

Contents

Preface	V
Contents	VII
Committees	XI
List of Participants	XIII

Part I Plenary Lectures

<i>R. de la Llave</i> : Recent Progress in Classical Mechanics	3
<i>B. Zumino</i> : Introduction to the Differential Geometry of Quantum Groups	20
<i>B.V. Chirikov</i> : Chaotic Quantum Systems	34
<i>D. Ruelle</i> : Dynamical Zeta Functions: Where Do They Come From and What Are They Good For?	43
<i>L.A. Bunimovich</i> : Billiard-Type Systems with Chaotic Behaviour and Space-Time Chaos	52
<i>L.A. Pastur</i> : Statistical Physics and Spectral Theory of Disordered Systems: Some Recent Developments	70
<i>F. Martinelli</i> : Low Temperature Stochastic Spin Dynamics: Metastability, Convergence to Equilibrium and Phase Segregation .	87
<i>S.R.S. Varadhan</i> : Entropy Methods in Hydrodynamical Scaling ...	103
<i>Y.I. Manin</i> : Quantum Groups and Non-Commutative Differential Geometry	113
<i>L.D. Faddeev</i> : Hamiltonian Methods in Conformal Field Theory ..	123
<i>K. Fredenhagen</i> : On the General Theory of Quantized Fields	136
<i>J.P. Solovej</i> : Atomic and Molecular Structure – A Renormalized Picture –	153
<i>J. Fröhlich, U.M. Studer</i> : Gauge Invariance in Non-Relativistic Many-Body Theory	165
<i>G.M. Graf</i> : Asymptotic Completeness for N-Body Quantum Systems	174
<i>R. Jackiw</i> : Self-Dual Chern–Simons Solitons	184
<i>S. Klainerman</i> : Mathematical Theory of Classical Fields and General Relativity	213
<i>J. Cuntz</i> : Representations of Quantized Differential Forms in Non-Commutative Geometry	237

Part II Session Lectures**Section 1: Analysis on Manifolds and Classical Mechanics**

<i>W. Craig, C.E. Wayne</i> : Solutions of Nonlinear Wave Equations and Localization Theory	256
<i>V.V. Trofimov</i> : Connections on Symplectic Manifolds and Characteristic Classes of Hamiltonian Systems	262
<i>Ch. Golé</i> : Symplectic Twist Maps and the Theorem of Conley-Zehnder for General Cotangent Bundles	265
<i>S. Dostoglou, D. Salamon</i> : Floer Homology for Mapping Cylinders	269

Section 2: Quantum Groups and Non-Commutative Differential Geometry

<i>J. Lukierski</i> : κ -Deformation of (Super)Poincaré Algebra	274
<i>A. Jaffe</i> : Quantum Physics as Non-Commutative Geometry	281
<i>T. Masuda, Y. Nakagami</i> : An Operator Algebraic Framework for the Duality of Quantum Groups	291

Section 3: Chaotic Quantum Systems

<i>P.M. Bleher</i> : Distribution of Energy Levels in Quantum Systems with Integrable Classical Counterpart. Rigorous Results	298
<i>D. Voiculescu</i> : Entropy-Invariants of Dynamical Systems and Perturbations of Operators	303
<i>M. Klein, A. Knauf</i> : Chaotic Motion in Coulombic Potentials	308
<i>H.R. Jauslin, J.L. Lebowitz</i> : Generalized Floquet Operator for Quasiperiodically Driven Quantum Systems	313

Section 4: Equilibrium Statistical Mechanics

<i>L.R.G. Fontes</i> : Magnetization and Slow Decay of Correlations in Continuum $1/r^2$ Ising Models	318
<i>A. Klein</i> : Existence of the Kosterlitz-Thouless Phase for Two-Dimensional Coulomb Gases at Inverse Temperatures above 8π ...	322
<i>R.L. Dobrushin, S.B. Shlosman</i> : Large Deviation Behavior of Statistical Mechanics Models in the Multiphase Regime	328

Section 5: Classical Dynamical Systems and Random Perturbations

<i>Y. Kifer</i> : A Variational Approach to the Random Diffeomorphisms Type Perturbations of a Hyperbolic Diffeomorphism	334
<i>M.L. Blank</i> : Chaotic Mappings and Stochastic Markov Chains	341

Section 6: Disordered Systems

<i>A. Klein</i> : Quantum Spin Systems in a Random Environment	348
<i>J. Wehr</i> : Rounding Effects in Systems with Static Disorder	355

Section 7: Nonequilibrium Statistical Mechanics

<i>H.-T. Yau</i> : Derivation of Euler Equation from Hamiltonian Systems with Negligible Random Noise	360
<i>M. Bramson, J.L. Lebowitz</i> : The Spatial Structure in Diffusion Limited Two-Particle Reactions	364
<i>D.A. Dawson, J. Gärtner</i> : Multilevel Models of Interacting Diffusions and Large Deviations	370

Section 8: General Theory of Quantized Fields

<i>J. Bros</i> : Fields, Particles and Analyticity: Recent Results	376
<i>B.S. Kay</i> : Quantum Field Theory in Curved Spacetime	383
<i>K.-H. Rehren</i> : Charges in Quantum Field Theory	388
<i>A.S. Wightman</i> : Three Exactly Soluble Quantum Field Theory Models in 2-, 3- and 4-Dimensional Space Time and Some General Questions They Suggest	393
<i>H.J. Borchers</i> : CPT- and Lorentz-Transformations in Two-Dimensional Quantum Field Theory	399
<i>J. Roberts</i> : The Concept of Spontaneously Broken Symmetry and a New Approach to Goldstone's Theorem	404

**Section 9: Nonrelativistic Quantum Mechanics
(Stationary)**

<i>C.L. Fefferman, L.A. Seco</i> : On the Atomic Energy Asymptotics ..	408
--	-----

Section 10: Special Systems in Quantum Field Theory

<i>P.A. Faria da Veiga</i> : Existence of the Schwinger Functions of the Three-Dimensional Gross-Neveu Model	420
<i>H. Grosse</i> : Progress in Completely Integrable Models of Quantum Field Theory	423

Section 11: Scattering Theory, Inverse Problems

<i>A.I. Nachman</i> : Inverse Scattering at Fixed Energy	434
<i>D. Robert</i> : Semi-Classical and High-Energy Asymptotics of the Scattering Phase for Perturbations of Elliptic Operators	442
<i>A. Jensen, S. Nakamura</i> : On the Mapping Properties of the Wave Operators in Scattering Theory	447

Section 12: Conformal and Topological Field Theory

<i>A.W. Wipf</i> : Reduction of Kac-Moody Systems	452
<i>L.K. Hadjiivanov, Y.S. Stanev, I.T. Todorov</i> : Quantum Symmetry of Rational Conformal Models	457

Section 13: General Relativity and Classical Field Theory

<i>B.G. Schmidt: Quasi-Normal Modes of the Schwarzschild</i>	
Space-Time	464
<i>A.D. Rendall: The Initial Value Problem for Self-Gravitating</i>	
Fluid Bodies	470

Poster Session and Program

Poster Session	477
Program	488