- 42 The Poincaré Group and its Representations -- 43 The Klein-Gordon Equation and Scalar Quantum Fields -- 44 Symmetries and Relativistic Scalar Quantum Fields -- 45 U(1) Gauge Symmetry and Electromagnetic Field -- 46 Quantization of the Electromagnetic Field: the Photon -- 47 The Dirac Equation and Spin-1/2 Fields -- 48 An Introduction to the Standard Model -- 49 Further Topics -- A Conventions -- B Exercises -- Index.

| Sommario/riassunto | This text systematically presents the basics of quantum mechanics, emphasizing the role of Lie groups, Lie algebras, and their unitary representations. The mathematical structure of the subject is brought to the fore, intentionally avoiding significant overlap with material from standard physics courses in quantum mechanics and quantum field theory. The level of presentation is attractive to mathematics students looking to learn about both quantum mechanics and representation theory, while also appealing to physics students who would like to know more about the mathematics underlying the subject. This text showcases the numerous differences between typical mathematical and physical treatments of the subject. The latter portions of the book focus on central mathematical objects that occur in the Standard Model of particle physics, underlining the deep and intimate connections between mathematics and the physical world. While an elementary physics course of some kind would be helpful to the reader, no specific background in physics is assumed, making this book accessible to students with a grounding in multivariable calculus and linear algebra. Many exercises are provided to develop the reader's understanding of and facility in quantum-theoretical concepts and calculations. |

2.	Record Nr.	UNINA9910265657403321
	Titolo	Internet research
	Pubbl/distr/stampa	[England], : MCB University Press, 1993-
	ISSN	2054-5657
	Collana	Emerald intelligence + fulltext
	Disciplina	004.67
	Soggetti	Internet Computer networks Periodicals.
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Periodico
	Note generali	Refereed/Peer-reviewed Title from volume contents page (viewed Feb. 25, 1998).