

Contents

Part 1

Symmetry of Differential Equations

<i>BARANNYK A.F. and YURYK I.I.</i> , Construction of Exact Solutions of Diffusion Equation	29
<i>BARANNYK T.A. and NIKITIN A.G.</i> , Solitary Wave Solutions for Heat Equations	34
<i>BASARAB-HORWATH P., LAHNO V. and MAGDA O.</i> , The Structure of Lie Algebras and the Classification Problem for Partial Differential Equations	40
<i>BOYKO V.M.</i> , Nonlocal Symmetry and Integrable Classes of Abel Equation	47
<i>BURSKII V.P.</i> , On Equivariant Boundary Value Problems	52
<i>CHANG J.H.</i> , On the Deformations of Dorfman's and Sokolov's Operator	55
<i>CHERNIHA R.</i> , Non-Lie Reductions of Nonlinear Reaction-Diffusion Systems with Variable Diffusivities	62
<i>CHEVIAKOV A.F.</i> , Bogoyavlenskij Symmetries of Isotropic and Anisotropic MHD Equilibria as Lie Point Transformations	69
<i>CICOGNA G.</i> , A Discussion on the Different Notions of Symmetry of Differential Equations	77
<i>FEDORCHUK V.M. and FEDORCHUK V.I.</i> , On the Differential First-Order Invariants of the Non-Splitting Subgroups of the Poincaré Group $P(1,4)$	85
<i>FEDORCHUK V.I.</i> , On Symmetry Reduction of Some Classes of the First-Order Differential Equations in the space $M(1,4) \times R(u)$	92
<i>GAETA G.</i> , Symmetry of Stochastic Equations	98
<i>GOLOVIN S.V.</i> , Group Foliation of Euler Equations in Nonstationary Rotationally Symmetrical Case	110
<i>GRUNDLAND A.M. and PICARD P.</i> , Invariant and Conditionally Invariant Solutions of Magnetohydrodynamic Equations in $(3 + 1)$ Dimensions	118
<i>GÜNGÖR F., LAHNO V. and ZHDANOV R.</i> , Symmetry Classification of KdV-Type Nonlinear Evolution Equations	125
<i>HARRISON B.K.</i> , Applications of Symmetry to General Relativity	131
<i>IBRAGIMOV N.H. and SOPHOCLEOUS C.</i> , Invariants for Evolution Equations	142
<i>IVANOVA N.M.</i> , Conservation Laws and Potential Systems of Diffusion-Convection Equations	149
<i>LAHNO V.</i> , On Realizations of the Conformal Algebra and Nonlinear Invariant Equations in Low-Dimensional Space-Time	153
<i>LEACH P.G.L. and ANDRIOPOULOS K.</i> , Application of Symmetry and Symmetry Analyses to Systems of First-Order Equations Arising from Mathematical Modelling in Epidemiology	159
<i>LEHENKYI V.I. and RUDOLPH J.</i> , Towards the Group Classification of Control Systems	170
<i>LUTFULLIN M.W.</i> , On Integrable Systems of ODEs	176
<i>MARVAN M.</i> , Recursion Operators for Vacuum Einstein Equations with Symmetries	179
<i>MILLER W., KALNINS E. and POGOSYAN G.</i> , Infinite Order Symmetries for Two-Dimensional Separable Schrödinger Equations	184
<i>MOROZOV O.I.</i> , Symmetries of Differential Equations and Cartan's Equivalence Method	196
<i>MOYO S. and LEACH P.G.L.</i> , Symmetry Methods Applied to a Mathematical Model of a Tumour of the Brain	204
<i>NESTERENKO M.O.</i> , Differential Invariants of Transformation Groups on the Real Plane	211
<i>ÖZER T.</i> , On Symmetry Group Properties of the Benney Equations	214
<i>POPOVYCH R.O., IVANOVA N.M. and ESHRAGHI H.</i> , Lie Symmetries of $(1+1)$ -Dimensional Cubic Schrödinger Equation with Potential	219
<i>RAHULA M.</i> , Universal Structure of Jet Space	224

