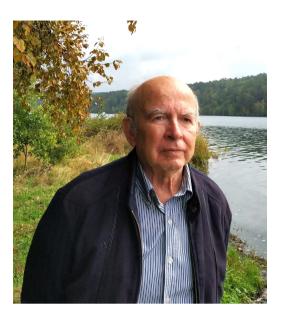# Nikolai Aleksandrovich Sidorov (on 80th birthday)

On April 30, 2020, Honored Professor of Irkutsk State University Nikolai Aleksandrovich Sidorov celebrated his 80th birthday. After graduation from the secondary school No. 11 with honours in 1957, Nikolai A. Sidorov was enrolled at the Physics and Mathematics Faculty of the Irkutsk State University. As Junior Researcher, Nikolai A. Sidorov joined the Anti-Space Defense Department of the Head Research Institute No. 2 of the USSR Ministry of Defense after graduation from the University with honours in 1962. Nikolai A. Sidorov defended his Ph.D. thesis in the analytical methods theory of the integral-differential equations in 1967. Then Nikolai A. Sidorov focused on a range of problems related to degenerate differential-operator equations, nonlinear functional analysis and its applications, focusing on the regularization of ill-posed problems. Nikolai A. Sidorov reported his results at seminars of the eminent mathematicians A.N. Tikhonov, M.M. Lavrent'ev, V.K. Ivanov, L.V. Ovsyannikov, S.L. Sobolev, L.A. Lyusternik and V.A. Trenogin, V.I. Yudovich. In 1983, Nikolai A. Sidorov defended his Habilitation thesis dedicated to approximate solution of problems in branching theory and their regularisation at the Institute of Mathematics and Mechanics, USSR Academy of Sciences. Academicians M.M. Lavrentyev, V.K. Ivanov and MIPT Professor A.M. Ter-Krikorov were appointed as opponents, the leading organisation was Moscow State University (academicians A.N. Tikhonov and V.A. Ilyin).

Professor Nikolai A. Sidorov is Head of the Department of Mathematical Analysis of Irkutsk State University since 1981. He was promoted to full professor by USSR Higher Attestation Commission in 1983. Then, in 1984, professor Nikolai A. Sidorov was invited by academician V.M. Matrosov to join Irkutsk Computer Center (today known as Matrosov Institute for System Dynamics and Control Theory SB RAS) of the Siberian Branch of the USSR Academy of Sciences as Principal Investigator to lead the team of graduate of postgraduate students in the fields of differential equations and mathematical physics and their applications. Nikolai A. Sidorov supervised 14 PhDs and 5 Drhabls in these fields. Nikolai A. Sidorov was awarded the title of Honoured Scientist of the Russian Federation and the title of Honorary Worker of Higher Professional Education of the Russian Federation.

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Many papers written by Nikolai A. Sidorov are devoted to the theory of branching solutions of nonlinear equations and non-standard differential-operator equations. Nikolai A. Sidorov succeeded in proving general theorems on the existence of points, curves and bifurcation surfaces. The theory constructed was applied to the problem on branching solutions of classes of nonlinear elliptic equations and to practical problems in mechanics. Solutions of the integral compensation equation were constructed based on the theory of superconductivity, and a bifurcation analysis of some problems for the Vlasov–Maxwell kinetic systems describing the behaviour of a multicomponent plasma was carried out in applied works. Together with Professor B.V. Loginov, Nikolai A. Sidorov considered a range of problems in the spectral theory of linear operators and the theory of iterative methods under conditions of group symmetry of the equation. Some of the results of these works were included in the monograph [1]. As a result, the mathematical school on the theory of differential-operator equations with an irreversible operator at the main part was created in Irkutsk. One of the seminal problems formulated by Nikolai A. Sidorov is called the *Showalter–Sidorov problem* [2]. In the scientific school of Professor Nikolai A. Sidorov, the existence theorems were proved in the linear and nonlinear cases, a method was developed for constructing classical and generalised solutions based on the Jordan structure of the operator coefficients of the linearization of the original equation.

Professor Nikolai A. Sidorov conducts expert work in dissertation councils, leading scientific foundations, manages the Irkutsk regional branch of the scientific and methodological council for mathematics of the Ministry of Education and Science of the Russian Federation. Professor Nikolai A. Sidorov was elected as a member of many mathematical societies. Also, Professor Nikolai A. Sidorov is the author of five monographs and over 200 papers on theoretical and applied mathematics. His biography with a bibliography in detail can be found in [4].

Nikolai A. Sidorov keeps fruitfully working with his colleagues and students, publishing new interesting scientific results. In March 2020, the international academic publisher World Scientific published his monograph "Towards the General Theory of Operator-Differential and Kinetic Models" [3] written jointly with Professor of RAS D.N. Sidorov and Professor of Universidad Nacional de Colombia A.V. Sinitsyn. The monograph provides an introduction to the modern theory of differential operator and kinetic models, including the Vlasov–Maxwell equations. Among the new author's results included in this monograph, we can outline the theory of operator integral equations of the first kind with discontinuous kernels, the original theory of skeleton decomposition of operators for solving linear systems of ODEs and systems of partial differential equations with irreversible operators in the main part of the equations. In 2020, Nikolai A. Sidorov organised the Special Issue "Solvability of Nonlinear Equations with Parameters: Branching, Regularisation, Group Symmetry and Solutions Blow-Up" by invitation of the Editorial Board of the Symmetry Journal (MDPI Publ., Switzerland) and published two articles concerning the theory of nonlinear singular equations [5], [6].

We wish Nikolai Alexandrovich good health, happiness and new creative achievements!

**A.I. Dreglea, V.K. Gorbunov, A.V. Keller, V.V. Pukhnachev,
R.Ju. Leontiev, O.A. Romanova, D.N. Sidorov, V.S. Sizikov,
G.A. Sviridyuk, A.A. Zamyshlyaeva, S.A. Zagrebina**

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