

Contents

Part I Plenary Talks

Revisiting Trace Anomalies in Chiral Theories	3
Loriano Bonora, Stefano Giaccari, and Bruno Lima De Souza	
Complete T-Dualization of a String in a Weakly Curved Background	13
Lj. Davidović, B. Nikolić, and B. Sazdović	
Modular Double of the Quantum Group $SL_q(2, \mathbb{R})$	21
L.D. Faddeev	
Physical Ageing and New Representations of Some Lie Algebras of Local Scale-Invariance	33
Malte Henkel and Stoimen Stoimenov	
New Type of $\mathcal{N} = 4$ Supersymmetric Mechanics	51
Evgeny Ivanov and Stepan Sidorov	
Vector-Valued Covariant Differential Operators for the Möbius Transformation	67
Toshiyuki Kobayashi, Toshihisa Kubo, and Michael Pevzner	
Semi-classical Scalar Products in the Generalised $SU(2)$ Model	87
Ivan Kostov	
Weak Poisson Structures on Infinite Dimensional Manifolds and Hamiltonian Actions	105
K.-H. Neeb, H. Sahlmann, and T. Thiemann	
Bethe Vectors of $\mathfrak{gl}(3)$-Invariant Integrable Models, Their Scalar Products and Form Factors	137
Eric Ragoucy	

Polylogarithms and Multizeta Values in Massless Feynman Amplitudes ..	155
Ivan Todorov	
Reduction of Couplings in Quantum Field Theories with Applications in Finite Theories and the MSSM.....	177
S. Heinemeyer, M. Mondragón, N. Tracas, and G. Zoupanos	
Part II String Theories and Gravity Theories	
A SUSY Double-Well Matrix Model as 2D Type IIA Superstring.....	199
Fumihiko Sugino	
$f(R)$-Gravity: “Einstein Frame” Lagrangian Formulation, Non-standard Black Holes and QCD-Like Confinement/Deconfinement..	211
E. Guendelman, A. Kaganovich, E. Nissimov, and S. Pacheva	
The D-Brane Charges of C_3/\mathbb{Z}_2	223
Elaine Beltaos	
On Robertson Walker Solutions in Noncommutative Gauge Gravity.....	231
Simona Babeti	
Some Power-Law Cosmological Solutions in Nonlocal Modified Gravity	241
Ivan Dimitrijevic, Branko Dragovich, Jelena Grujic, and Zoran Rakic	
On Nonlocal Modified Gravity and Cosmology.....	251
Branko Dragovich	
Part III Integrable Systems	
Vertex Operator Approach to Semi-infinite Spin Chain: Recent Progress	265
Takeo Kojima	
Thermopower in the Coulomb Blockade Regime for Laughlin Quantum Dots	279
Lachezar S. Georgiev	
On a Pair of Difference Equations for the ${}_4F_3$ Type Orthogonal Polynomials and Related Exactly-Solvable Quantum Systems	291
E.I. Jafarov, N.I. Stoilova, and J. Van der Jeugt	
Spin Chain Models of Free Fermions	301
Č. Burdík, A.P. Isaev, S.O. Krivonos, and O. Navrátil	
Group Analysis of Generalized Fifth-Order Korteweg–de Vries Equations with Time-Dependent Coefficients.....	311
Oksana Kuriksha, Severin Pošta, and Olena Vaneeva	

**A Construction of Generalized Lotka–Volterra Systems
Connected with $\mathfrak{sl}_n(\mathbb{C})$ 323**
 S.A. Charalambides, P.A. Damianou, and C.A. Evripidou

**Systems of First-Order Ordinary Differential Equations
Invariant with Respect to Linear Realizations
of Two- and Three-Dimensional Lie Algebras 331**
 Oksana Kuriksha

Part IV Supersymmetry and Quantum Groups

**On Principal Finite W -Algebras for Certain Orthosymplectic
Lie Superalgebras and $F(4)$ 343**
 Elena Poletaeva

Super-de Sitter and Alternative Super-Poincaré Symmetries 357
 V.N. Tolstoy

**Localizations of $U_q(\mathfrak{sl}(2))$ and $U_q(\mathfrak{osp}(1|2))$ Associated
with Euclidean and Super Euclidean Algebras 369**
 Patrick Moylan

On the 2D Zero Modes’ Algebra of the $SU(n)$ WZNW Model 381
 Ludmil Hadjiivanov and Paolo Furlan

Part V Conformal Field Theories

Breaking $so(4)$ Symmetry Without Degeneracy Lift 395
 M. Kirchbach, A. Pallares Rivera, and F. de J. Rosales Aldape

**On the Relation Between an $\mathcal{N} = 1$ Supersymmetric Liouville
Field Theory and a Pair of Non-SUSY Liouville Fields 405**
 Leszek Hadasz and Zbigniew Jaskólski

**Multi-Point Virtual Structure Constants and Mirror
Computation of CP^2 -Model 415**
 Masao Jinzenji

**N -Conformal Galilean Group as a Maximal Symmetry Group
of Higher-Derivative Free Theory 425**
 Krzysztof Andrzejewski and Joanna Gonera

Part VI Vertex Algebras and Superalgebras

**Virasoro Structures in the Twisted Vertex Algebra
of the Particle Correspondence of Type C 435**
 Iana I. Anguelova

On the Correspondence Between Mirror-Twisted Sectors for $N = 2$ Supersymmetric Vertex Operator Superalgebras of the Form $V \otimes V$ and $N = 1$ Ramond Sectors of V	447
Katrina Barron	
Operadic Bridge Between Renormalization Theory and Vertex Algebras	457
Nikolay M. Nikolov	
Superfields and Vertex Algebras in Four Dimensions	465
Dimitar Nedanovski	
Part VII Representation Theory	
Special Reduced Multiplets and Minimal Representations for $SO(p,q)$...	475
Vladimir Dobrev	
On the Structure of Green's Ansatz	505
Igor Salom	
Parafermionic Algebras, Their Modules and Cohomologies	515
Todor Popov	
On Non-local Representations of the Ageing Algebra in $d \geq 1$ Dimensions	527
Stoimen Stoimenov and Malte Henkel	
Part VIII Various Mathematical Results	
The Quantum Closet	541
Alon E. Faraggi	
Shape-Invariant Orbits and Their Laplace-Runge-Lenz Vectors for a Class of "Double Potentials"	551
Jamil Daboul	
Quantization on Co-adjoint Group Orbits and Second Class Constraints	561
Michail Stoilov	
Some Kind of Stabilities and Instabilities of Energies of Maps Between Kähler Manifolds	567
Tetsuya Taniguchi and Seiichi Udagawa	