<i>SENASHOV S.I. and YAKHNO A.N.</i> , 2-Dimensional Plasticity: Boundary Problems and Conservation Laws, Reproduction of Solutions.....	231
<i>SERGYEYEV A.</i> , The Structure of Cosymmetries and a Simple Proof of Locality for Hierarchies of Symmetries for Odd Order Evolution Systems	238
<i>SHIROKOV I.V.</i> , Application of the Orbits Method to Integration of Linear Differential Equations with Non-Commutative Symmetries.....	246
<i>TANG X.Y. and LOU S.Y.</i> , Group Explanation for the Conditional Similarity Reductions of the (2+1)-Dimensional KdV Equation	252
<i>TIMOSHIN M.I.</i> , Dynamical Symmetries of Autonomous Differential Second Order Equations ..	260
<i>TSYFRA I.</i> , Symmetry Reduction of Nonlinear Differential Equations	266
<i>TSYFRA I., MESSINA A., NAPOLI A. and TRETNYNYK V.</i> , On Applications of Non-Point and Discrete Symmetries for Reduction of the Evolution-Type Equations.....	271
<i>TYCHYNIN V. and RASIN O.</i> , Nonlocal Symmetry and Generating Solutions for the Inhomogeneous Burgers Equation	277
<i>VOLKMANN J. and BAUMANN G.</i> , Symmetry Analysis of (2 + 1)-Dimensional Doebner–Goldin Equations	282
<i>YEHORCHENKO I.</i> , Group Classification with Respect to Hidden Symmetry.....	290
<i>YEHORCHENKO I. and VOROBYOVA A.</i> , Sets of Conditional Symmetry Operators and Exact Solutions for Wave and Generalised Heat Equations.....	298
<i>ZAWISTOWSKI Z.J.</i> , Symmetries of Radial Maxwell–Vlasov Equations	304

Solitons and Integrability

<i>BELOKOLOS E.</i> , Conformal Maps and Integrable Hamiltonian Structures.....	311
<i>BERKELA Yu.</i> , Integration of Bi-Hamiltonian Systems by Using the Dressing Method	319
<i>BERKOVICH L.M.</i> , New Class of Nonlinear Evolutionary Equations.....	325
<i>BLASZAK M.</i> , Systematic Construction of Separable Systems with Quadratic in Momenta First Integrals	333
<i>BOYA L.J.</i> , Asymptotic Irrelevance of the KdV Hierarchy	341
<i>BURDE G.I.</i> , On the Use of the Lie–Bäcklund Groups in the Context of Asymptotic Integrability	348
<i>CARROLL R.</i> , Aspects of Quantum Groups and Integrable Systems	356
<i>DAMIANOU P.A.</i> , Bi-Hamiltonian Formulation of Generalized Toda Chains.....	368
<i>DEMUSKOI D.K.</i> , On Construction of Zero-Curvature Representations for Some Chiral-Type Three-Field Systems.....	374
<i>DUBROVSKY V.G. and FORMUSATIK I.B.</i> , New Lumps of Veselov–Novikov Integrable Nonlinear Equation and New Exact Rational Potentials of Two-Dimensional Stationary Schrödinger Equation via $\bar{\partial}$ -Dressing Method	382
<i>GERDJIKOV V.S. and GRAHOVSKI G.G.</i> , On N -Wave and NLS Type Systems: Generating Operators and the Gauge Group Action: the $so(5)$ Case	388
<i>GERSHUN V.D.</i> , Nonlocal Brackets and Integrable String Models	396
<i>HAMANAKA M. and TODA K.</i> , Towards Noncommutative Integrable Equations.....	404
<i>KERSTEN P., KRASIL'SHCHIK I. and VERBOVETSKY A.</i> , Nonlocal Constructions in the Geometry of PDE.....	412
<i>KOROSTIL A.M. and KOROSTIL I.A.</i> , On Calculation of Finite-Gap Spectra for One-Dimensional Schrödinger Operator	424
<i>LOUTSENKO I. and YERMOLAYEVA O.</i> , Finite-Dimensional Reductions of 2D dToda Hierarchy Constrained by the String Equation.....	430
<i>LOUTSENKO I. and YERMOLAYEVA O.</i> , Poisson Structure of Rational Reductions of the 2D dToda Hierarchy	438

