

Preface

Special Issue Dedicated to Eberhard Zeidler's 75th Birthday

Hans-Peter Gittel¹ · Harald Grosse² ·
Wolfgang Hackbusch³ · Hoang Xuan Phu⁴

Published online: 22 February 2016

© Vietnam Academy of Science and Technology (VAST) and Springer Science+Business Media Singapore 2016



This issue of the Vietnam Journal of Mathematics is dedicated to Professor Eberhard Zeidler on the occasion of his 75th birthday, which he celebrated on October 6, 2015. It

✉ Hans-Peter Gittel
gittel@math.uni-leipzig.de

Harald Grosse
harald.grosse@univie.ac.at

Wolfgang Hackbusch
wh@mis.mpg.de

Hoang Xuan Phu
hxphu@math.ac.vn

¹ Department of Mathematics, University of Leipzig, Augustusplatz 10, 04109 Leipzig, Germany

² Faculty of Physics, University of Vienna, Boltzmannngasse 5, 1090 Wien, Austria

³ Max Planck Institute for Mathematics in the Sciences, Inselstraße 22, 04103 Leipzig, Germany

⁴ Institute of Mathematics, Vietnam Academy of Science and Technology, 18 Hoang Quoc Viet Road, Cau Giay District, Hanoi, Vietnam

covers 11 papers on various areas of mathematics and mathematical physics. The authors have close ties to Eberhard Zeidler.

In 1959, he started studying mathematics at the University of Leipzig. For political reasons, he was forced to leave the university in 1961. Nevertheless, he autodidactically continued his studies of mathematics and physics supported substantially by his teacher Professor Herbert Beckert. In 1964, Eberhard Zeidler was allowed to return to the university, and already in 1967, he finished his PhD thesis [1] about a class of nonlinear singular boundary value problems with symmetry properties in function theory. In 1970, he obtained the habilitation with his study [2] on a class of free boundary value problems in hydrodynamics.

From 1974 to 1996, Eberhard Zeidler was Ordinary Professor for Analysis at the University of Leipzig. With his work, he contributed to the long-lasting tradition of the ‘Mathematisches Seminar’ founded by the famous mathematician Felix Klein in 1881. Eberhard Zeidler is a scientist covering a wide class of interests, including in particular applications of mathematics. His lectures and seminars always had a great impact to the students and were of a very stimulating and kind atmosphere. Hence, many PhD students, postdocs, and researchers were attracted to come to Leipzig.

Eberhard Zeidler soon became one of the most well-known mathematicians of the German Democratic Republic (GDR – the eastern part of Germany). In 1971, he published a survey [3] honoring his teacher Herbert Beckert. The article [4] (1974) concerning the development of mathematics in the GDR already shows his deep understanding and knowledge of partial differential equations and the principles of mathematical physics.

During the next years, he published several monographs; first three volumes on ‘Lectures on nonlinear functional analysis’ [5] (in German) appeared at Teubner, Leipzig. Among other results, these books include results by Eberhard Zeidler on bifurcation theory, free boundary value problems, Navier–Stokes equations, Lyusternik–Schnirelman theory as well as numerical functional analysis. During the late eighties, these monographs were extended to a four-volume opus on ‘Nonlinear functional analysis and its applications’ [6] (3500 pages!) published by Springer. They had great influence on all mathematicians working in this field and made Eberhard Zeidler to a founding father of nonlinear functional analysis. Due to these books, he earned international reputation and got invitations to outstanding universities and research institutes in the US. It is a surprise that besides his activities he managed to complete the books ‘Applied functional analysis’ [7] with part 1: ‘Applications to mathematical physics’ and part 2: ‘Main principles and their applications’ during the nineties. Moreover, he revised and extended the ‘Taschenbuch der Mathematik’ [8]—a classical German reference book on mathematics, which was also translated to English [9] and appeared at Oxford University Press in 2004.

When the Max Planck Society thought about new research institutes in the eastern part of Germany, it decided to hire Eberhard Zeidler as the founding director of a ‘Max Planck Institute for Mathematics in the Sciences’. Starting in 1995, he built up and managed this institute. Besides the scientific reputation, his leadership qualities and his broad spectrum of scientific interests were essential for the successful development of the institute. Discussions with him were always stimulating for further studies and enabled to see mathematical results in more general relations. Many researchers from all parts of the world visited the institute and enjoyed the hospitality and the pleasant, cooperative spirit. In 2007, he retired as a director of the Max Planck Institute.

Since 1994, Eberhard Zeidler is a member of the German Academy ‘Leopoldina’. In 2004, he obtained the Honorary Doctorate of the Vietnam Academy of Science and Technology in Hanoi. He was honored by the Alfred Krupp Science Price in 2006 and by the Science Price of Teubner Foundation in 2014.

During the last years, he completed the monographs on ‘Quantum field theory’ [10] consisting of volume 1: ‘Basics in mathematics and physics’ (2006), volume 2: ‘Quantum electrodynamics’ (2008), volume 3: ‘Gauge theory’ (2011). Each book has more than 1000 pages and aims at the ambitious task of ‘building a bridge between mathematicians and physicists’. This idea is worked out by giving a state-of-art overview from the physical principles to the mathematical methods.

On the occasion of the 75th birthday of Professor Eberhard Zeidler, we congratulate him and wish him many happy recurrences.

Selected Papers and Books of Eberhard Zeidler

1. Über eine Klasse nichtlinearer singulärer Randwertaufgaben der Funktionentheorie mit Symmetrieverhalten. Dissertation. Universität Leipzig, Leipzig (1967)
2. Zur Theorie und Praxis einer Klasse freier Randwertprobleme der ebenen Hydrodynamik. Habilitationsschrift. Universität Leipzig, Leipzig (1970); also appeared in [3]
3. Festschrift. Herrn Prof. Dr. phil. habil. Herbert Beckert zum 50. Geburtstag. Akademie-Verlag, Berlin (1971)
4. Entwicklung der Mathematik in der DDR. Deutscher Verlag der Wissenschaften, Berlin, 403–427 (1974)
5. Vorlesungen über Nichtlineare Funktionalanalysis. 3 volumes. Teubner, Leipzig (1976)–(1978)
6. Nonlinear Functional Analysis and its Applications. 4 volumes. Springer, New York (1986)–(1990)
7. Applied Functional Analysis. 2 volumes. Springer, New York (1995)
8. Teubner-Taschenbuch der Mathematik. Founded by Bronstein, I.N., Semendjajew, K.A. Teubner, Stuttgart (1996)–(2003)
9. Oxford User’s Guide to Mathematics. Oxford University Press, Oxford (2004)
10. Quantum Field Theory. 3 volumes. Springer, Berlin (2006)–(2011)
11. Mathematics – The Cosmic Eye of Humanity. Nonlinear Anal. 69, 1073–1082 (2008)