

ANNIVERSARY OF THE SCIENTIST ЮБИЛЕЙ УЧЕНОГО



Congratulations on the anniversary of Vladimir Fyodorovich Tishkin

On February 23, 2024, the prominent Russian scientist in the field of mathematical modelling and computational mathematics, Corresponding Member of the Russian Academy of Sciences, Doctor of Physical and Mathematical Sciences, Professor, Honored Scientist of the Russian Federation, Vladimir Fyodorovich Tishkin, celebrated his 75th birthday.

V.F. Tishkin was born in the city of Saransk. After graduating from school with a gold medal in 1966, he entered the Moscow Institute of Physics and Technology at the Faculty of Aerophysics and Applied Mathematics. After graduating from MIPT in 1972, he was assigned to the All-Union Scientific Research Institute of Experimental Physics in Arzamas-16. In 1975, he entered the graduate school of the Institute of Applied Mathematics named after M.V. Keldysh of the USSR Academy of Sciences. Under the scientific supervision of the Academician, Hero of Socialist Labor A.A. Samarsky, Vladimir Fyodorovich actively participated in advanced scientific research projects. In 1979, he became a candidate of physical and mathematical sciences, and in 1986, he received his doctorate in physical and mathematical sciences. In 1997, he was awarded the title of professor. In 2016, he was elected a corresponding member of the Russian Academy of Sciences. For almost fifty years, V.F. Tishkin has been working fruitfully at the Institute of Applied Mathematics named after M.V. Keldysh of the Russian Academy of Sciences. His scientific works have received international recognition and high praise in the scientific community.

Vladimir Fyodorovich is actively involved in scientific and organizational work. He is the chief editor of the “Journal of the Middle Volga Mathematical Society”, deputy chief editor of the journal “Issues of Atomic Science and Technology”, and a member of the editorial boards of the journals “Mathematical Modelling”, “Computational Mathematics and Information Technology”, as well as a member of several dissertation, expert, and scientific councils.

Vladimir Fyodorovich is successfully engaged in pedagogical activities. He is a professor at the Department of Computational Methods of the Faculty of Computational Mathematics and Cybernetics of Lomonosov Moscow State University, the Department of Computational Methods and Programming of the Moscow Aviation Institute (National Research University), and the head of the basic department of mathematical modelling of complex socio-technical systems of the Moscow Automobile and Road Construction State Technical University. Among his students are three doctors and fourteen candidates of physical and mathematical sciences.

Friends, colleagues, and students extend warm congratulations to Vladimir Fyodorovich on his 75th birthday, wishing him continued health, creative fulfillment, and further success in advancing Russian and global science!

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join in the congratulations.

Brief overview of the main scientific achievements of Corresponding Member of RAS V.F. Tishkin

V.F. Tishkin is a leading specialist in the development of new computational methods for solving problems in continuum mechanics.

He has developed the method of support operators, allowing to construct computational algorithms for a wide class of mathematical physics problems on grids of arbitrary structure. Currently, this method is widely used to solve relevant problems both in Russia and abroad.

For his work on mathematical modelling of the aggregates of the space shuttle “Buran”, V.F. Tishkin was awarded the Medal for Labor Valor.

Under V.F. Tishkin’s guidance, the package of applied programs “ATLANT” was developed. This software, when modeling laser compression of shells, first revealed the determining influence of nonlinear saturation of disturbance growth rate.

A unique series of calculations on direct numerical simulation of the Rayleigh-Taylor and Richtmyer-Meshkov hydrodynamic instability development was performed under the leadership of V.F. Tishkin, which made it possible to explain the nature of the change in the mixing zone growth rate over time, which is essential for determining the constants involved in turbulence approximate models used for calculations of specific constructions. For his contributions to direct numerical simulation of the Rayleigh-Taylor and Richtmyer-Meshkov hydrodynamic instability development, V.F. Tishkin was awarded the A.N. Krylov Prize of the Russian Academy of Sciences.

V.F. Tishkin is the author of a series of papers on the generation of unstructured adaptive grids based on Delaunay triangulations. The methodology proposed in his works, related to the use of the shortest path metric, allows building effective algorithms of this type in the presence of arbitrary constraints.

A series of works on the application of multigrid methods to solve diffusion-type equations was carried out under V.F. Tishkin’s leadership. The developed numerical algorithms, in terms of computational costs, are comparable to explicit schemes, possess stability properties of implicit schemes, and easily fit into the architecture of modern multi-processor computing complexes.

Under V.F. Tishkin’s guidance, efficient algorithms have been developed for solving problems of mathematical physics by the Galerkin method with discontinuous basis functions. New computational algorithms for solving parabolic equations have been proposed, using the discontinuous Galerkin method on shifted grids. The parallel software complex RAMEG3D has been created, implementing the discontinuous Galerkin method on unstructured grids with cells of various configurations, designed for numerical solution of applied problems in areas with complex shapes.