<i>MINESAKI Y. and NAKAMURA Y.</i> , A Conservative Numerical Integration Algorithm for Integrable Henon–Heiles System.....	444
<i>NAKAMURA Y. and ZHEDANOV A.</i> , Toda Chain, Sheffer Class of Orthogonal Polynomials and Combinatorial Numbers.....	450
<i>POCHYNAYKO M. and SYDORENKO Yu.</i> , Operators of Binary Darboux Transformations for Dirac’s System.....	458
<i>SKRYPNYK T.V.</i> , Quasigraded Lie Algebras and Matrix Generalization of Landau–Lifshitz Equation.....	462
<i>SYDORENKO Yu.</i> , Generalized Binary Darboux-like Theorem for Constrained Kadomtsev–Petviashvili (cKP) Flows.....	470
<i>SZABLIKOWSKI B.M. and BLASZAK M.</i> , Soliton Systems as \star -Deformed Dispersionless Equations.....	478
<i>TAJIRI M.</i> , Relation between Periodic Soliton Resonance and Instability.....	486
<i>VAKHNENKO V.O. and PARKES J.</i> , The Connection of the Degasperis–Procesi Equation with the Vakhnenko Equation.....	493
<i>VALENT G.</i> , Higher Conserved Quantities for the Multi-Centre Metrics.....	498
<i>VERNOV S.Yu.</i> , Construction of Special Solutions for Nonintegrable Dynamical Systems with the Help of the Painlevé Analysis.....	504
<i>VUS A. and PIDKUYKO S.</i> , Explicitly Reducible Integrable Natural Systems with the Integral of Full Momentum.....	512
<i>ZOLOTARYUK Y. and SALERNO M.</i> , Symmetry Breaking and AC-Driven Dynamics of Solitons.....	516

Part 2

Supersymmetry

<i>ANDRIANOV A.A. and SOKOLOV A.V.</i> , Nonlinear Supersymmetry in Quantum Mechanics...	539
<i>BURBAN I.M.</i> , D-branes on Calabi–Yau Hypersurfaces.....	547
<i>KOTIKOV A.V., LIPATOV L.N. and VELIZHANIN V.N.</i> , DGLAP and BFKL Equations in $N = 4$ Supersymmetric Gauge Theory.....	555
<i>KURU Ş. and VERÇİN A.</i> , Three-Dimensional Integrable and Superintegrable Isospectral Potentials.....	563
<i>MILITELLO B., NIKITIN A. and MESSINA A.</i> , Symmetries and Supersymmetries in Trapped Ion Hamiltonian Models.....	569
<i>PAVLYUK A.</i> , Generalized Self-Duality in Superfield Formalizm.....	574
<i>RAUSCH de TRAUBENBERG M.</i> , Four Dimensional Cubic Supersymmetry.....	578
<i>SHIMA K., TSUDA M. and SAWAGUCHI M.</i> , On Linearization of Superon-Graviton Model (SGM).....	586
<i>UVAROV D.V. and ZHELTUKHIN A.A.</i> , Hamiltonian of Superstring and Super p -Branes with Enhanced Supersymmetry.....	593
<i>VISINESCU M.</i> , Symmetries and Supersymmetries of the Dirac-Type Operators on Curved Spaces.....	601

Symmetry in Physics

<i>BALEANU D.</i> , Angular Momentum and Killing–Yano Tensors.....	611
<i>BENDER C.M.</i> , Complex Extension of Quantum Mechanics.....	617
<i>BENNETT D.L. and NIELSEN H.B.</i> , The Multiple Point Principle: Realized Vacuum in Nature is Maximally Degenerate.....	629
<i>BOGOSLOVSKY G.Yu. and GOENNER H.F.</i> , Generalized Lorentz Symmetry and Nonlinear Spinor Fields in a Flat Finslerian Space-Time.....	637

