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Mohammad Ashraf
Asma Ali
Vincenzo De Filippis *Editors*

Algebra and Related Topics with Applications

ICARTA-2019, Aligarh, India, December
17–19

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Mohammad Ashraf · Asma Ali ·
Vincenzo De Filippis
Editors

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Preface

Algebra is considered a significant milestone in Mathematics. Algebra is not just limited to Mathematics; also, it has a lot of real-world applications be it computer science, chemical science, technology, coding theory, cryptography, graph theory, etc. In fact, the world revolves around the applications of algebra.

The Department of Mathematics, Aligarh Muslim University, Aligarh, India, organized an International Conference on Algebra and Related Topics with Applications (ICARTA-19) with the aim to provide a forum for researchers, eminent academicians, research scholars and students to exchange ideas, and to communicate and discuss research findings and new advances in different branches of algebra, especially Ring theory, Coding theory, Cryptography and Graph theory.

During the conference, world-renowned algebraists gave 8 plenary talks and 20 invited talks which have been potentially affected by the most recent developments in the related areas. This conference covered topics of several new directions and applications. Among the participants of the conference, 90 exuberant younger mathematicians presented their research articles, during proper thematic sessions. More than one dozen participants from various countries like USA, Egypt, Korea, Nigeria, Taiwan, Italy, Germany and Norway together with nearly two hundred delegates from within India participated in this conference.

A special session was devoted in the honour of Prof. M. A. Quadri who is one of the esteemed professors who initiated study and research in the area of modern mathematics in the Department of Mathematics, AMU, Aligarh.

We appreciate the active participation of all young researchers and academicians. Hopefully, the conference also enables participants to explore possible avenues to foster academic and research exchange, as well as scientific activities within and abroad of India. This refereed volume includes papers from renowned algebraists and invited speakers as well as other participants of the conference. All submitted papers are rigorously reviewed, followed by a careful selection process.

In addition to highlighting the latest research being done on the frontiers of algebra, the articles published also provide insights into how ideas have explored and have been connected. The proceeding's overall approach addresses the challenges of abundant topics of algebra particularly semi groups, groups, derivations in rings, rings

and modules, group rings, matrix algebra, triangular algebra, polynomial rings and lattice theory. Apart from these topics, we also received research papers which have applications in coding theory and graph theory.

This research volume is distinguished from many others by its variety of topics, methodologies and depth of research. We believe that this volume will thus further expand our understanding and can serve as a reference book in the rapidly expanding field of algebra and related topics with their applications to coding theory, cryptography and graph theory.

We gratefully acknowledge the funding received towards this conference from the Aligarh Muslim University (AMU), Aligarh, Department of Science and Technology (DST), New Delhi, Indian National Science Academy (INSA), New Delhi, and the Council of Scientific and Industrial Research (CSIR), New Delhi. This volume would not have been possible without the support of expert referees who provided their valuable comments through reports diligently and promptly despite their busy schedules. We would like to thank Prof. M. Imdad, Chairman, Department of Mathematics, for his consistent support and guidance during the running of this conference. Furthermore, we would like to thank the rest of the faculty members, research scholars of Mathematics Department, AMU, for their collaborative effort during the conference. Also thanks to committee members, especially Prof. Nadeem ur Rehman, Dr. Shakir Ali, Dr. Mujeebur Rehman, Dr. M. Aslam Siddeeqe and Dr. Ghulam Mohammad, who enabled this conference to be possible. We would like to say special thanks to Prof. M. A. Quadri. In spite of his health problems, his support, guidance and overall insights have made this an inspiring experience for us. We would like to express our gratitude to the entire team of Springer for publishing this volume. Thank you Mr. Shamim Ahmad, Senior Editor, Mathematical Sciences, Springer, India for facilitating the publication process, we truly appreciate your hard work and enthusiasm, everything was so intelligible and gave clear guidance. We look forward to continue our relationship.

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