

NINA NIKOLAEVNA URAL'TSEVA
(ON THE OCCASION OF HER ANNIVERSARY)

Nina Ural'tseva was born on May 24, 1934 in Leningrad. Her parents, Nikolai Fedorovich Ural'tsev and Lidiya Ivanovna Zmanovskaya were at that time students of the Leningrad Polytechnical Institute. After leaving the high school in 1951, Nina entered the Department of Physics of the Leningrad State University (LSU), where she specialized at the Division of Mathematical Physics and graduated with honors in 1956. During 1957–1959, Nina studied at the graduate level at the Physical Department of LSU under supervision of O. A. Ladyzhenskaya.

In 1960 Nina Nikolaevna defended her PhD Thesis “Regularity of solutions of multi-dimensional quasilinear equations and variational problems”. Four years later, in 1964, she defended also her DrSci Thesis “Boundary-value problems for quasilinear second-order elliptic equations and systems”. Since November 1959 Nina Ural'tseva has been working at the Division of Mathematical Physics of the Department of Mathematics and Mechanics of LSU (now St. Petersburg State University). After a series of promotions, she got a Full Professor position. In 1968 she was approved by the state in the academic rank of Full Professor. Since 1974 she has been the Head of the Division of Mathematical Physics.

Nina Ural'tseva is known in the world mathematical society as a prominent expert in the field of partial differential equations. She is the author of more than 115 publications, including a number of fundamental monographs that gained worldwide recognition. The monographs “Linear and Quasilinear Equations of Elliptic Type” written jointly with O. A. Ladyzhenskaya (Moscow, 1964) and “Linear and Quasilinear Equations of Parabolic Type” written jointly with O. A. Ladyzhenskaya and V. A. Solonnikov (Moscow, 1967) were translated in the USA, France, and China. These treatises became reference books for generations of mathematicians dealing with the theory of partial differential equations and its applications.

In the 1960s, N. N. Ural'tseva obtained a number of fundamental results on uniformly elliptic and uniformly parabolic quasilinear equations. Together with O. A. Ladyzhenskaya, she developed new powerful methods for the study the regularity properties of generalized solutions. These methods have led to the creation of quite a complete theory of solvability of the classical boundary value problems for such equations, and to the ultimate results on the 19th and 20th Hilbert problems. These results deserved overall recognition and were awarded by the P. L. Chebyshev Prize of the USSR Academy of Sciences (1967) and the State Prize of the USSR (1969).

Among the wide range of topics lying in the area of scientific interests of N. N. Ural'tseva, we should also mention the quasilinear elliptic equations that degenerate with respect to the gradient. In particular, Nina Nikolaevna established the famous result on the $C^{1,\alpha}$ -regularity of p -harmonic functions that was rediscovered by K. Uhlenbeck almost 10 years later. N. Ural'tseva has developed a method for obtaining local estimates of the gradient of solutions for equations involving the mean curvature operator.

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N. N. Ural'tseva is also a world-renowned specialist on the theory of variational inequalities and problems with free boundaries. She studied the regularity properties of generalized solutions of variational inequalities that have important applications in mechanics.

In the past twenty years, N. N. Ural'tseva studied various regularity topics arising in free boundary problems. In this field she developed powerful techniques, which led to the optimal regularity results for solutions and free boundaries. The monograph "Regularity of Free Boundaries in Obstacle-Type Problems" (AMS, 2012), written in collaboration with A. Petrosyan and H. Shahgholian, is highly appreciated by the experts around the world.

Research and teaching activities of N. N. Ural'tseva highly contributed to the increase of credibility of the St. Petersburg scientific school of nonlinear partial differential equations. For more than 10 years Nina Nikolaevna has been directing the work of the prominent V. I. Smirnov Seminar on Mathematical Physics. During her time at the University, she has given a number of general and specialized courses with invariably original content. In recent years, she has developed a new course "Free Boundary Problems", as well as a special seminar "Introduction to Harmonic Analysis". In addition, Nina Nikolaevna was an advisor of 14 PhD students; 4 of her disciples became Doctors of Science.

Nina Nikolaevna gives a lot of time and effort to editorial activity; she is the editor-in-chief of "Proceedings of the St. Petersburg Mathematical Society" and the series "Problems of Mathematical Analysis". Also she is a member of the Editorial Boards of the journals "Algebra and Analysis" ("St. Petersburg Mathematical Journal"), "Vestnik of St. Petersburg State University", and "Lithuanian Mathematical Journal".

Many times Nina Ural'tseva has been an invited speaker at prestigious international conferences. Twice she has been an Invited Speaker at the International Congress of Mathematicians. In 2005 she was chosen to give the European Mathematical Society annual lectures.

For many years Nina Nikolaevna has been a member of the Board of the St. Petersburg Mathematical Society. From 1997 till 2000 she was the Vice-President of this Society. She chaired the PDE Panel at the XXIII International Congress of Mathematicians and the Prize Committee of the IV European Congress of Mathematics. Also, we should mention her work as a member of the European Research Council and the Expert Council of the Russian Foundation for Basic Research, as well as her participation in Program Committees for various international conferences.

The international mathematical community deeply appreciates the scientific achievements of Nina Ural'tseva. She is Honorary Professor of the St. Petersburg State University, Honorable Doctor of the Royal Institute of Technology (Stockholm, Sweden), and the winner of the Humboldt Research Award (Germany). In 1999 N. N. Ural'tseva was awarded the honorary title "Honoured Doctor of the Russian Federation".

A person of rare intelligence and charm, Nina Nikolaevna produces around herself an atmosphere of friendliness and professionalism.

On behalf of colleagues, friends, and disciples we congratulate Nina Nikolaevna on the occasion of her anniversary and wish her good health and further interesting results.

D. E. Apushkinskaya and A. I. Nazarov
Guest Editors