ANNIVERSARY

75th anniversary of Doctor of Physical and Mathematical Sciences, Professor M.T. Jenaliyev

On January 25, 2022, a well-known specialist in the field of the theory of partial differential equations and its applications, Chief Researcher of the Institute of Mathematics and Mathematical Modeling of the Committee of Science of the Ministry of Education and Science of the Republic of Kazakhstan, Doctor of Physical and Mathematical Sciences, Professor Muvasharkhan Tanabaevich Jenaliyev, turned 75 years old.

M.T. Jenaliyev was born in a family of rural workers in Aktobe (now the Tole-bi farm) of the Shu district of the Zhambyl region. His father, Zhienaliev Tanabai, worked for many years as a shepherd, his mother, Zhienalieva Tenge, helped her husband in this difficult shepherd business, until his death. Before retiring, she worked in various jobs. The shepherd's hard work was not alien to Muvasharkhan either, during the summer holidays he helped his parents.

In 1953, Muvasharkhan Jenaliyev entered the seven-year Kazakh school of the Aktobe district, where he graduated from the first grade with a commendable diploma. Since his parents' move to the settlement Mikhailovka (in the subsequent settlement Chatyrkul) in 1954, he again entered the first grade of the now seven-year-old Russian school, since he did not speak Russian. In a year, he manages to learn Russian and finishes the first grade with a commendable diploma. Then he continues to study in Russian and in 1965 he graduated from the 10th grade of the Gorky Secondary School in the settlement Novotroitskoye (now Tolebi). Back in the 9th grade, Muvasharkhan became interested in mathematics and this passion was instilled in him by his teacher Kutuzov Alexander Yakovlevich. In 1964-1965, he participated in the republican Olympiads of schoolchildren in Almaty. At the 3rd Kazakhstan Mathematical Olympiad, he was awarded a special prize and a diploma of the second degree.

In 1965, M.T. Jenaliyev entered the Kazakh Polytechnic Institute named after. V.I. Lenin at the Faculty of Automation and Computer Engineering and in 1971 he graduated from it with a degree in Automation and Telemechanics with the qualification of an "Electrical Engineer". In 1971-1976, he worked as an engineer, senior engineer, and head of the design team at the Kazakh branch of the SDI "Projectmontazhavtomatika"(Almaty), engaged in the design of dispatching systems for power supply facilities using telemechanical devices.

In 1976–1980, he is a full-time postgraduate student at Kazakh State University under the supervision of Professor S.A. Aisagaliyev. In 1982, M.T. Jenaliyev defended his candidate's and in 1994, his doctoral dissertations, in 1996, he was awarded the academic title of professor.

Since 1980 M.T. Jenaliyev has been working at the Institute of Mathematics and Mechanics of the Academy of Sciences of the Kazakh SSR (now the Institute of Mathematics and Mathematical Modeling of the CS MES RK). Muvasharkhan Tanabaevich goes through all the stages of the positions of an academic institution: Junior researcher, senior researcher, leading researcher, chief researcher, head of the laboratory of equations of mathematical physics, deputy director for scientific work, from January 1, 2007 - acting, and from August 2008 to 2011 director of the Institute of Mathematics.

Scientific achievements of M.T. Jenaliyev published in journals "Differential equations", "Siberian Mathematical Journal", "Boundary value problems", "Advances in difference equations", "Mathematical Journal"

(Almaty), “Proceedings of the Institute of Mathematics of the NAS of Belarus”, “Reports of NAS RK”, “Non-classical equations of mathematical physics” (S.L. Sobolev Institute of Mathematics SB RAS), “Reports of the AIAS”, “Proceedings of the NAS of the RK. Physico-mathematical series” and others. We list the results of his scientific research:

– M.T. Jenaliyev proved a theorem on sufficient optimality conditions and, on its basis, developed an algorithm for the approximate solution of the problem of optimal control of a parabolic equation. This result is a development of V.F. Krotov’s optimality principle for partial differential equations, which takes into account their solvability in the corresponding Sobolev classes (in the sense of an integral identity). An innovation was the introduction of an auxiliary functional and special constructions, which made it possible to remove the restriction on the reduction of partial differential equations to normal form, which facilitated to reduce the original problem for a conditional extremum to the problem for an unconditional extremum in Sobolev functional spaces. The results of these studies formed the basis of M.T. Jenaliyev’s candidate dissertation.

– For boundary value problems with time derivatives on the boundary for parabolic and hyperbolic equations, M.T. Jenaliyev discovered the effect of "overdetermination"at setting initial conditions in the domain and on its boundary from the class of square summable functions (which are not consistent with the trace theorem). The solvability of boundary value problems for linearly loaded equations with irregular coefficients is established. A symmetrizing operator for a loaded parabolic equation, a Hilbert space of the type of K. Friedrichs space and a quadratic functional are constructed, and the Euler equation is also posed, for which also a generalized statement of the original boundary value problem was given. Based on these results M.T. Jenaliyev defended his doctoral dissertation.

– In terms of the (complex) spectral parameter, which is the coefficient of the loaded term, a description of the resolvent set and spectrum for a spectrally loaded parabolic operator is found, a characteristic of the multiplicity of eigenfunctions in the space of bounded and continuous functions depending on the value of the spectral parameter is given (together with M.I. Ramazanov).

– For boundary value problems for multidimensional linear and nonlinear heat conduction equations in non-cylindrical domains with a power law of degeneracy: Uniqueness classes are found; In the case of a power law of domain degeneracy, the dimensions of the kernel and cokernel of operators of multidimensional boundary value problems are determined and the solvability of the boundary value heat conduction problem with time derivatives under boundary conditions is proved; Algorithms for solving boundary value problems for a heat equation loaded by multidimensional manifolds with control functions on the boundary have been developed.

In recent years, M.T. Jenaliyev, together with his collaborators, has been researching one-dimensional and multidimensional boundary and inverse problems for nonlinear equations, including the Burgers, Boussinesq, and Navier-Stokes equations. In Sobolev classes, the solvability of boundary value problems with nonlinear Neumann-type conditions and boundary value problems with dynamic conditions for the Burgers equation in degenerating domains is proved. Theorems on the solvability of the inverse problem for a linearized two-dimensional Navier-Stokes system in a cylindrical domain with a final overdetermination are proved and a computational algorithm for solving the inverse problem using the optimization method is proposed. Also, for a circle, a solution of the generalized spectral problem for a biharmonic operator is given.

M.T. Jenaliyev is actively engaged in the training of scientific personnel. Under his scientific supervision, 3 doctoral, 11 candidate dissertations and 4 PhD dissertations were defended. Since 1980 the scientist has also been teaching special courses at the Mechanics and Mathematics Faculty of Al-Farabi Kazakh National University.

Muvasharkhan Tanabaevich Jenaliyev is distinguished by a businesslike, principled and creative attitude, diligence, professionalism and a high sense of responsibility. He enjoys well-deserved respect in the staff of the Institute of Mathematics and Mathematical Modeling.

The editorial board of the scientific journal cordially congratulates Muvasharkhan Tanabaevich on his 75th birthday and wishes him good health and creative longevity.

Editorial board of the journal
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