

Preface

Inequalities are found in almost all fields of pure and applied mathematics. Because of their various applications in areas such as the natural and engineering sciences as well as economics, new types of interesting inequalities are discovered every year. In the theory of differential equations, in the calculus of variations and in geometry, fields which are dominated by inequalities, efforts are made to extend and improve the classical ones.

The study of inequalities reflects the different aspects of modern mathematics. On one hand, there is the systematic search for the basic principles, such as the deeper understanding of monotonicity and convexity. On the other hand, finding the solutions to an inequality requires often new ideas. Some of them have become standard tools in mathematics. In view of the wide-ranging research related to inequalities, several recent mathematical periodicals have been devoted exclusively to this topic.

A possible way to speed up the communication between groups of specialists of the seemingly unconnected areas is to bring them together from many parts of the globe. Due to the efforts of János Aczél, Georg Aumann, Edwin F. Beckenbach, Richard Bellman and Wolfgang Walter, the first General Inequalities meeting was organized in Oberwolfach, Germany in 1976. Then six meetings were organized in Oberwolfach between 1978 and 1995 and one in Noszvaj, Hungary in 2002.

The *Conference on Inequalities and Applications* 07 also took place at the De La Motte Castle in Noszvaj, Hungary from September 9 to 15, 2007. It was organized by the Department of Analysis of the University of Debrecen.

The members of the Scientific Committee were Catherine Bandle (Basel), William Norrie Everitt (Birmingham, honorary member), László Losonczi (Debrecen), Zolt Páles (Debrecen), Michael Plum (Karlsruhe) and Wolfgang Walter (Karlsruhe, honorary member).

The organizing Committee consisted of Zoltán Daróczy (honorary chairman), Attila Gilányi (chairman), Mihály Bessenyei (scientific secretary), Zoltán Boros, Gyula Maksa, Szabolcs Baják and Fruzsina Mészáros. There were 66 participants from 16 countries.

The talks at the symposium focused on the following topics: convexity and its generalizations; mean values and functional inequalities; matrix and operator inequalities; inequalities for ordinary and partial differential operators; integral and differential inequalities; variational inequalities; numerical methods. A number of

sessions were, as usual, devoted to problems and remarks. The scientific program was complemented by several social events, such as a harpsichord recital of some masterpieces of Bach and Haydn, performed by Ágnes Várallyay.

This volume contains 33 research papers, about half of the works presented at the meeting. The material is arranged into six chapters ranging from *Inequalities related to ordinary and partial differential equations* to *Inequalities, stability, and functional equations*. The contributions given here reflect the ramification of inequalities into many areas of mathematics, and also present a synthesis of results in both theory and practice.

The editors of the volume are thankful to Mrs. Phyllis H. Brown for the artistic drawings made at the conference, which are illustrations to the six chapters. They thank Mihály Bessenyei for enthusiastically compiling the report of the meeting, Andrea Pákozdy for the preparation of the manuscripts and the publisher, Birkhäuser Verlag, for the careful typesetting and technical assistance.

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The Editors

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Bandle, C.; Gilányi, A.; Losonczi, L.; Páles, Z.; Plum, M.
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