

Preface

This volume consists of papers presented at the International Conference ‘Algebra and Combinatorics: Interactions and Applications’ which took place in Königstein, Germany, in March 1994. The conference was dedicated to the memory of Lev Arkad’evich Kalužnin (see pp. 5–18 for more detailed information).

The present collection of papers can be viewed as a link to two previous collections also published by Kluwer, namely the special issue of *Acta Applicandae Mathematicae* 29(1–2) (1992) on ‘Interactions Between Algebra and Combinatorics’, edited by I. A. Faradžev, A. A. Ivanov and M. H. Klin, and the book *Investigations in Algebraic Theory of Combinatorial Objects*, edited by I. A. Faradžev, A. A. Ivanov, M. H. Klin and A. J. Woldar, 1994.

While the two previous collections were based on papers submitted exclusively by mathematicians from the former U.S.S.R., the present volume contains a healthy balance of results achieved by Eastern and Western mathematicians. To a certain extent this symbolizes the impressive progress made in human and scientific contacts – a significant feature of the last five years.

The volume consists of three parts:

Part A contains a biography of Lev Arkad’evich Kalužnin written by his former students, and a bibliography of his scientific work.

Part B consists of expository and survey papers written expressly for the volume in a style and order specified by the editors. The majority of these papers are based on plenary talks presented at the conference. The study of permutation groups and their applications to combinatorics was one of the favorite areas of activity of L. A. Kalužnin and his collaborators. This subject is presented in the papers of S. E. Anacker and A. J. Woldar, A. Kerber and R. Laue, V. Liskovets, E. K. Lloyd and G. A. Jones, V. B. Mnukhin, M. Muzychuk, A. Seress, and V. A. Ustimenko. The two papers by M. Deza and V. P. Grishukhin and R. I. Tyshkevich and V. E. Zverovich are concerned with some aspects of graph theory and combinatorics closely related to algebraic methods. The paper of T. Hikita and I. G. Rosenberg reports on progress in the area of completeness in relational systems.

Part C includes research communications submitted by participants of the conference. The papers presented here also reflect several facets of the interrelations between algebra and combinatorics. Most of the papers belong to the realm of group theory (N. Adrianov and A. Zvonkin, H.-J. Hoehnke, J. Hrabe de Angelis, I. D. Ivanjuta, G. Pazderski, I. D. Suprunenko). Two other areas represented here are that of general (universal) algebra (D. A. Bredikhin, I. Chajda, H. Machida, J. Płonka) and applications to the natural sciences (J. Grell). One

paper is devoted to the history of mathematics (H. Gropp) and one to the extremal graph theory (G. Fiorini and F. Lazebnik).

We believe that the present collection provides a rather vivid exposition of many of the important links between algebra and combinatorics, together with numerous and varied applications.

As was the case with the two previous volumes, we express our gratitude to Kluwer Academic Publishers for their continued interest in and support of this work, and we are looking forward to have their full cooperation with future projects.

Finally, heartfelt thanks are due to the conference organizers, not only for the exceptional job they did in arranging all conference related activities but also for extending us the invitation to serve as main editors of the volume, thereby enabling us to pay tribute to an extraordinary man – *Lev Arkad'evich Kalužnin*. We dedicate the volume in his honor.

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