

VALENTYNA IVANIVNA GORBACHUK
(to 80th birthday anniversary)



Valentyna Ivanivna Gorbachuk, an outstanding Ukrainian mathematician, was born on June 25, 1937, in Mogilyov (now Belarus') in a family of an accountant and a telegraphist with ten children. Her childhood was not easy. The difficulties became more perceptible in the days of German occupation of Belarus during the Second World War. They were not reduced even after coming back the Soviet forces. In search of a job and a habitation, the parents were forced to leave Belarus' and move to the Western Ukraine, the city of Lutsk, Volyn. Here the girl received her secondary education. Having graduated a school, she tried to enter the Mathematics and Mechanics Faculty of the T. Shevchenko University of Kyiv, but this attempt turned out to be unfortunate. The reason was stay in the occupation. So, in 1954 she entered the Department of Physics and Mathematics at the Lutsk Pedagogical Institute (now the East European University) and graduated from it in 1959. One of her teachers was S.I. Zuhovitsky who had a significant influence on forming her as a future mathematician and a personality. By his advice, she became a postgraduate student of Yu. M. Berezansky at the Institute of Mathematics in Kyiv. Her Candidate/PhD thesis "On the Integral Representation of Hermitian-Indefinite Kernels" was prepared under his supervision and defended in 1962 at this Institute. Since then she worked there. In 1992 she defended her Doctor of Science thesis "Boundary Values of Solutions of Differential-Operator Equations".

In her Candidate/PhD thesis V.I. for the first time unifies the problem of integral representations and extensions of Hermitian-indefinite kernels with finite number of negative squares with the theory of expansions in generalized eigenfunctions of selfadjoint operators in a space with indefinite metric. Later she works, together with her husband M. L. Gorbachuk, on a wide range of problems related to partial differential equations. This work obtained a stronger impulse since 1986, when, on a base of the former PDE-Laboratory at the Mathematical (in fact, Functional) Analysis Department, there was created the PDE-Department headed by M.L. Gorbachuk.

At the beginning of 1980-s , V.I. and M.L. characterized some classes of periodic generalized functions in terms of their Fourier coefficients growth and then developed the theory of smooth and generalized functions where a basic role is played, instead of the differentiation operator, by an arbitrary closed one in a Banach space. This made it possible to find a general (operator) approach to direct and inverse theorems in the theory of approximation of smooth vectors of a closed operator by its entire vectors of exponential type. The results were applied to various concrete situations which enabled to obtain from a general point of view a number of classic results, in particular, for harmonic functions, to specify and strengthen them.

In much the same time, V.I. and M.L. described all smooth inside an interval solutions to both a first and a second order binomial elliptic and parabolic operator differential equations and established the conditions for their stability and stabilization. They found a topological space in which such a solution has a boundary value, and this became a foundation for further investigation by them of solutions to higher order abstract differential equations in a Banach space, initial and boundary-value problems for such equations.

This is only a part of V.I. Gorbachuk's creation. She has got also a number of interesting results in the theory of non-selfadjoint operators, approximation theory, the theory of semigroups of linear operators in a Banach space and so on. She has published about 140 scientific articles in the leading mathematical journals. She is an author of 3 monographs, translated into English, and entered the cycle of works awarded (1998) with the State Prize of Ukraine in Science and Technology. Thus, she is a prize-winner of this reward. Many times she participated in the international mathematical conferences and congresses held in various countries including Ukraine, Russia, USA, Germany, Poland, Portugal, Israel and others. In spite of diseases chasing permanently her, V.I. is a tolerant, open-hearted and sensitive woman, who has helped a number of people in the Institute of Mathematics. She has an active social position and genuinely loves Ukraine, its language and culture.

Recently, a hard grief overtook V.I., — the death of her husband and brother-in-arms M.L. Gorbachuk . Sympathizing her in so sorrowful days, we wish her to gather all the strength and live further, continue to engage in mathematics, assist her son who is also a mathematician, an assistant professor of the National Technical University “KPI”, and, as is said, put her small grandchildren on their feet.

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