Contents

Preface ---- VII

Part I: **Theory**

Anthony M. Gaglione and Dennis Spellman

The Universal Theories of Various Classes of Groups: A Survey —— 3

James Howie and Olexandr Konovalov

Generalized Triangle Groups of Type (2, 3, 2) with No Cyclic Essential Representations —— 27

Olga Kharlampovich and Christopher Natoli

On Countable Elementary Free Groups ---- 43

Alexei G. Myasnikov and Mahmood Sohrabi

Groups Elementarily Equivalent to the Classical Matrix Groups — 53

Matthias Neumann-Brosig

An Approximation Theorem for Finitely Generated Groups — 87

Part II: Algorithms

Alexander Hulpke

Some Examples of Computer Calculations with Finitely Presented Groups —— 99

Martin Kreuzer and Florian Walsh

An Algorithmic Survey of Finite Z-Algebras — 115

Vladimir Shpilrain

Complexity of Some Algorithmic Problems in Groups: A Survey —— 137

Part III: Applications

Jane Gilman

Lifting Surface Automorphisms in \mathbb{R}^3 to \mathcal{S}^3 —— 155



Delaram Kahrobaei and Keivan Mallahi-Karai

Secret Sharing Schemes Using Representation Theory of Finite Groups —— 165

Gabriele Kern-Isberner

Algebraic Messages from the Probabilistic Entropy Principles for Knowledge Representation in Artificial Intelligence —— 175

Kristina Rosenthal

Teaching Conceptual Modeling in the Age of Generative Conversational AI: Ideas for a Research Agenda —— 199

Jens Zumbrägel

Noncommutative Group Actions for Cryptography — 209

Part IV: The Life and Work of Gerhard Rosenberger

Martin Kreuzer

A Brief Biography —— 225

Gerhard Rosenberger's Books ---- 226

Gerhard Rosenberger's Papers — 228

Index ---- 239