![50 years of the new era!](image)

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Figure 1: 50 years of the new era!

Abstract

Full Text

Our country, all progressive humanity, is summing up the results of all that has been accomplished in the 50 years since the Great October Socialist Revolution.

The first steps of the Soviet state were directed toward transforming backward, illiterate Russia into an advanced state in which science would be the immediate productive force of a new social order. During the years of Soviet power in the USSR, all the main scientific fields, including mathematics, have undergone broad development.

The enormous role of our national scholars in the development of the theory of differential equations and its applications is well known. Their work, which bore the imprint of the ideas of two great mathematicians of the world, H. Poincaré and A. Lyapunov, as well as of G. Birkhoff and E. Hilbert, is not easy to survey —it is immense. Even in the most general terms it is difficult to enumerate the directions and the new methods for solving problems that have appeared over the last 50 years.

A well-known role in creating the initial positions in mathematical physics was played by V. Steklov. Our compatriot S. Sobolev is the founder of the modern, most general theory of differential equations in partial derivatives. N. Günter created the most complete theory of potential. N. Muskhelishvili laid the foundations of new methods—the methods of functions of a complex variable in mathematical physics. Deep applications of these methods and their generalizations belong to I. Vekua. The vigorous development of aerodynamics, the theory of aircraft, and methods for solving problems in this field, based on the theory of differential equations, is associated with the names of M. Keldysh, A. Dorodnitsyn, M. Lavrentiev, and many other outstanding mathematicians of ours. The theory of a broad class of systems of partial differential equations is associated with the name of I. Petrovsky. He is responsible for fundamental works that laid the foundations of this theory.

The role of I. Lappo-Danilevsky in the development of the theory of ordinary differential equations is enormous. At the dawn of the development of the Soviet mathematical school, the brilliant talent of N. Bogolyubov emerged; he made a great contribution to the development of methods for solving ordinary differential equations in the theory of nonlinear oscilla-

···equations. The founder of many profound directions both in the theory of ordinary differential equations and in the theory of partial differential equations is A. Tikhonov.

The achievements of Soviet mathematicians in the theory of stability of motion, and N. Chetaev' s role in this, are well known.

A great merit of Soviet mathematicians is that they were the first to pass from local problems to nonlocal ones in the theory of dynamical systems, in qualitative theory, stability theory, and the analytic theory of differential equations. In recent years Soviet mathematicians have developed powerful methods for studying problems of optimal control and the general theory of control.

It was precisely in the Soviet period that large scientific centers and powerful groups for the study of differential equations arose in our country: Moscow, Leningrad, Kiev, Sverdlovsk, Novosibirsk, Tbilisi. In recent years Minsk, Voronezh, Alma-Ata, Kharkov, Samarkand, Gorky, Baku, Erevan, and Kishinev have been becoming such centers. All this is a great achievement and characterizes the Soviet period of science. Here one should note the great importance of V. Smirnov' s five-volume course in mathematics, which in many respects reflected this new era of mathematics.

The reader will find a detailed survey of the development of the theory of differential equations and its applications in the *History of Domestic Mathematics*, which is being published by the Academy of Sciences of the USSR and the Academy of Sciences of the Ukrainian SSR in Kiev under the editorship of I. Z. Shtokalo*). There, as the reader will see, even large articles cannot contain a description of the scientific feat of our scholars during this period. The results of research over the last 10 years far exceed the volume of work carried out over the entire preceding period. This characterizes the pace of development of the science of our time.

The entire path traversed by Soviet mathematicians instills confidence that we shall continue to occupy leading positions in world science.

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*) The first volume has appeared. Kiev: "Naukova Dumka," 1966.

Note: Figure translations are in progress. See original paper for figures.