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Biography

Miroslav Fiedler, 1926–2015

Professor Miroslav Fiedler, an outstanding Czech mathematician, passed away on Friday November 20, 2015.



Miroslav Fiedler was born on April 7, 1926 in Prague. He graduated at Charles University in 1950, where he obtained the degree of RNDr. (rerum naturalium doctor).

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In 1952 he joined the Central Mathematical Institute, the predecessor of the Mathematical Institute of the Czechoslovak Academy of Sciences, where he received the degree of CSc. (equivalent to Ph.D.) in 1955 and the degree of DrSc. (Doctor of Science) in 1963. In 1965 he was appointed a full professor at Charles University. With exception of several long-term scientific stays abroad (Caltech; Auburn University; University of South Carolina) he worked all his life at the Mathematical Institute of the Czech (Czechoslovak) Academy of Sciences. In 1993 he was affiliated also with the Institute of Computer Science, and was appointed Professor Emeritus of the Czech Academy of Sciences.

M. Fiedler significantly contributed to the state-of-the-art in the fields of linear algebra, matrix theory, geometry, combinatorics and graph theory. During his research career he authored or co-authored four monographs and close to 250 research papers (a complete up-to-date bibliography can be found at the link http://www.cs.cas.cz/knihovna-data/bibliografie/fiedler/seznam_publicaci_2015.pdf). For many years he lectured at universities throughout the former Czechoslovakia including Prague, Bratislava and Košice. He always cared about talented students of secondary schools and served as a very active member of organizing committees of mathematical competitions and olympiads. M. Fiedler was in 1978 awarded by the Government of the Republic the Czechoslovak National Prize (jointly with V. Pták), B. Bolzano Medal for Merits in Mathematical Sciences of the Czechoslovak Academy of Sciences in 1986, H. Schneider Prize of the International Linear Algebra Society in 1993, the honorary medal De Scientia et Humanitate Optime Meritis of the Czech Academy of Sciences in 2006. In 2007 he was awarded by the President of the Czech Republic the Medal of the Merit of the First Degree, one of the highest awards of the Czech Republic. He also got the Neuron Foundation Award for Scientific Achievements in 2012, and the Medal of Josef Hlávka delivered by the Hlávka Foundation in 2013.

M. Fiedler served for many years as the Editor-in-Chief of the Czechoslovak Mathematical Journal, and he served also as the editor of *Numerische Mathematik*. He was associated with Linear Algebra and its Applications in a most remarkable way. In 1968–1984 he served as associate editor, in 1984–1991 as advisory editor, and in 1992–2015 as distinguished editor. His involvement and impact can be documented also by the following quantitative facts. The total number of 1238 results containing the keyword “Fiedler” has been found by the search engine in all fields of the homepage of Linear Algebra and its Applications. It is interesting also to see their distribution over the years which can be seen in Fig. 1. According to the same source, M. Fiedler is an author or coauthor of 84 papers in Linear Algebra and its Applications with the counts depicted in Fig. 2. These numbers demonstrate the amazing fact that he was scientifically fully active until his very last days.

Together with a number of coauthors, including, in particular, T.L. Markham and F.J. Hall, he studied in recent years properties of various classes of matrices such as complementary basic matrices and their generalizations, G-matrices, combined matrices. Besides their algebraic properties he was also interested in their sign patterns and graph

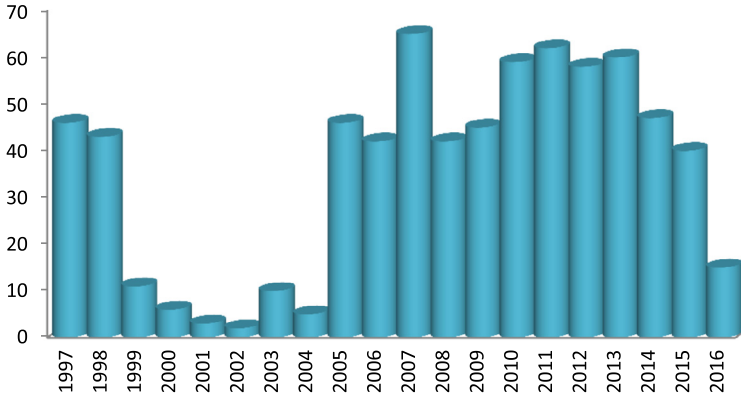


Fig. 1. Frequency of the keyword “Fiedler” in LAA. Total 1238 results; 1996 and earlier 532 results.

