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PREFACE: GEOMETRIC FUNCTIONAL ANALYSIS AND RELATED TOPICS, PART I

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Special Issue on Geometric Functional Analysis and Related Topics dedicated to the memory of Professor Nicole Tomczak-Jaegermann

This special issue on Geometric Functional Analysis and Related Topics is dedicated to the memory of Professor Nicole Tomczak-Jaegermann.

Nicole Tomczak-Jaegermann (June 8, 1945 – June 17, 2022) was an outstanding Polish-Canadian mathematician who made significant contributions to Asymptotic Geometric Analysis, Geometric Functional Analysis and Random Matrix Theory. She has numerous influential results in these fields. In particular, she combined methods of Asymptotic Analysis (studying high-dimensional convex bodies) with (infinite dimensional) Banach Space Theory. Her results formed one of the key components of Fields medalist Timothy Gowers' solution to Stefan Banach's homogeneous space problem, posed in 1932. She also established sharp bounds on the approximation of the covariance matrix by an empirical covariance matrix obtained by random sampling, thus completely answering a question raised by three renowned mathematicians, Kannan, Lovasz and Simonovits, in the context of random walks. Her 1989 monograph on Banach-Mazur distances is highly cited.

Professor Nicole Tomczak-Jaegermann earned her MSc degree in 1968 from the University of Warsaw and her PhD degree from the same university in 1974, under the supervision of Aleksander Pelczynski. She remained on the faculty of the University of Warsaw from 1975 until 1981, when she moved to Texas A&M University. In 1983 she joined the University of Alberta, where she was a professor of mathematics and the holder of the Canada Research Chair in Geometric Analysis.

In 1996 Professor Tomczak-Jaegermann was elected to the Royal Society of Canada. In 1998 she was an Invited Speaker at the International Congress of Mathematicians in Berlin. In 1999 she won the Krieger-Nelson Prize for an outstanding female Canadian mathematician. She was the winner of the 2006 CRM-Fields-PIMS prize for exceptional research in mathematics. In 2013 she was awarded the Sierpinski medal by the University of Warsaw jointly with the Polish Mathematical Society.

Professor Nicole Tomczak-Jaegermann has authored a book, edited another book and wrote about 120 papers. She has had 11 PhD students.

In the first part of this special issue we present papers authored by a select group of experts in the area of Geometric Functional Analysis and its applications. It contains eleven papers contributed by researchers from Bulgaria, Canada, France, Germany, Hungary, Israel, Spain, and the USA.

These papers cover a wide spectrum of important problems and topics of current research interest, including a non-Archimedean analogue of the space of valuations

on convex sets, Croft, Falconer and Guy questions of uniqueness for bodies of revolution, ergodicity of the space $l_2(X)$, vertex generated polytopes, density bounds for unit ball packings relative to their outer parallel domains, Zolotarev-type distances, 2-rotund norms for generalized Baernstein spaces and their duals, Radon transforms with small derivatives and distance inequalities for convex bodies, Köthe duals of Orlicz-Lorentz spaces, non-central sections of the regular n-simplex, and the mth-order weighted projection body operator and related inequalities.

We hope that this special issue is of importance for many mathematicians interested in recent developments in Geometric Functional Analysis as well as in its diverse applications.

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