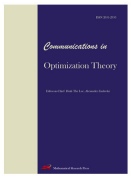
MATHRES
Communications in Optimization Theory
Available online at http://cot.mathres.org



PREFACE
A SPECIAL ISSUE ON NONLINEAR ANALYSIS
DEDICATED TO THE MEMORY OF PROFESSOR PETR P. ZABREIKO

Professor Petr Petrovich Zabreiko (February 3, 1939 – March 21, 2019) was an outstanding Soviet-Belarusian mathematician. In 1961, he graduated from the Faculty of Mathematics and Mechanics of Voronezh State University. While studying in graduate school under the guidance of Professor M. A. Krasnoselskii, he obtained a number of significant results regarding the geometric methods of analysis, some of which were included in the monograph "Vector Fields in the Plane" (1963) co-written with M. A. Krasnoselskii, A. I. Perov and A. I. Povolockii and served as the basis for the PhD thesis he defended in 1964. After completing his graduate studies, Petr Zabreiko built a systematic theory of operators and operator equations in spaces of functions. His scientific research covers a wide range of areas of modern mathematics. Professor Zabreiko developed algorithms for calculating the topological characteristics of mappings in degenerate cases, which led to new theorems on bifurcation and the solvability of partial differential equations, constructed a general theory of spaces of functions and integral operators acting on them, and developed methods for studying branching problems for solutions of various classes of operator equations. A number of Professor Zabreiko's research results, which have already become classic, radically influenced the formation and development of entire areas of mathematical research. His results on the theory of linear and nonlinear operators are widely known. They concern, for instance, analytical methods for solving operator equations, geometric methods of analysis, the theory of differential equations, and analysis of impulse-differential equations. Professor Zabreiko published twelve books and 378 refereed journal and conference articles. He had 32 PhD students.

In this special issue we present papers authored by a selected group of experts in the area of nonlinear analysis. Most of the papers collected here have been contributed by former students, collaborators, friends and colleagues of Petr Zabreiko, who were influenced by his scientific work. The special issue contains ten papers contributed by researchers from Australia, Germany, Israel, Morocco, Poland, Russia, Serbia, South Africa, Sweden, Taiwan and the United States of America. These papers cover a wide spectrum of important problems and topics of current research interest.

Therefore we feel that this special issue will be highly important for many mathematicians, who are interested in recent developments in nonlinear analysis, as well as in its numerous applications.

Simeon Reich
Technion–Israel Institute of Technology, Israel
E-mail address: sreich@technion.ac.il

Alexander Zaslavski
Technion–Israel Institute of Technology, Israel
E-mail address: ajzasl@technion.ac.il

Table of Contents