

# LOGIC, ALGEBRA, AND COMPUTER SCIENCE

Helena Rasiowa in memoriam

*Editors of the Volume*

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## PREFACE

In 1985, a semester on *Mathematical Problems in Computation Theory* was held at the Stefan Banach International Mathematical Center. It was chaired by an eminent Polish logician, Professor Helena Rasiowa. The proceedings thereof appeared as volume 21 of the Banach Center Publications. The title points to the main purpose of the event, which was to stimulate an interest of working mathematicians, in particular Ph.D. students in mathematical logic and general algebra, in problems arising in computer science. As mentioned in the preface to that volume, also the meeting of scientists from both East and West was beneficial by creating a possibility for wide and free contact, which, as we can note today, was scarce at that time.

The subsequent decade saw the fruitful development of mathematics of computer science, and in particular of computer science logic, both in scope and in depth. Several ideas that sprang up in the early 1980's evolved to major fields, including descriptive complexity, temporal logic, polymorphic lambda calculus, logic programming, and fuzzy logic. Mathematics and computer science seem to be much closer to each other today, as are perhaps also East and West.

Professor Rasiowa left us on August 9, 1994.

A group of her former students and collaborators decided to pay tribute to her memory by organizing a working conference that would revive the idea of the 1985 semester. It was our intention to create a meeting place for researchers working on the mathematical problems of logic and general algebra relevant to computer and information science. One important goal was also to inspire young researchers and Ph.D. students, in particular from Eastern Europe. Thanks to the kind attitude of the Stefan Banach International Mathematical Center in Warsaw, the conference took the shape of a mini-semester held there, December 2–22, 1996, under the title LOGIC, ALGEBRA, AND COMPUTER SCIENCE — Helena Rasiowa *in memoriam*.

The meeting brought together over 140 scientists from 25 countries, among them a great number of former students and collaborators of Helena Rasiowa. The scientific programme consisted of 110 lectures, including a number of expository talks addressed to a large audience. Most lectures can be classified within the following areas:

- modal and epistemic logic, logic of programs,
- constructive mathematics and automated reasoning,
- proof theory and lambda calculus,
- algebraic and categorical methods in logic,

- multi-valued logic,
- reasoning about knowledge in intelligent systems,
- computational and descriptive complexity, theory of finite structures.

This volume contains a selection of papers related to the expository talks presented at the mini-semester. Most of them are expanded versions of the actual tutorials.

We wish to thank all the authors who contributed to this volume. Thanks go also to the referees for their great help.

We take the opportunity to thank all the participants of the mini-semester for their interest, and particularly the lecturers for their valuable contribution.

We wish to express our gratitude to the Stefan Banach International Mathematical Center for hosting the meeting, and especially to its director, Prof. B. Jakubczyk for his kind support.

The first editor who also served as technical organizer of the mini-semester wishes to thank all the colleagues who gave him assistance in programme and organization tasks, particularly Prof. E. Orłowska, Prof. A. Skowron, and Prof. L. Polkowski.

We also acknowledge the excellent administrative work of Ms. G. Pieścik-Bojarska and Ms. U. Jurakowska. Special thanks go to R. Maron and A. Schubert for the maintenance of Internet facilities.

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