<i>BORGHARDT A.A., KARPENKO D.Ya. and KHACHATUROVA T.A.</i> , Axially Symmetrical Solutions of the Klein–Gordon–Fock Equation	645
<i>BRONNIKOV K.A. and MEIEROVICH B.E.</i> , Self-Gravitating Global Monopole and Nonsingular Cosmology	649
<i>BUDINICH P.</i> , Internal Symmetry from Division Algebras in Pure Spinor Geometry	654
<i>CHICHIKINA M.V. and KHRUSTALEV O.A.</i> , Quantization of Nonlinear Fields on the Classical Background by Means of Bogoliubov Group Variables	666
<i>CORDES H.O.</i> , Symmetry Conditions on Dirac Observables	671
<i>DE MONTIGNY M., KHANNA F.C. and SANTANA A.E.</i> , Some Applications of a Lorentz-Like Formulation of Galilean Invariance	677
<i>DEBERGH N. and VAN DEN BOSSCHE B.</i> , Supplementary Solutions for Quasi-Exactly Solvable One-Dimensional Equations	685
<i>DERZHKO O. and VERKHOLYAK T.</i> , Jordan–Wigner Fermions and Dynamic Probes of Quantum Spin Chains	692
<i>DOEBNER H.D., KOPP A. and ZHDANOV R.</i> , Extensions of Physical Theories: Quantum Mechanics with Internal Degrees of Freedom and Nonlinear Transformations	700
<i>EDGAR S.B., RANI R. and BARNES A.</i> , Nondegenerate Killing Tensors from Conformal Killing Vectors	708
<i>ESHRAHGI H. and ABEDINI Y.</i> , The Generalized Leray Transformation for Finite Time Singular Vortices in Fluids	715
<i>FADEEV N.G.</i> , The Physical Nature of Lobachevsky Parallel Lines and a New Inertial Frame Transformation	722
<i>FIORENZA D. and LONGONI R.</i> , Associative Algebras, Punctured Disks and the Quantization of Poisson Manifolds	729
<i>FROGGATT C.D., LAPERASHVILI L.V., NIELSEN H.B. and TAKANISHI Y.</i> , Family Replicated Gauge Group Models	737
<i>GAITE J.</i> , Symmetry in Anisotropic Rotating Turbulence	744
<i>GALKIN A.</i> , Equation for Doublets of Particles with Half-Integer Spin and Parasupersymmetry	752
<i>GAVRILIK A.M.</i> , Quantum Groups and Cabibbo Mixing	759
<i>GIACOMINI A.</i> , Classical Liouville Theory and the Microscopic Interpretation of Black Hole Entropy	767
<i>GOLUBOWSKA B.</i> , Infinitesimal Affinely-Rigid Bodies in Riemann Spaces	774
<i>GÜNTHER U.</i> , Intertwiners of Pseudo-Hermitian 2×2 -Block-Operator Matrices and a No-Go Theorem for Isospectral MHD Dynamo Operators	780
<i>HASSELMANN K. and HASSELMANN S.</i> , The Metron Model: a Unified Deterministic Theory of Fields and Particles – a Progress Report	788
<i>HENKEL M.</i> , Dynamical Space-Time Symmetry for Ageing Far from Equilibrium	796
<i>IVASHIN A.P., KOVALEVSKY M.Y. and LOGVINOVA L.V.</i> , Classification of Equilibrium States of Condensed Media with Spontaneously Broken Symmetry	804
<i>KELLER J.</i> , A Derivation of Quantum Mechanics from START	811
<i>KIRILYUK A.P.</i> , Universal Symmetry of Complexity and Its Manifestations at Different Levels of World Dynamics	821
<i>KÖRCÜK E. and KOÇ R.</i> , Symmetries of the Jahn–Teller System and Their Solvability	829
<i>KOTEL'NIKOV G.</i> , On the Possibility of Faster-Than-Light Motions in Nonlinear Electrodynamics	835
<i>KOVACHEV L.M.</i> , Nonlinear Amplitude Maxwell–Dirac Equations. Optical Leptons	843
<i>KOVALEV V.F. and SHIRKOV D.V.</i> , The Renormalization Group Symmetry for Solution of Integral Equations	850

