

Igor Petrov, corresponding member of the Russian Academy of Sciences, is 70 years old



Igor Petrov, Corresponding Member of the Russian Academy of Sciences, Doctor of Physical and Mathematical Sciences, Professor, Honored Professor of the Moscow Institute of Physics and Technology, turned 70 on February 8, 2023.

The scientific interests are, first of all, computer methods for solving dynamic systems of partial differential equations and numerical modeling of processes occurring in deformable media under their dynamic loading.

Scientific activity is inextricably linked with the Moscow Institute of Physics and Technology, where he entered the Aerophysics and Space Research Faculty in 1970. After graduating from the Institute, in 1976, he was assigned to the Department of Computational Mathematics at MIPT as a junior researcher. In 1983, he defended his dissertation there for the degree of Candidate of Physical and Mathematical Sciences. In 1991, at the same department, he defended his thesis for the Doctor of Physical and Mathematical Sciences degree on the topic “Numerical study of problems of dynamics of deformable media by grid-characteristic methods”.

The grid-characteristic method for the numerical solution of problems of deformable solid mechanics, geophysics, biomechanics, contact problems was first applied by Igor Petrov. He developed hybrid grid-characteristic schemes for the numerical solution of this class of problem and extended them to the multidimensional case together with corresponding member of the Russian Academy of Sciences Alexander Kholodov. These schemes are based on an approach using the space of indeterminate coefficients. Igor Petrov considered a wide class of problems on high-speed collision of deformable bodies in a wide range of collision velocities using various nonlinear rheological models, including elastic-plastic, viscoelastic, and damaged media.

The professor pays great attention to solving geophysical and seismic exploration problems, problems of seismic resistance of ground structures, asteroid hazard, railway safety, as well as problems of biology and medicine in recent years. The simulation of seismic signals-responses from the main types of fractured carbonate and shale reservoirs when filled with fluid, gas and with collapsed cracks revealed the possibility to determine the change in reservoir saturation.

The scientist has achieved significant success in solving problems related to the development of the Arctic shelf of the Northern Seas of the Russian Federation. Igor Petrov is developing a promising direction related to numerical modeling of the behavior of composite elements of aircraft and spacecraft under the influence of aerodynamic loads, and with the tasks of non-destructive damage control of these elements. The development of new grid-characteristic numerical methods is conducted by the professor. Attention is also paid to solving inverse problems, including with the use of neural networks, when the results of a high-precision numerical solution of the corresponding direct problem are used to form a training sample.

Igor Petrov is one of the leading specialists in the field of computer science, applied mathematics, and computer modeling today. He is the author of 445 scientific and 24 educational works, co-author of 4 monographs and 4 textbooks, 4 scientific collections published by SPRINGER, has 4 patents, 3 copyright certificates of state registration of computer programs.

I. B. Petrov is an active teacher. For more than 40 years he has been engaged in scientific work with students and postgraduates of MIPT. Under his leadership, 26 candidate's (54 with students of students) and 5 doctoral dissertations were defended.

Igor Petrov is a member of the editorial boards of 8 scientific journals; a member of the MIPT Academic Council; Chairman of the MIPT Dissertation Councils; member of the dissertation Councils of the Institute of Applied Mathematics of the Russian Academy of Sciences, Institute of Computational Mathematics of the Russian Academy of Sciences, MSU; Chairman of the State Attestation Commissions of MSU, Baltic Federal University, Innopolis; head of grants of the RFBR, RSF; expert of the Councils of the Russian Academy of Sciences, RFBR. He is an honored worker of the Higher School of the Russian Federation, an honorary worker of science and technology. Moscow, Honored Professor of MIPT, Honorary

Professor of Innopolis University and Xi'an University (China), member of the Mathematical Sciences Section of the Coordinating Council of Fundamental Scientific Research of the Russian Federation, the National Committee for Industrial and Applied Mathematics.

For outstanding achievements, the scientist was repeatedly rewarded with awards and medals, among them medal of the Order “For Merit to the Fatherland” 2d Class and the MIPT badge “Star of Phystech”.

We sincerely congratulate Igor Petrov on his anniversary. We wish him health, happiness, as well as further active scientific and educational activities.

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