

CONTENTS	
Foreword by Michael Atiyah	vii
Foreword by Chen Ning Yang	ix
Preface	x
Plenary Lectures	1
Yangian and Applications <i>C.-M. Bai, M.-L. Ge, K. Xue and H.-B. Zhang</i>	3
The hypoelliptic Laplacian and Chern-Gauss-Bonnet <i>J.-M. Bismut</i>	38
S. S. Chern and Chern-Simons Terms <i>R. Jackiw</i>	53
Localization and Conjectures from String Duality <i>K.F. Liu</i>	63
Topologization of Electron Liquids with Chern-Simons Theory and Quantum Computation <i>Z.H. Wang</i>	106
Invited Contributions	121
Quasicrystals: Projections of 5-d Lattice into 2 and 3 Dimensions <i>H. Au-Yang and J. H. H. Perk</i>	123

Theoretical Analysis of the Double Spin Chain Compound KCuCl_3	for (133)
<i>M. T. Batchelor, X.-W. Guan and N. Oelkers</i>	
Applications of Geometric Cluster Algorithms	142
<i>H. W. J. Blöte, Y. Deng and J. R. Heringa</i>	
Equivariant Cohomology and Localization for Lie Algebroids	Mo-Lin Ge Wei-ping Zhang
and Applications	152
<i>U. Bruzzo</i>	
Directed Percolation in Two Dimensions: An Exact Solution	160
<i>L. C. Chen and F. Y. Wu</i>	
Generalized Drinfeld Polynomials for Highest Weight Vectors	Following page
of the Borel Subalgebra of the sl_2 Loop Algebra	169
<i>T. Deguchi</i>	
On the Physical Significance of q -deformation in Many-body Physics	179
<i>J. P. Draayer, K. D. Sviratcheva, C. Bahri and A. I. Georgieva</i>	
A Matrix Product Ansatz Solution of an Exactly Solvable	Y 190
Interacting Vertex Model	
<i>A. A. Ferreira and F. C. Alcaraz</i>	
A 2h-dimensional Model with Virasoro Symmetry	200
<i>P. Furlan and V.B. Petkova</i>	
3-dimensional Integrable Lattice Models and the Bazhanov-	210
Stroganov Model	
<i>G. von Gehlen, S. Pakuliak and S. Sergeev</i>	
Exact Solution of Two Planar Polygon Models	221
<i>A.J. Guttmann and I. Jensen</i>	
Quasi-exact Solvability of Dirac Equations	232
<i>C.-L. Ho</i>	
Exotic Galilean Symmetry, Non-commutativity & the Hall Effect	H 241
<i>P. A. Horváthy</i>	

The Energy-momentum and Related Topics in Gravitational Radiation or 3 Qubits	248
<i>W.-l. Huang and X. Zhang</i>	
Quantum Operators and Hermitian Vector Fields	256
<i>J. Janyška and M. Modugno</i>	
Electric-magnetic Duality Beyond Four Dimensions and in General Relativity	266
<i>B.L. Julia</i>	
Another Version and an Invariant of Calabi-Yau Threefold	280
Topology and Quantum Information	273
<i>L.H. Kauffman</i>	
Differential Galois Groups of Higher Order Fuchsian ODEs	290
Generalized Cohomologies and Differential Forms of Higher Order	283
<i>R. Kerner</i>	
Conformal Triality of de Sitter, Minkowski and Anti-de Sitter	
Periodic Cellular Automata and Bethe Ansatz	293
<i>A. Kuniba and A. Takenouchi</i>	
An L^2 -Alexander-Conway Invariant for Knots and the Volume Conjecture	303
<i>W.P. Li and W.P. Zhang</i>	
Faddeev Knots, Skyrme Solitons, and Concentration-Compactness	313
<i>F.H. Lin and Y.S. Yang</i>	
Dynamics of Bose-Einstein Condensates	323
<i>W.-M. Liu</i>	
Twisted Space-Time Symmetry, Non-Commutativity and Particle Dynamics	333
<i>J. Lukierski and M. Woronowicz</i>	
Toeplitz Quantization and Symplectic Reduction	343
<i>X.N. Ma and W.P. Zhang</i>	
On Mysteriously Missing T-duals, H-flux and the T-duality Group	350
<i>V. Mathai and J. Rosenberg</i>	

Murphy Operators in Knot Theory <i>H. R. Morton</i>	359
Bethe Ansatz for the Open XXZ Chain from Functional Relations at Roots of Unity <i>R.I. Nepomechie</i>	367
Separation Between Spin And Charge in SU(2) Yang-Mills Theory <i>A. J. Niemi</i>	377
Dirac Operator in Two Dimensions: An Exact Solution On Solutions of the One-dimensional Holstein Model <i>F. Pan and J.P. Draayer</i>	180 384
Recent Developments on Ising and Chiral Potts Model <i>J. H. H. Perk and H. Au-Yang</i>	389
Bethe Ansatz and Symmetry in Superintegrable Chiral Potts Model and Root-of-unity Six-vertex Model <i>S.-S. Roan</i>	399
The Cyclic Renormalization Group <i>G. Sierra</i>	410
Bohm-Aharonov Type Effects in Dissipative Atomic Systems <i>A.I. Solomon and S.G. Schirmer</i>	420
Noncommutative Procedures in Spontaneous Symmetry Breaking and Quantum Differentiation <i>M. Suzuki</i>	429
Löwner Equations and Dispersionless Hierarchies <i>K. Takasaki and T. Takebe</i>	438
Multiparameter Quantum Deformations of Jordanian Type for Lie Superalgebras <i>V.N. Tolstoy</i>	443

A Correlation-Function Bell Inequality with Improved Visibility for 3 Qubits	453
<i>C.F. Wu, J.-L. Chen, L.C. Kwek and C.H. Oh</i>	
Topological Aspects of the Spin Hall Effect	462
<i>Y.-S. Wu</i>	
Positive Mass Theorems and Calabi-Yau Compactification	473
<i>N.Q. Xie</i>	
Analytic Torsion and an Invariant of Calabi-Yau Threefold	480
<i>K.-I. Yoshikawa</i>	
Differential Galois Groups of High Order Fuchsian ODE's	490
<i>N. Zenine, S. Boukraa, S. Hassani and J.-M. Maillard</i>	
Conformal Triality of de Sitter, Minkowski and Anti-de Sitter Spaces	503
<i>B. Zhou and H.-Y. Guo</i>	
Some Observations on Gopakumar-Vafa Invariants of Some Local Calabi-Yau Geometries	513
<i>J. Zhou</i>	