
OBITUARY

Vladimir Aleksandrovich Il'in

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Academician Vladimir Aleksandrovich Il'in, a great personality of our times, an outstanding worldwide renowned mathematician, an unrivalled lecturer, a profound teacher, and an inspired poet, passed away aged 86 on June 26, 2014. He was Head of the Department of General Mathematics of the Faculty of Computational Mathematics and Cybernetics at Moscow State University and Editor-in-Chief of the journal *Differentsial'nye Uravneniya* (*Differential Equations*).

V.A. Il'in was born into a white-collar family in the ancient Russian city of Kozelsk. He entered the Department of Physics of Moscow State University in 1945 and graduated with excellence in 1950. Since then, his research and teaching career has been closely associated with Moscow University. Having published his first three scientific papers written as early as in his student years (1950), Il'in worked tirelessly and productively and obtained brilliant results in various fields of mathematics.

Il'in was the utmost authority in the field of mathematical physics, theory of differential equations, spectral theory of differential operators, and the theory of boundary control of oscillating objects. Associated with his name is a major progress in the theory of boundary value problems and mixed problems for equations of mathematical physics in domains with nonsmooth boundaries and for equations with discontinuous coefficients, in the mathematical modeling of diffraction and refraction of electromagnetic waves on nonsmooth surfaces, in the theory of multiple Fourier series and integrals, in spectral theory of self-adjoint elliptic operators and nonself-adjoint differential operators, in difference methods for nonlocal boundary value problems, and in issues concerning the relationship between classical and generalized solutions of problems of mathematical physics.

Problems absolutely new for Il'in attracted his attention in 1999. With great enthusiasm, he started to study them and achieved deep and striking results. In 1999–2014, he studied a number of optimal boundary control problems for oscillating objects. A large series of joint papers

published by Il'in and Moiseev in 2004–2008 deals with the solution of optimal boundary control problems for oscillating objects. In particular, for each of the six basic problems, they derived a closed-form analytical expression for the optimal boundary controls on arbitrary sufficiently large time intervals. Note that although a number of well-known authors considered boundary control problems and methods for their optimization before Il'in, none of them obtained a closed-form analytical expression for optimal boundary controls. Recently, Il'in returned to the study of topical problems in spectral theory of elliptic differential operators and obtained important results. In particular, he generalized the well-known Riesz (Hausdorff–Young) theorem to differential operators with discrete and continuous spectrum.

In 1980, Il'in was awarded the Lomonosov prize for a series of papers on spectral theory of nonself-adjoint differential operators. In 2001 and 2007, his results on boundary control theory were recognized as the best in the Russian Academy of Sciences. In the last five years, Il'in published about 30 scientific papers; the total number of his scientific publications exceeds 400.

A spacious approach to the problems to be solved, depth and clarity in their statement, and an aspiration to obtain an exact, nonimprovable result were typical of Il'in. The range of fields of mathematics in which Il'in's methods can be used or where he developed new approaches and methods has ever been expanding.

Il'in, a student of the great Russian scientist A. N. Tikhonov, defended his Ph.D. thesis on diffraction theory of electromagnetic waves in 1953 and D.Sc. thesis on spectral theory of elliptic operators in 1958. He worked at the Faculty of Physics of Moscow State University until 1970, and in 1970 he was transferred to the newly established Faculty of Computational Mathematics and Cybernetics, where he founded the Department of General Mathematics and headed it since July 1974 until his last days. Since 1973, Il'in has been carrying fruitful research at the Steklov Mathematical Institute.

Il'in was elected Corresponding Member of the Academy of Sciences of the USSR (in computer science, computing machinery, and automation) in 1987 and Academician of the Academy of Sciences of the USSR in 1990. Since 1991, Il'in has been Academician of the Russian Academy of Sciences. For many years, he was Chairman of the Expert Council of the State Commission of Academic Degrees and Titles of Russia.

Being an active member of the Editorial Board of the journal *Differentsial'nye Uravneniya* (*Differential Equations*) for almost 50 years and its Editor-in-Chief for the last 22 years, Il'in determined the high scientific level and international standing of the journal. His efforts saved the journal from ceasing to exist in the hard 1990s. Until his last days, he was Vice Chairman of the Editorial Board of the journal *Doklady Akademii Nauk* (*Doklady of the Academy of Sciences*).

Il'in was a brilliant lecturer. He started to read lectures to students as early as when being a Ph.D. student, and then he lectured and conducted seminars on all basic mathematical courses. Recently, Il'in read the most complicated and meaningful part of his course of mathematical analysis to second course students of the Faculty of Computational Mathematics and Cybernetics. He was respected and loved by students. In 1992, Il'in was awarded the Lomonosov Prize for pedagogical skills, and in 2000 he was recognized as the best lecturer of Moscow State University. He was awarded the 2004 Prize of the President of the Russian Federation in the field of education and the 2009 Main Prize of MAIK Nauka/Interperiodica for best publications in 2008. He was a recipient of five orders of the USSR and the Russian Federation.

Il'in (together with Poznyak) wrote widely known teaching books on mathematical analysis, analytic geometry, and linear algebra, which became classical and were awarded the State Prize of the USSR in 1980. Later, Il'in, together with Sadovnichii and Sendov, created a new original course of mathematical analysis published in the form of two teaching books. These teaching books are basic at the Faculty of Computational Mathematics and Cybernetics, the Faculty of Physics, and the Faculty of Mechanics and Mathematics of Moscow State University and in a number of other Russian and foreign institutes. He, together with Kim, published a teaching book on linear algebra and analytic geometry in 1998 and, together with Kurkina, wrote a new teaching book on basic fields of higher mathematics for students of nonmathematical specialties in 2002. Recently, Il'in (together with Lomov) prepared a teaching book on numerical and function series, including Fourier series.

Il'in established a large scientific and pedagogical school: he taught 32 doctors of science and more than 100 philosophy doctors in physics and mathematics. Many of them are working in Russian and foreign institutes, are Associate Professors, Professors, chairmen, rectors, and members of academies of sciences.

Il'in was a fine, very unpretentious, and wise person. His death caused pain in thousands of hearts of his students and colleagues. Il'in radiated great charm, generosity, and benevolence towards talented youth and colleagues and was always kind and responsive. He attracted people by his wide interests and knowledge and his extraordinary memory (in particular, he remembered all the numerous phone numbers he needed); even his handwriting was excellent. Until very recently, he wrote wonderful poems and could spout them as well as poems of Russian poets for hours to his colleagues and students. The second book of his poems was published in 2014.

We express our sincere condolences to the family of Vladimir Aleksandrovich Il'in and his friends, students, and colleagues.

The bright memory of Vladimir Aleksandrovich Il'in will also remain in our hearts.

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