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Collana	Lecture Notes in Mathematics ; ; Volume 1510
Disciplina	512.55
Soggetti	Conformal invariants Quantum field theory
Lingua di pubblicazione	Inglese
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Nota di contenuto	On some unsolved problems in quantum group theory -- Quantum symmetry -- Yang-Baxter equation and deformation of associative and Lie algebras -- Quantum G-spaces and Heisenberg algebra -- Real and imaginary forms of quantum groups -- Rank of quantum groups and braided groups in dual form -- Yangians of the "strange" lie superalgebras -- Askey-wilson polynomials as spherical functions on $SU_q(2)$ -- Twisted yangians and infinite-dimensional classical Lie algebras -- Differential graded Lie algebras, quasi-hopf algebras and higher homotopy algebras -- Quantum deformation of the flag variety -- Zonal spherical functions on quantum symmetric spaces and MacDonalD's symmetric polynomials -- Hidden quantum groups inside Kac-Moody algebras -- Liouville theory on the lattice and universal exchange algebra for bloch waves -- Non-local currents in 2D QFT: An alternative to the quantum inverse scattering method -- Induced representations and tensor operators for quantum groups -- Affine toda field theory: S-matrix vs perturbation -- Contractions of quantum groups -- New solutions of Yang-Baxter equations and quantum group structures -- Quantum group symmetry of 2D gravity -- Extended chiral conformal theories with a quantum symmetry -- Fusion rsos models and rational coset models -- Integrable time-discrete systems: Lattices and mappings -- On relations between poisson groups and

quantum groups -- Characters of Hecke and Birman-Wenzl algebras -- Invariants of 3-Manifolds based on conformal field theory and Heegaard splitting -- The multi-variable alexander polynomial and a one—parameter family of representations of  $U_q(\mathfrak{sl}(2, \mathbb{C}))$  at  $q \neq 1$  -- Preparation theorems for isotopy invariants of links in 3-manifolds -- Quantum invariants of 3-manifold and a glimpse of shadow topology -- Moves of triangulations of a PL-manifold -- Yang-Baxter relation, exactly solvable models and link polynomials -- Triangularity of transition matrices for generalized Hall-Littlewood polynomials -- An open problem in quantum groups -- Two problems in quantized algebras of functions -- Unsolved problems -- On classification of  $\mathbb{Z}$ -graded Lie algebras of constant growth which have algebra  $\mathfrak{h}$  as Cartan subalgebra.

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## Sommario/riassunto

The theory of Quantum Groups is a rapidly developing area with numerous applications in mathematics and theoretical physics, e.g. in link and knot invariants in topology,  $q$ -special functions, conformal field theory, quantum integrable models. The aim of the Euler Institute's workshops was to review and compile the progress achieved in the different subfields. Near 100 participants came from 14 countries. More than 20 contributions written up for this book contain new, unpublished material and half of them include a survey of recent results in the field (deformation theory, graded differential algebras, contraction technique, knot invariants,  $q$ -special functions). FROM THE CONTENTS: V.G. Drinfeld: On Some Unsolved Problems in Quantum Group Theory.- M. Gerstenhaber, A. Giaquinto, S.D. Schack: Quantum Symmetry.- L.I. Korogodsky, L.L. Vaksman: Quantum G-Spaces and Heisenberg Algebra.- J. Stasheff: Differential Graded Lie Algebras, Quasi-Hopf Algebras and Higher Homotopy Algebras.- A.Yu. Alekseev, L.D. Faddeev, M.A. Semenov-Tian-Shansky: Hidden Quantum Groups inside Kac-Moody Algebras.- J.-L. Gervais: Quantum Group Symmetry of 2D Gravity.- T. Kohno: Invariants of 3-Manifolds Based on Conformal Field Theory and Heegaard Splitting.- O. Viro: Moves of Triangulations of a PL-Manifold.

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