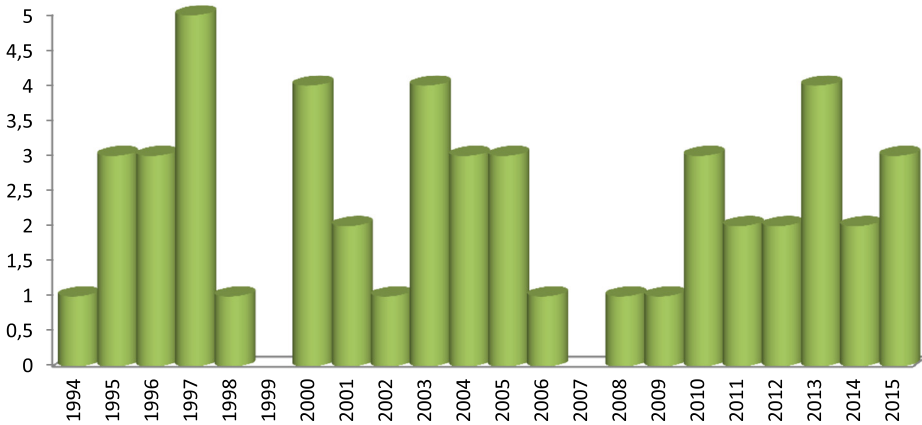


Fig. 2. Number of M. Fiedler’s publications in LAA. Total 84 publications; 1993 and earlier 35 publications.

theoretic properties. From subjects closer to geometry, his another favorite field, one can mention recent works on a majorization in Euclidean geometry, geometry of the Laplacian or isoperimetric problems for Euclidean simplices. The last monograph of M. Fiedler with the title *Matrices and Graphs in Geometry* (2011) has appeared in the series *Encyclopedia of Mathematics and its Applications* published by the Cambridge University Press. Its review in *Linear Algebra and its Applications* by B. Grünbaum has appeared in 2012 [3].

In 2007, a special issue of *Linear Algebra and its Applications* was published in honor of Miroslav Fiedler on the occasion of his 80th birthday [2], edited by P. Butkovič, L. Hogben, R. Nabben, Z. Strakoš and M. Tůma. The preface of that issue [1] presents a brief biography and appreciation of M. Fiedler and a bibliography of his books and papers up to that time. At the ILAS Meeting on Pure and Applied Linear Algebra (Braunschweig, Germany, August 22–26, 2011), a plenary minisymposium was organized by R.A. Brualdi and H. Schneider in honor of Miroslav Fiedler [4]. There were four invited

talks highlighting four general aspects of Fiedler's many mathematical contributions and how they have influenced continued developments. These talks, by S. Mackey [5], V. Nikiforov [6], S. Sergeev [7], and J. Stuart [8] are included in Issue 4 of Volume 439. Another special issue of *Linear Algebra and its Applications*, Volumes 223/224, was dedicated to Miroslav Fiedler and Vlastimil Pták in 1995. This issue edited by N. Young, W. Barrett and A. Bunse-Gerstner [9] honors two whole-life-lasting friends, colleagues and collaborators. Their biographies and research works were comprehensively described in the introductory article of Z. Vavřín [10].

One can nowadays often meet a very short sighted views to planning and evaluation of science, including mathematics, by an immediate impact, preferably using measurable economic profits. The results of Miroslav Fiedler can be used also to demonstrate foolishness of such efforts. All his results were produced out of a genuine scientific curiosity. Yet many of them are of fundamental importance. He has not performed himself large scale numerical computations. Still his results are nowadays, decades after their publication, counted among principal tools in development of methods and software for solution of very large problems on the most powerful massively parallel computers. Such computations solve key problems from sciences, engineering, environment, security, etc. Who is able to measure the everyday economical impact of such basic science contributions? Advocates of shallow indicators of the quality and impact of mathematics should read some of the most influential papers of Miroslav Fiedler and other outstanding mathematicians. The work of Miroslav Fiedler gives an excellent example that science is often progressing in an unexpected and unmeasurable way.

Miroslav Fiedler was a great mathematician and true gentleman who influenced a lot of mathematicians all over the world. Many of them never met him in person. We all miss him. To celebrate his productive life and achievements, a memorial webpage has been set at the <http://www.cs.cas.cz/fiedler>, where the colleagues, friends and all people affected by him, by his achievements and his whole life are encouraged to contribute with their memories, stories and remarks.

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