<i>KUCHERYAVY V.I.</i> , Renormalization, Ward Identities, Symmetries, and Quantum Anomalies: Logical Aspect	862
<i>MALYUTA Yu.M. and OBIKHOD T.V.</i> , D-Branes, Helices, and Proton Decay.....	870
<i>MATUTE E.A.</i> , Topological Charges, Prequarks and Presymmetry: a Topological Approach to Quark Fractional Charges.....	873
<i>MESSINA A., MILITELLO B. and NAPOLI A.</i> , Generation of Glauber Coherent State Superpositions via Unitary Transformations	881
<i>NOVIKOV-BORODIN A.V.</i> , Space Rotation	886
<i>NURMAGAMBETOV A.J.</i> , The Sigma-Model Representation for the Duality-Symmetric $D = 11$ Supergravity	894
<i>OKNINSKI A.</i> , Splitting the Kemmer–Duffin–Petiau Equations.....	902
<i>PARTHASARATHY R. and SRIDHAR R.</i> , Diagonal Representation of Density Matrix Using q -Coherent States	909
<i>SAWADO N., SHIIKI N. and ORYU S.</i> , Multi-Soliton Solutions with Discrete Symmetries in the Chiral Quark Soliton Model.....	915
<i>SHVEDOV O.Yu.</i> , Symmetries in Semiclassical Mechanics	923
<i>SINGLETON D., YOSHIDA A. and KATO A.</i> , Alternative Gauge Procedure with Fields of Various Ranks	931
<i>SITENKO Yu.A. and GORKAVENKO V.M.</i> , Charge Fractionalization in a Planar System with a Point-Like Vortex Defect at Finite Temperature	939
<i>SLAD L.M.</i> , Double Symmetry and Infinite-Component Field Theory.....	947
<i>SLAWIANOWSKI J.J. and KOVALCHUK V.</i> , Invariant Geodetic Problems on the Projective Group $\text{Pr}(n, \mathbb{R})$	955
<i>SPICHAK S.</i> , Invariance of Maxwell’s Equations under Nonlinear Representations of Poincaré Algebra	961
<i>SU J.C.</i> , Massive Gauge Field Theory without Higgs Mechanism.....	965
<i>URBANOWSKI K.</i> , CPT Symmetry and Properties of the Exact and Approximate Effective Hamiltonians for the Neutral Kaon Complex.....	973
<i>VASSILIEV D.</i> , The Pseudoinstanton – a Lorentzian Analogue of the Instanton.....	981
<i>WANG Q.</i> , Calculation of \mathcal{C} Operator in \mathcal{PT} -Symmetric Quantum Mechanics.....	986
<i>WAWRZYCKI J.</i> , Generally Covariant Quantum Mechanics	993
<i>YAMALEEV R.M.</i> , Extended Relativistic Dynamics with n -degree Characteristic Polynomial ...	999
<i>YANG C.Y.</i> , Symmetry in Relativistic Measurements.....	1006
<i>ZNOJIL M. and YANOVICH D.</i> , New Type of Exact Solvability and of a Hidden Nonlinear Dynamical Symmetry in Anharmonic Oscillators	1010
<i>ZVEREV V.V. and RUBINSTEIN B.Y.</i> , Dynamical Symmetries and Well-Localized Hydrogenic Wave Packets	1018

Part 3

Algebras, Groups and Representation Theory

<i>ATAKISHIYEV N.M. and KLIMYK A.U.</i> , Hamiltonian Type Operators in Representations of the Quantum Algebra $\text{su}_q(1, 1)$	1039
<i>BECKERS J.</i> , On the Gauge Groups of Particle Physics and Their Quantum Deformations....	1051
<i>BONDARENKO A.</i> , Description of Anti-Fock Representation Set of $*$ -Algebras Generated by the Relation $XX^* = f(X^*X)$	1053
<i>BONDARENKO V.M. and POLISHCHUK A.M.</i> , On Finiteness of Critical Tits Forms of Posets	1061
<i>CHAPOVSKY Yu.A., KALYUZHNYI A.A. and PODKOLZIN G.B.</i> , On $2 + 2$ Locally Compact Quantum Groups	1064

