Applications of Mathematics

Karel Segeth
Professor Ivo Babuška is seventy

NEWS AND NOTICES

PROFESSOR IVO BABUŠKA IS SEVENTY

The founder of this Journal, Professor Ivo Babuška, was born just 70 years ago. It is a nice opportunity to congratulate him upon his birthday and to remember his active and fruitful life.

Ivo Babuška was born on March 22, 1926 in Prague (Praha), Czechoslovakia. After World War II, he studied civil engineering at the Czech Technical University in Prague, and received the Ing. degree in 1949 and the Ph.D. degree in Technical Science (Dr. tech.) in 1951. In the period 1949–1952, he studied mathematics at the Central Mathematical Institute in Prague as a graduate student and since 1951 he was a research fellow at the Institute. The Institute changed its name to the Mathematical Institute of the Czechoslovak Academy of Sciences in 1953.

In 1955 Babuška received the Ph.D. (CSc.) degree in mathematics and in 1960 the D.Sc. (DrSc.) degree. From 1955 to 1968 he was Head of the Department of Constructive Methods of Mathematical Analysis of the Mathematical Institute of the Czechoslovak Academy of Sciences.

In 1956, Babuška established the journal Applications of Mathematics (formerly Aplikace matematiky) in Prague. He was also one of initiators of international scientific meetings that still take place up to now. The first international EQUADIFF Conference on Differential Equations was held in Prague in 1962 and the first international Conference on Basic Problems of Numerical Analysis in Liblice in 1964. He was appointed Professor at the Charles University in Prague in 1968.

In 1968, he arrived in the United States and was a Visiting Professor at the Institute for Fluid Dynamics and Applied Mathematics (IFDAM) at the University of Maryland at College Park, MD. In 1969, he became a Research Professor at IFDAM (now called the Institute for Physical Science and Technology) and later also at the Department of Mathematics.

Babuška, along with others, is a founder and leader of the Finite Element Circus, an informal meeting which, for more than 25 years, takes place twice a year.

After leaving Prague, Babuška remained in scientific contact with his colleagues in Czechoslovakia. Since 1990, he resumed visiting Czechoslovakia (later Czech Republic) and in 1994, he established the Prize for Young Czech Scientists in the field of numerical analysis and computational mechanics that is awarded anually.

In 1995, Babuška became a senior research scientist and Robert Trull Professor at the Texas Institute for Computational and Applied Mathematics at the University of Texas at Austin, TX.

Babuška solved one of his first great mathematical tasks with straightforward engineering applications in the early fifties. In the period 1953–1956, he was the leader of a computational group that analyzed technology of the building of Orlík Dam on the Vltava River. It is a gravitational concrete dam 91 m high. All the computations were carried out on mechanical desk calculators. Most technological problems were formulated mathematically by Babuška and then analyzed mathematically and numerically. The problems treated initiated the establishing of a general theory of numerical stability of algorithms.

Babuška's group in the Mathematical Institute in Prague was mainly interested in the theory of partial differential equations with applications to mechanics, and in numerical analysis. Babuška's interest in applied and numerical mathematics finally brought him to the finite element method. He has achieved numerous bright results in the method itself, in its reliability, a priori and a posteriori estimations, and adaptive approaches, which are recognized all over the world and belong to the fundamentals of the method.

Babuška has been involved in the education of several tens of graduate students, along with his other scientific activities. He is the author or co-author of 6 monographs and he contributed to further 13 books with fundamental chapters. Altogether he published 180 original papers in recognized international mathematical as well as engineering journals and further 70 papers in various proceedings. The full bibliography of Babuška appeared in Czechoslovak Math. J. *46* (1996). The reception of his work is excellent and the response is numerous. He belongs to a small group of a few scientists who make the real top of the world research in the finite element method.

He has received much recognition and various awards for his scientific work. He has been invited to a lot of lectures at conferences all over the world and he is a member of editorial boards of numerous mathematical and engineering journals.

The Mathematical Institute of the Academy of Sciences of the Czech Republic, in cooperation with further institutions, will organize a Prague Mathematical Conference in honor of the 70th birthdays of Professor Ivo Babuška and his colleagues, Professors Miroslav Fiedler, Jaroslav Kurzweil, and Vlastimil Pták, on July 8–12, 1996. I am sure that Professor Ivo Babuška deserves our congratulations and our sincere wishes of good health, optimistic mind, and a lot of further interesting mathematical results.

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