

Contents

Preface	vii
LIE GROUPS	1
The Racah Algebra: An Overview and Recent Results HENDRIK DE BIE, PLAMEN ILIEV, WOUTER VAN DE VIJVER, AND LUC VINET	3
Orbit Embedding for Double Flag Varieties and Steinberg Maps LUCAS FRESSE AND KYO NISHIYAMA	21
Symplectic Dirac Cohomology and Lifting of Characters to Metaplectic Groups JING-SONG HUANG	43
Spectrum of Semisimple Locally Symmetric Spaces and Admissibility of Spherical Representations SALAH MEHDI AND MARTIN OLBRICH	55
Four Examples of Beilinson-Bernstein Localization ANNA ROMANOV	65
NUMBER THEORY	87
Perfect Powers in Polynomial Power Sums CLEMENS FUCHS AND SEBASTIAN HEINTZE	89
The Number of Irregular Diophantine Quadruples for a Fixed Diophantine Pair or Triple YASUTSUGU FUJITA	105
On Ideals Defining Irreducible Representations of Reductive p -adic Groups GORAN MUIĆ	119
On Diophantine Properties of Radix Representations in Algebraic Number Fields ATTILA PETHŐ	133
VERTEX ALGEBRAS	149
On Certain W -algebras of Type $W_k(\mathfrak{sl}_4, f)$ DRAŽEN ADAMOVIĆ, ANTUN MILAS, AND MICHAEL PENN	151
On the $N = 1$ Super Heisenberg-Virasoro Vertex Algebra DRAŽEN ADAMOVIĆ, BERISLAV JANDRIĆ, AND GORDAN RADOBOLJA	167

Character Rings and Fusion Algebras PETER BANTAY	179
Continuing Remarks on the Unrolled Quantum Group of $\mathfrak{sl}(2)$ JAMES F. CLARK	187
On the Geometric Interpretation of Certain Vertex Algebras and Their Modules JESSE CORRADINO	201
Representation Theory of Vertex Operator Algebras and Orbifold Conformal Field Theory YI-ZHI HUANG	221
Further q -series Identities and Conjectures Relating False Theta Functions and Characters CHRIS JENNINGS-SHAFFER AND ANTUN MILAS	253
Ultra-Discretization of $D_6^{(1)}$ -Geometric Crystal at the Spin Node KAILASH C. MISRA AND SUCHADA PONGPRASERT	271
Twisted Exterior Derivative for Universal Enveloping Algebras I ZORAN ŠKODA	305
The Heisenberg Generalized Vertex Operator Algebra on a Riemann Surface MICHAEL P. TUIITE	321