<i>DALETSKII A. Yu. and KALYUZHNYI A.A.</i> , Permutations in Tensor Products of Factors, and L^2 Betti Numbers of Configuration Spaces	1071
<i>DEELEY R.J., HORWOOD J.T., MCLENAGHAN R.G. and SMIRNOV R.G.</i> , Theory of Algebraic Invariants of Vector Spaces of Killing Tensors: Methods for Computing the Fundamental Invariants	1079
<i>GLAZUNOV N.M.</i> , On Computational Aspects of the Fourier–Mukai Transform	1087
<i>IORGOV N.</i> , On the Wave Functions of Ruijsenaars Model Related to q -Analogue of Symmetric Space $GL(n)/SO(n)$	1094
<i>KAROLINSKY E., MUZYKIN K. and STOLIN A.</i> , Classical Dynamical Yang–Baxter Equations and Quasi-Poisson Homogeneous Spaces	1101
<i>KISIL V.V.</i> , p -Mechanics and De Donder–Weyl Theory	1108
<i>KOROVNICHENKO A., SPIRIDONOV V.P. and ZHEDANOV A.S.</i> , Poisson Algebras on Elliptic Curves	1116
<i>KRUGLYAK S.A.</i> , Relation of Majorization for $*$ -Categories and $*$ -Wild Categories	1124
<i>KYRYCHENKO A.A.</i> , The Structure of Algebras $Q_{n,\bar{\alpha}}$ Generated by Linear Connected Idempotents	1128
<i>MAISTRENKO T., POPOVYCH S. and SAMOÏLENKO Yu.</i> , On the Algebra of Unharmonic Quantum Oscillator	1131
<i>MELLIT A.S., SAMOÏLENKO Yu.S. and ZAVODOVSKY M.V.</i> , On $*$ -Representations of Algebras of Temperley–Lieb Type and Algebras Generated by Linearly Dependent Generators with Given Spectra	1139
<i>MIYAMOTO M.</i> , (Pseudo-)Trace Functions and Modular Invariance of Vertex Operator Algebra	1145
<i>PATERA J.</i> , Orbit Functions of Compact Semisimple Lie Groups as Special Functions	1152
<i>PERRINE S.</i> , Modified Hypergeometric Equations Arising from the Markoff Theory	1161
<i>POPOVA N.</i> , On $*$ -Representations of One Deformed Quotient of Affine Temperley–Lieb Algebra	1169
<i>PROSKURIN D.P.</i> , Twisted Product of Fock Spaces	1172
<i>RABANOVICH V.I. and STRELETS A.V.</i> , On Polynomial Identities in Algebras Generated by Idempotents and Their $*$ -Representations	1179
<i>SAMOILENKO A., PRYKARPATSKY Y., BLACKMORE D. and PRYKARPATSKY A.</i> , On the Liouville–Arnold Integrable Flows Related with Quantum Algebras and Their Poissonian Representations	1184
<i>SAMOILENKO Ye. Ye.</i> , On Spectrum of Matrix-Valued Continuous Functions of a Family of Commuting Operators	1192
<i>STUKOPIN V.</i> , Yangians of Classical Lie Superalgebras: Basic Constructions, Quantum Double and Universal R -matrix	1195
<i>USENKO C.V. and LEV B.I.</i> , Spinor Representation of Lee Algebra for Complete Linear Group	1202
<i>VASILCHUK V.</i> , On the Moments of the Traces of Unitary and Orthogonal Random Matrices	1207
<i>VLASENKO M.O.</i> , On Certain Quotient of Temperley–Lieb Algebra	1214
Related Problems of Mathematical Physics	
<i>AMDJADI F.</i> , Torus Doubling Cascade in Problems with Symmetries	1221
<i>ANTONIOUK A. Val.</i> , Nonlinear Symmetries of Variational Calculus and Regularity Properties of Differential Flows on Non-Compact Manifolds	1228
<i>ANTONIOUK A. Vict.</i> , Regularity Properties of the Infinite-Dimensional Evolutions, Related with Anharmonic Lattice Systems	1236

