CONTENTS

LECTURES

Allen C. Hirshfeld

DEFORMATION QUANTIZATION IN QUANTUM MECHANICS AND QUANTUM FIELD THEORY **11**
Introduction 11
Deformations of Algebras 13
Quantum Mechanical Systems 18
Star Products on Poisson Manifolds 30
Summary 38

Rolf-Peter Holzapfel

ENUMERATIVE GEOMETRY FOR COMPLEX GEODESICS ON QUASI-HYPERBOLIC 4-SPACES WITH CUSPS **42**
Introduction 42
Orbital Divisors on Orbital Surfaces 44
Orbital Functionals 48
Orbital Intersection Products 51
Arithmetic Orbital Divisors 56
Orbital Heegner Series 58
Leading Example 61
The Theta Functions in the Background 65
From Zeta Functional Equations to Theta Transformation Laws 72
Appendix: Signature Heights of Orbital Curves 79

Gregory L. Naber

EQUIVARIANT LOCALIZATION AND STATIONARY PHASE **88**
Stationary Phase Approximation 88
Hamiltonian Actions on Symplectic Manifolds 91
The Cartan Model of Equivariant Cohomology 102
Equivariant Localization 112
The Duistermaat–Heckman Theorem 122

CONTRIBUTIONS

Sezgin Altay and Füsun Özen

NETS OF ASYMPTOTIC LINES IN A RIEMANNIAN HYPERSURFACE WITH NON-SYMMETRIC METRIC CONNECTION **127**

Beatrice Bucker

MODERN APPROACHES TO THE QUANTIZATION OF GAUGE THEORIES **135**

Omar Cherbal, Mustapha Maamache and Mahrez Drir

NONADIABATIC HANNAY'S ANGLE OF SPIN ONE HALF IN GRASSMANNIAN VERSION AND INVARIANT ANGLE COHERENT STATES **153**

Valentin Cristea

NECESSARY CONDITIONS FOR A SUPERDIFFERENTIABLE SUPERCURVE TO BE A WEAK MINIMUM RELATIVE TO TWO SUB-SUPERMANIFOLDS **161**

Vesselin Gueorguiev

MATTER, FIELDS, AND REPARAMETRIZATION-INVARIANT SYSTEMS **168**

Martin Juráš

VARIATIONAL SYMMETRIES AND LIE REDUCTION FOR FROBENIUS SYSTEMS OF EVEN RANK **178**

Azniv Kasparian

COMPRESSED PRODUCT OF BALLS AND LOWER BOUNDARY ESTIMATES ON BERGMAN KERNELS **193**

Ivaïlo Mladenov and John Oprea

UNDULOIDS AND THEIR CLOSED GEODESICS **206**

Ionel Mos, Silvana Chirici and Mircea Puta

THE CHARGED HEAVY TOP AND THE DIRAC PROBLEM **235**

Füsun Özen and Sezgin Altay

CONFORMAL MAPPINGS AND SPECIAL NETWORKS OF WEYL SPACES **239**

Mircea Puta, Ioan Casu and Mircea Caruntu

THE STABILITY PROBLEM AND THE EXISTENCE OF PERIODIC ORBITS IN THE HEAVY TOP DYNAMICS **248**

Yusuke Sakane and Takumi Yamada

HARMONIC FORMS ON COMPACT SYMPLECTIC 2-STEP NILMANIFOLDS **257**

Hajime Sato and Tetsuya Ozawa

CONFORMAL SCHWARZIAN DERIVATIVES AND DIFFERENTIAL EQUATIONS **271**

Rudolf Schmid

$\mathfrak{g}$-SYMPLECTIC ORBITS AND A SOLUTION OF THE BRST CONSISTENCY CONDITION **284**

Sergey Smirnov

EXACTLY SOLVABLE PERIODIC DARBOUX q-CHAINS **296**

Jürgen Tolksdorf

MASS AND CURVATURE **303**

Abraham Ungar

THE RELATIVISTIC CENTER OF MOMENTUM **316**

Izu Vaisman

ON LOCALLY LAGRANGIAN SYMPLECTIC STRUCTURES **326**

Akira Yoshioka and Toshio Matsumoto

PATH INTEGRAL FOR STAR EXPONENTIAL FUNCTIONS OF QUADRATIC FORMS **330**

Subject Index **341**