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Seventieth birthday of Professor Alexander Ženíšek

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SEVENTIETH BIRTHDAY OF PROFESSOR ALEXANDER ŽENÍŠEK

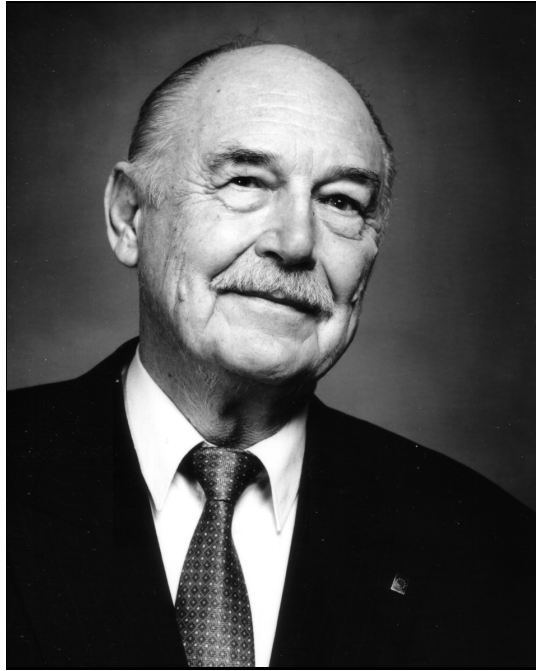


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Prof. Alexander Ženíšek, member of the Learned Society of the Czech Republic, celebrates his seventieth birthday this year. He was born on 29th January 1936 in Brno. After his study of Physics at the Masaryk University in Brno he obtained an assistant position in the Department of Physics at the Technical University in Brno. His activities in Physics can be documented by the book “Fundamentals of Physics”, which he published together with B. Klimeš and J. Kracík in 1972. Nevertheless, it follows from the list of his publications that very soon he converted to mathematics. A break in his scientific career was caused by his non-professional hobby. As an enthusiastic bridge player, he met František Leitner (who became a bridge player on a world level) and Jiří Kratochvíl (later professor at the TU Brno), who acquainted him in the year 1967 with a new engineering method for static structural analysis of

dams, called the *finite element method* (FEM). Several months later, when he met Prof. Miloš Zlámal, he started to be fully engaged in the mathematical theory of the FEM. In the year 1970 he became a scientific fellow-worker in the Computing Laboratory of the TU Brno, where Prof. Zlámal was director. Very soon, A. Ženíšek became a recognized specialist in the FEM with world reputation. In 1990 he obtained the position of Professor of Mathematics in the Department of Mathematics of the Faculty of Mechanical Engineering at the TU Brno, and in the years 1994–2003 he was director of the Institute of Mathematics at this faculty. After his retirement in 2005 he became Professor Emeritus of the TU Brno.

Professor A. Ženíšek contributed to the FEM in many directions. Let us mention at least some of his most important results. First, it is the construction and analysis of new finite elements as e.g. triangular and tetrahedral C^m -elements, semiregular triangular elements of Hermite type, curved C^m -elements and narrow quadrilateral isoparametric finite elements. Further, it is the analysis of the so-called variational crimes, i.e. the approximation of a curved boundary and the use of numerical integration. He was extensively concerned with finite element approximations of nonlinear elliptic and parabolic problems and eigenvalue problems. He obtained important results in the theory of semiregular elements. Beside the FEM, Prof. Ženíšek also paid attention to some other mathematical disciplines having importance in the theory of the FEM. We can mention the theory of curvilinear and surface integrals and the theory of Sobolev spaces. A. Ženíšek is the author/co-author of 7 monographs or chapters in monographs. His results are included in nearly 70 scientific works. Moreover, he is the author/co-author of 9 university textbooks.

I am very happy that I had the opportunity to cooperate with Prof. A. Ženíšek on the solution of some problems. At the end of the seventies I started to deal (unfortunately with a ten years delay) with the finite element method. I recognized that the solution of problems of fluid dynamics required the application of this technique. Moreover, I was also motivated by the ideas and activities of the famous Brno FEM school, with which I had come into contact from time to time. I can say that I have always spoken about M. Zlámal and A. Ženíšek with deep respect. I did not start with the FEM from the investigation of linear problems, but I immediately jumped to the area of strongly nonlinear problems of fluid dynamics. It was a great honour for me when A. Ženíšek asked me for a discussion after my lecture at the Equadiff conference in 1985. It appeared that our interests were nearly identical, but each of us was fighting with different obstacles. During an hour, Prof. Ženíšek honoured me once more by an offer to cooperate with him. We started immediately. I was impressed by his knowledge of a number of finite element tricks that solved my problems. Till the end of the Equadiff conference we were ready with our theory and wrote several papers

devoted to the generalization of the Ciarlet-Raviart theory of variational crimes to nonlinear problems, which met with considerable interest of other numerical analysts.

Since then we became good friends. I have always admired his erudition and his indefatigable effort to achieve precise and comprehensible exposition. He has always had sense for the choice of topical and attractive problems. I always found something new, interesting, beneficial and beautiful in his works. For example, for several years I tried to apply the well-known Ciarlet-Raviart theory of numerical integration to the analysis of the finite element approximation of a nonlinear Newton boundary condition with polynomial growth. Finally, one paper by A. Ženíšek gave me guidance. His ideas led to desirable results. This shows that Prof. A. Ženíšek belongs to distinguished specialists in the finite element method, whose works have contributed to the progress in science. This can also be documented by his excellent monograph “Nonlinear Elliptic and Evolution Problems and their Finite Element Approximations” published by Academic Press. Recently, A. Ženíšek published another excellent book “Sobolev Spaces and Their Applications in the Finite Element Method”. Its treatment is clear and comprehensible and therefore it is suitable not only for mathematicians but also for theoretically oriented engineers. This monograph yielded its author the 2005 Josef Hlávka Prize, awarded by the Czech Literary Foundation and Foundation of Josef, Marie and Zdeňka Hlávka.

Professor A. Ženíšek contributed to the progress in science not only as a distinguished specialist. He is a regular member of the Learned Society of the Czech Republic. Its goal is to spread culture, intelligence and knowledge and to popularize the science.

It is interesting that A. Ženíšek, an enthusiastic scientist, does not fit in the general opinion about mathematicians. He has sense of humour and is deeply interested in art, particularly in music and poetry. Not everybody knows that he is the author of several books of poems.

On behalf of all his friends and colleagues, I would like to congratulate Professor Alexander Ženíšek on his anniversary and sincerely wish him good health, optimistic mind and a lot of joy from Mathematics as well as poetry.

References

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