<i>ARAI A.</i> , Enhanced Binding in a Model of an Abstract Quantum System Coupled to a Multi-Component Bose Field	1244
<i>ARRIOLA L.</i> , First Integrals/Invariants & Symmetries for Autonomous Difference Equations	1253
<i>BAZILEVICH Yu.N.</i> , Hidden Symmetry Exposure. The Mechanical Systems with the Hard Structure of Forces	1261
<i>BILGE A.H.</i> , <i>DERELI T.</i> and <i>KOÇAK Ş.</i> , Monopole Equations on 8-Manifolds with Spin(7) Holonomy: The Energy Integral	1266
<i>CHANU C.</i> , Separation of Variables in the Null Hamilton–Jacobi Equation	1274
<i>CHIRICALOV V.A.</i> , Matrix Impulsive System of Differential Equations with Bilinear Main Part	1282
<i>COHL H.S.</i> , Discrete Fourier Inversion of Linear Inhomogeneity	1288
<i>DRYUMA V.S.</i> , On Geodesical Extension of the Schwarzschild Space-Time	1294
<i>FINKELSHTEIN D.L.</i> , Second Order Differential Operators on the Configuration Spaces	1301
<i>GERASIMENKO V.I.</i> , <i>RYABUKHA T.V.</i> and <i>STASHENKO M.O.</i> , On the BBGKY Hierarchy Solutions for Many-Particle Systems with Different Symmetry Properties	1308
<i>GRUNDLAND A.M.</i> and <i>ZAKRZEWSKI W.J.</i> , CP^{N-1} Harmonic Maps and the Weierstrass System	1314
<i>GÜLER Y.</i> , Geometrical Interpretation of Constrained Systems	1322
<i>HILLER B.</i> and <i>OSIPOV A.A.</i> , $SU(N)$ Flavor Dynamics within a Generalized Heat Kernel Expansion	1328
<i>IGONIN S.</i> , <i>VERBOVETSKY A.</i> and <i>VITOLO R.</i> , Variational Multivectors and Brackets in the Geometry of Jet Spaces	1335
<i>KACIMOV A.</i> and <i>SERRANO S.</i> , Dynamics of Sharp Interfaces in One-, Two-Phase Flows in Porous Media: Asymmetry in the Boussinesq and Charny Equations	1343
<i>KADIOGLU N.</i> and <i>ATAOGLU S.</i> , An Elastodynamic State for the Solutions of Axial Symmetric Problems	1348
<i>KALNITSKY V.S.</i> , Spray Algebra	1356
<i>KHRIPLOVICH I.B.</i> and <i>KIRILIN G.G.</i> , Quantum Long-Range Interactions in General Relativity	1361
<i>KLEEFELD F.</i> , On Symmetries in (Anti)Causal (Non)Abelian Quantum Theories	1367
<i>KOLEVA M.K.</i> , Coarse-Grained Structure of a Physical (Strange) Attractor. Analytical Solution	1375
<i>KORNYAK V.V.</i> , Computer Algebra Study of Spectral Invariants of Differential Operators on Curved Manifolds	1382
<i>KUROCHKINA E.P.</i> and <i>SOBOLEVA O.N.</i> , Numerical Simulation of Replacing Oil by Water in a Scale-Invariant Porous Medium	1390
<i>KUZ'MIN G.A.</i> and <i>SOBOLEVA O.N.</i> , Flow Through a Porous Medium with Multiscale Log-Stable Permeability	1396
<i>LAZUR V.Yu.</i> , <i>MYHALYNA S.</i> and <i>KHOMA M.</i> , Asymptotic Approach to the Quantum Mechanical Problem of the Three Coulomb Centers	1404
<i>MAKARENKO A.</i> , <i>POLIARUSH A.</i> and <i>TETKO I.</i> , Symmetry Analysis in Spikes (Bursts) Recognition and Classifications	1410
<i>MALKOWSKY E.</i> , Visualisation and Animation in Mathematics and Physics	1415
<i>MATARAZZO G.</i> , <i>POMPEI A.</i> and <i>SAMOYLENKO V.</i> , One Frequency Asymptotic Solutions to Differential Equation with Deviated Argument and Slowly Varying Coefficients	1423
<i>REITY O.K.</i> , <i>RUBISH V.V.</i> and <i>MYHALYNA S.I.</i> , The WKB Method for the Dirac Equation with Vector-Scalar Potentials in 2+1 and 3+1 Dimensions	1429

<i>SAMOYLENKO Yu.</i> , Asymptotical Expansions for One-Phase Soliton-Type Solution to Perturbed Korteweg–de Vries Equation	1435
<i>SAWADO N. and SHIIKI N.</i> , Axially Symmetric Black Hole Skyrmions	1442
<i>SEMENOV A.A., LEV B.I. and USENKO C.V.</i> , Quantum Phase Space in Relativistic Theory: the Case of Charge-Invariant Observables	1448
<i>SHAPOVALOV A., TRIFONOV A. and LISOK A.</i> , Semiclassical Approach to the Geometric Phase Theory for the Hartree Type Equation	1454
<i>SHRAMCHENKO V.</i> , New Frobenius Structures on Hurwitz Spaces in Terms of Schiffer and Bergmann Kernels	1466
<i>SKRYPNIK W.</i> , Long-Range Order in Lattice Linear Oscillator Systems and Peierls Argument	1474
<i>SOROKA D.V. and SOROKA V.A.</i> , Generalizations of Schouten–Nijenhuis Bracket	1480
<i>TORRES D.F.M.</i> , The Role of Symmetry in the Regularity Properties of Optimal Controls	1488
<i>VELIČKOVIĆ V. and MALKOWSKY E.</i> , Analytic Transformations between Surfaces with Animations	1496
<i>VISINESCU A. and GRECU D.</i> , Modulational Instability and Multiple Scales Analysis of Davydov’s Model	1502
<i>VLADIMIROV V.A. and KUTAFINA E.V.</i> , On the Localized Invariant Solutions of Some Non-Local Hydrodynamic-Type Models	1510
<i>YATSENKO V.A., SACKELLARES J.C., PARDALOS P., CARNEY P.</i> <i>and PROKOPYEV O.</i> , Geometric Models, Fiber Bundles and Biomedical Applications	1518