

Contents

Preface	xi
A Geometric Description of Equivariant K -Homology for Proper Actions PAUL BAUM, NIGEL HIGSON AND THOMAS SCHICK	1
The Planar Algebra of Diagonal Subfactors DIETMAR BISCH, PARAMITA DAS AND SHAMINDRA KUMAR GHOSH	23
K_1 -Injectivity for Properly Infinite C^* -Algebras ÉTIENNE BLANCHARD	49
Families of Monads and Instantons from a Noncommutative ADHM Construction SIMON BRAIN AND GIOVANNI LANDI	55
Cyclic Theory for Commutative Differential Graded Algebras and S -Cohomology DAN BURGHELEA	85
Vinberg Algebras, Lie groups and Combinatorics PIERRE CARTIER	107
Noncommutative Geometry as the Key to Unlock the Secrets of Space-Time ALI H. CHAMSEDDINE	127
The Regular C^* -Algebra of an Integral Domain JOACHIM CUNTZ AND XIN LI	149
Noncommutative Coordinate Algebras MICHEL DUBOIS-VIOLETTE	171
Random Matrices, Free Probability, Planar Algebras and Subfactors A. GUIONNET, V. F. R. JONES, D. SHLYAKHTENKO	201
The Tangent Groupoid and the Index Theorem NIGEL HIGSON	241
Le Théorème de Périodicité en K -Théorie Hermitienne MAX KAROUBI	257
A Short Survey of Cyclic Cohomology MASOUD KHALKHALI	283
The Core Hopf Algebra DIRK KREIMER	313
Propriété (T) Renforcée et Conjecture de Baum-Connes VINCENT LAFFORGUE	323
Combinatorial Hopf algebras J.-L. LODAY AND M. RONCO	347
Cyclotomy and Analytic Geometry over \mathbb{F}_1 YURI I. MANIN	385

Motivic Renormalization and Singularities MATILDE MARCOLLI	409
Free Groups and Reduced 1-Cohomology of Unitary Representations FLORIAN MARTIN AND ALAIN VALETTE	459
Local index Formula and Twisted Spectral Triples HENRI MOSCOVICI	465
Observables in Quantum Gravity ALEJANDRO PEREZ AND CARLO ROVELLI	501
On the Fundamental Group of II_1 Factors and Equivalence Relations Arising from Group Actions SORIN POPA AND STEFAAN VAES	519
Leibniz Seminorms for “Matrix Algebras Converge to the Sphere” MARC A. RIEFFEL	543
Structured Vector Bundles Define Differential K -Theory JAMES SIMONS AND DENNIS SULLIVAN	579
Entropy in Operator Algebras ERLING STØRMER	601
Non-Compact Spectral Triples with Finite Volume RAIMAR WÜLKENHAAR	617
A Characterization of the Image of the Baum-Connes Map GUOLIANG YU	649
Quantum Modular Forms DON ZAGIER	659