

PREFACE: MEMORY OF PROFESSOR WATARU TAKAHASHI



This special issue on Journal of Nonlinear and Convex Analysis is dedicated to the memory of Professor Wataru Takahashi.

Professor Wataru Takahashi passed away on November 19, 2020, at the age of 76. Professor Takahashi was born in Tokyo in 1944. After graduating from the Department of Mathematics of Yokohama National University, he entered the Graduate school of Tokyo Institute of Technology in April 1966. He studied Functional Analysis and received his Doctorate of Science degree in 1971, under his supervisor Professor H. Umegaki. He gained a position as an Assistant Professor in the Department of Information Science in Tokyo Institute of Technology in April 1971, and as an Associate Professor in the Faculty of Education at Yokohama National University in April 1972. After two years of teaching there, he came back to Tokyo Institute of Technology as an Associate Professor in 1974. He was promoted to a Professor in the department in July 1999.

His research covers a large number of topics in Nonlinear Analysis. The outstanding successes among his many achievements are as follows: nonlinear ergodic theory for nonexpansive semigroups, fixed point theorems for nonlinear mappings, studies of convex metric spaces, the approximation of fixed points by various types of methods, and others. He wrote more than 535 academic papers related to these topics, and many mathematical articles have cited his works over 10,745 times. Besides the publication of his works, Professor Takahashi made a significant contribution to

academic society through editorial activities in international journals. He is one of the founding editors of the *Journal of Nonlinear and Convex Analysis*, founded in 2000, the leading journal in this field. His name is on the list of the editorial board of various journals.

He was also one of the prominent founding members of two conference series: International Conference on Nonlinear Analysis and Convex Analysis (NACA) and Asian conference on Nonlinear Analysis and Optimization (NAO-Asia). The latest 11th NACA conference took place in Hakodate, Hokkaido, Japan, on August 2019, as the celebrated joint conference with the International Conference on Optimization: Techniques and Applications (ICOTA). At this conference, they held a special celebrating session for Professor Wataru Takahashi on his 75th birthday.

Professor Takahashi was also a successful educator. “Forty-three students obtained their Ph.D. degrees under his supervision”. Most of them are active research mathematicians in their academic field.

He created an international network of researchers that brought together people from many countries and provided them new ways to communicate and publish their work. The following messages from his friends tell a lot about his character.

“The passing of Wataru Takahashi is a huge loss to the mathematical world. Beyond his numerous academic contributions, he created an international network of researchers that brought together people from many countries and provided them new ways to communicate and publish their work. The cycles of meetings he started up have been a scientific benefit and source of yearly travel pleasure for very many of us, and for me particularly. Without them and his kind invitations, I would not have learned to know so many colleagues in Asia and to love so much the culture of Japan and its neighbors. I will greatly miss him and his influential efforts.”

—Terry Rockafellar

“It was 1999, that I wrote the first letter to Professor Takahashi and asked him for suggestions on the struggling in my research, and he kindly introduced me the book written by him. The book and many others books under his name are very helpful to my works, thereafter. Years after our first contact, he made the first visit to my university, Chulalongkorn University in Bangkok, gave lecture to participants from many universities in the country. Since then, many Thai PhD students had worked under his supervision. As a very kind teacher and a beloved friend he will be in my heart forever.”

—Imchit Termwuttipong

“Wataru had been an Honorary Chair Professor of our Department of Applied Mathematics, National Sun Yat-sen University, Kaohsiung, Taiwan, for about 10 years. Among his 524 publications found in Mathscinet, there are 17 papers coauthored with me, 70 papers addressed to our department, and about 200 papers joined with colleagues in Taiwan. It is never overemphasized how important the contribution Wataru made to the field of analysis in Taiwan. We are in deep sorrow

in the loss of our best friend, best colleague, and best teacher, Wataru Takahashi Sensei. May Sensei rest in peace.”

——Ngai-Ching Wong

“ Professor Wataru Takahashi has been known to me for a long time as an expert of nonlinear and convex analysis, and I actually had occasional email correspondences with him for many years, but it was only recently that I had the chance to talk to him personally. In 2018 I was invited to give a talk at the 6th conference of NAO-Asia in Okinawa on some work on discrete optimization related to convexity. In NAO-Asia 2018, it was impressive for me to witness an international community of nonlinear analysis that Professor Takahashi developed with enthusiasm and friendship. Not only elderly established researchers but younger people also enjoyed the friendly conference with substantial scientific interaction. On top of his numerous mathematical papers and books, his contribution to forming an international community, especially in Asia, is outstanding. I am really sorry for the loss of such an international leader, and I can only hope that his enthusiasm will be inherited by his successors.”

——Kazuo Murota

Full text and other messages can be found in:

<https://www.lab2.toho-u.ac.jp/sci/is/kimura/en/takahashi-memorial.html>

We feel that this special issue will be of great importance for many mathematicians and scientists, who are interested in recent developments in nonlinear and convex analysis as well as in their numerous applications.

Editors