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(*b*. Sevsk, Orlov guberniya, Russia, 18 January 1901; *d*. Moscow, U.S.S.R., 15 January 1973)

mathematics.

Petrovsky's major works dealt with the theory of partial differential equations, the topology of algebraci curves and surfaces, and the theory of probability. After graduating from the technical high school in Sevsk in 1917, he worked in various Soviet institutions until 1922, when he entered Moscow University. He graduated from the division of physics and mathematics in 1927 and remained at Moscow until 1930 as a graduate student of D. F. Egorov.

From 1929 to 1933 Petrovsky was assistant professor and *dozent* at Moscow. In 1933 he became professor and, in 1935, doctor of physical-mathematical sciences. From 1951 he was head of the department of differential equations. During World War II he was dean of the faculty of mechanics and mathematics; and from 1951 until his death he was rector of the university.

Petrovsky combined his work at the university with activity at various scientific and teaching institutions. From 1943 he worked at the V. A. Steklov Institute of Mathematics at the Academy of Sciences, of which he was vice-director from 1947 to 1949. For many years he was editor-in-chief of *Matematicheski sbornik*.

In 1943 Petrovsky was elected corresponding member and, in 1946, full member of the Soviet Academy of Sciences. From 1949 to 1951 he was academician-secretary of the division of physical and mathematical sciences of the Academy, and from 1953 until his death he was a member of the Presidium of the Academy. He was twice awarded the State Prize of the U.S.S.R., and he received the title of Hero of Socialist Labor. He was also a member of the Soviet Committee for the Defense of Peace and vice-president of the Institute of Soviet-American Relations.

Petrovsky's first reseach dealt with the investigation of the Dirichlet problem for Laplace's equation (1928) and the theory of functions of a real variable (1929). In the early 1930's he began research on the topology of algebraic curves and surfaces in which he achieved fundamental results and methods. In 1933 he proved Hilbert's hypothesis that a curve of the sixth order cannot consist of eleven ovals lying outside each other. The method that Petrovsky devised for this proof was useful in solving the more general problem of embedding components of algebraic curves of any order in a projective plane. In 1949 he generalized certain of his results to include algebraic surfaces in *n*-dimensional space.

The results of Petrovsky's work (1934) on the solvability of the first boundary-value problem for the heat equation were widely applied in the theory of probability, especially in research connected with the Khinchin-Kolmogorov law of the iterated logarithm. Petrovsky's article on the theory of random processes (1934) considerably influenced an investigation of limit laws for the sum of a large number of random variables with the aid of the transition to random processes with continuous time. The work also contains the so-called method of upper and lower sums, which became the basic analytical method of research in the field.

A second work, also published in 1934, examined the behavior, near the origin of the coordinates of integral curves, of a system of equations of the form

This work was, essentially, the first full investigation of a neighborhood of a singular point in the three-dimensional case.

In 1937-1938 Petrovsky distinguished and studied classes of systems of partial differential equations, which he first identified as either elliptical, hyperbolic, or parabolic. In 1937 he published his proof that the Cauchy problem for nonlinear systems of differential equations, which Petrovsky called hyperbolic, is well-posed. In a work on the Cauchy problem for systems of linear partial differential equations in nonanalytic functions (1938) Petrovsky studied systems for which the Cauchy problem is uniformly wellposed relative to the variation of the surface, for which the original data are given. Petrovsky introduced the concept of parabolic systems and investigated the problem of the analyticity of the solution of such systems in space dimensions. In 1937 he introduced his famous notion of elliptical systems and showed that when the functions are analytic, all sufficiently smooth solutions will be analytic, thereby giving a more complete solution of Hilbert's nineteenth problem. Petrovsky's results were the starting point for numerous investigations, including those of J. Leray and L. Garding; and they determined the basic direction of the development of the theory of systems of partial differential equations.

In widely known works on the qualitative theory theory of hyperbolic equations (1943-1945) Petrovsky introduced the concept of lacunae and obtained necessary and sufficient conditions for the existence of stable lacunae for uniform hyperbolic equations with constant coefficients. He also solved completely the question of lacunae for linear hyperbolic systems with variable coefficients in the case of two independent variables.

In 1945 Petrovsky investigated the extent of the discontinuitites of the derivatives of the displacements on the surface of a nonuniform elatic body that is free from the influence of external forces; and in 1954 he examined the character of lines and surfaces of a discontinuity of solutions of the wave equations.

Many well-known specialists in the theory of differential equations were students of Petrovsky, whose seminar (the Petrovsky seminar) is a leading center for the study of the theory of partial differential equations. His course texts are widely known.

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II. Secondary Literature. On Petrovsky's work and its influence, see P. S. Aleksandrov *et al.,* "Ivan Georgievich Petrovsky," in *Uspekhi matematicheskikh nauk*, **26** no. 2 (1971), 3-22, with bibliography, pp. 22–24; *Matematika v* SSSR za 40 let ("Mathematics in the U.S.S.R. for the Last Forty Years") , II (Moscow, 1959), 538–540, for a bibliography of 51 of his publications; and *Matematika v SSSR za 50 let* ("Mathematics in the U. S. S. R. for the Last Fifty Years") , II, pt. 2 (Moscow, 1970), 1035.

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