

CONTENTS

Preface	ix
----------------------	-----------

CONFORMAL FIELD THEORY

Integrable Conformal Field Theory—A Case Study	3
V. Schomerus	
Minimal Representations and Reductive Dual Pairs in Conformal Field Theory	13
I. Todorov	
4-Point Superconformal Blocks in N=1 SCFT	31
P. Suchanek	

STRING AND (SUPER-) GRAVITY THEORIES

On p-Adic Sector of Open Scalar Strings and Zeta Field Theory	43
B. Dragovich	
Operators on Pure Spinor Spaces	51
M. Cederwall	
Asymmetric Wormholes via Electrically Charged Lightlike Branes	60
E. Guendelman, A. Kaganovich, <u>E. Nissimov</u> , and S. Pacheva	
Tensor Models as Theory of Dynamical Fuzzy Spaces and General Relativity	76
N. Sasakura	
EMP Reformulations of Einstein's Equations as an Application of a Property of Suitable Second Order Differential Equations	87
J. D'Ambroise	

QUANTUM MECHANICAL AND PROBABILISTIC SYSTEMS

Analytically Solvable Quantum Hamiltonians and Relations to Orthogonal Polynomials	99
G. Regniers and <u>J. Van der Jeugt</u>	
The Centrally Extended Heisenberg Algebra and Its Connection with the Schrödinger, Galilei and Renormalized Higher Powers of Quantum White Noise Lie Algebras	115
<u>L. Accardi</u> and A. Boukas	
Random Variables and Positive Definite Kernels Associated with the Schrödinger Algebra	126
L. Accardi and <u>A. Boukas</u>	
The Hamiltonian $H=xp$ and Classification of $\mathfrak{osp}(1 2)$ Representations	138
<u>G. Regniers</u> and J. Van der Jeugt	

REPRESENTATIONS AND COHOMOLOGY

A Vertex Algebra Attached to the Flag Manifold and Lie Algebra Cohomology	151
T. Arakawa and E. Malikov	
Cohomologies of Configuration Spaces and Higher-Dimensional Polylogarithms in Renormalization Group Problems	165
N. M. Nikolov	
Invariant Subalgebras of Ghost Systems	179
A. R. Linshaw	
Conditions for Validity of the Gell-Mann Formula in the Case of $sl(n, \mathbb{R})$ and/or $su(n)$ Algebras	191
I. Salom and D. Šijački	

SUPERSYMMETRY

Ginsparg-Wilson Formulation of 2D $\mathcal{N} = (2,2)$ SQCD with Exact Lattice Supersymmetry	201
E. Sugino and Y. Kikukawa	
Parafermions, Ternary Algebras and Their Associated Superspace	213
R. Campoamor-Stursberg and M. Rausch de Trautenberg	
Effective Supersymmetry Based on $SU(3)^c \times S$ Superalgebra	223
S. Catto	
On Exceptional Superconformal Algebras	231
E. Poletaeva	

QUANTUM GROUPS AND RELATED OBJECTS

Diagonalization of Boundary Transfer Matrix for the $U_{q,p}(\hat{sl}(3, \mathbb{C}))$ ABF Model	241
T. Kojima	
Noncommutative Complex Manifolds via Coherent States of Quantum Groups and Supergroups	254
N. Aizawa , R. Chakrabarti, and J. Segar	
Hopf Structures on Standard Young Tableaux	265
J.-L. Loday and T. Popov	

QUANTUM COMPUTING AND OTHER STRUCTURES

Monodromy Analysis of the Computational Power of the Ising Topological Quantum Computer	279
A. Ahlbrecht, L. S. Georgiev , and R. F. Werner	

Methods of Power Geometry in Asymptotic Analysis of Solutions to Algebraic or Differential Equations	289
I. Goryuchkina	
Functors of Special Type	299
D. Botnaru and <u>Q. Cerbu</u>	
List of Participants	311
Author Index	313