

CSR-National Prize awarded to Professor RNDr. Ivo Marek, DrSc.

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CSR-NATIONAL PRIZE AWARDED
TO PROFESSOR RNDR. IVO MAREK, DRSC.

Head of Department of Numerical Mathematics of the Faculty of Mathematics and Physics, Charles University, Prague, Professor RNDr. Ivo Marek, DrSc., is among those who on 4 May have been awarded the National Prize of the Czech Socialist Republic for outstanding results in science, technology, art and culture. Of all the results awarded, those of I. Marek are the only ones belonging to the field of Mathematics and its applications.

An extensive collection of papers under the common title "Functional and Numerical Analysis of Reactor Physics", for which Prof. Marek was granted the prize, can be divided into three main groups: mathematical models of reactors, positive operators, numerical methods.

The first group of papers concerns the properties of various mathematical models of reactors. In particular, existence and uniqueness of solutions of certain problems of reactor physics is proved. When studying the model based on Boltzmann's equation, Marek among other proved the conjecture of E. Fermi that the neutron flow is not oscillatory.

The main topics of the second group are the spectral properties of positive operators and their application to the theory of criticality, in particular, criticality of reactor systems. Among the results we find the abstract minimax theory for operators that reproduce the cone in the Banach space. This result, similarly to many others from this group, is of much more general import than merely in the domain of reactor physics.

The group of papers concerning numerical methods of solution of nuclear reactors includes above all the method of iteration of sources together with the optimization of its version, and the method of evaluation of critical parameters of nuclear reactors. One of the methods studied is the finite element method, for which special elements are chosen that take account of the transient conditions in the variational formulation of the problem. The mathematical verification of correctness of several types of homogenization of strongly oscillating data, which occur in problems of nuclear reactors, also belongs to this group.

There is nothing accidental in the fact that the scientific results of Prof. Marek, for which he has been awarded the National Prize, belong to the domain of applications of mathematics in reactor physics. After graduating from the University, the first affiliation of I. Marek was with the Institute of Nuclear Physics (now Institute for Nuclear Research), and since then, during all his years at the Faculty of Mathematics and Physics, he has been showing unceasing interest in the field. Problems of reactor physics have penetrated all his research and motivated even such works that at first sight appear to be of purely mathematical character.

We congratulate Prof. I. Marek on the occasion of the bestowal of the National Prize of the CSR and wish him many further successes in his scientific activity.

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