

Professor Boris Șcerbacov - 100th anniversary



On February 19, 2024, the 100th anniversary of the birthday of the famous Soviet and Moldovan mathematician Boris Șcerbacov (known in the mathematical literature as Boris Alexeevich Shcherbakov) was celebrated.

Boris Șcerbacov was born on February 19, 1924, in the town of Cetatea Albă, Romania (currently – town of Bilhorod-Dnistrovskii, Ukraine). Here he graduated from a high school.

During the years 1944-1950 he was drafted into the army. Only after that, at the age of 27, he had the opportunity to start his studies at the University of Chișinău.

However, Boris Șcerbacov managed to achieve a brilliant scientific career. He graduated from the Faculty of Physics and Mathematics of the State University of Chișinău (currently – Moldova State University) in 1956 and PhD studies in 1959.

As proof of his exceptional abilities is the fact that, before defending his PhD thesis, Boris Șcerbacov has already published 3 scientific articles in the prestigious and worldwide recognized journal “Doklady Akademii Nauk SSSR”.

In 1964 he defended the Candidate (PhD) thesis in Physical and Mathematical Sciences under the title “On the classes of Poisson stable motions of dynamical systems” at the Institute of Mathematics of the Belarusian Academy of Sciences, Minsk, with Professor Constantin Sibirschi being his scientific adviser.

In 1971, after only seven years, Boris Şcerbacov has defended his Habilitation thesis under the title “The comparison principle of recurrence and the Poisson stable solutions of differential equations”, also at the Institute of Mathematics of the Belarusian Academy of Sciences.

Being a student, from 1953 until 1959 he worked as a teacher at the high school no. 2 (with the evening program) in Chişinău. During the years 1961-1966 he worked as a junior scientific researcher and senior scientific researcher at the Institute of Mathematics with Computer Center of the Academy of Sciences of Moldova.

During periods 1959-1961 and 1966-1972 he activated at the Moldova State University as an associate professor and as a full professor since 1972.

In 1966, after the organization of the Department of Differential Equations at the State University of Chişinău Boris Şcerbacov was appointed head of this department and held this position until 1990. Later, he activated as a full professor at the Department of Differential Equations (1990-2000), Department of Mathematical Analysis and Differential Equations (2000-2008).

Professor Boris Şcerbacov was a distinguished specialist in the qualitative theory of differential equations and the topological theory of dynamical systems. He obtained important results on Lyapunov stability of solutions of differential equations in Banach spaces. B. Şcerbacov performed a deep and comprehensive investigation of the Poisson stable motions of dynamical systems and established many interesting results on the existence of Poisson stable solutions of non-autonomous differential equations. Several of his papers are devoted to the study of stable invariant subsets of dynamical systems.

The main results of professor Boris Şcerbacov are the following:

1. He has provided the classification of Poisson stable motions by possible types of recurrence, thus completing it with two new classes of such motions.

2. A new method (the method of limiting transformations) was proposed and applied to study the differential equations in view of the existence of Poisson stable solutions.

3. Using the method of limiting transformations, he established the total dependency (a property of succession of the recurrence), according to which some solutions of differential equations inherit the type of recurrence of the right hand sides of these equations (such as periodicity, Bohr almost periodicity, almost automorphy, recurrence in the sense of Birkhoff, Levitan almost periodicity, almost recurrence in the sense of Bebutov and other types of Poisson stability). Such solutions were called concordant solutions, or, in other words, solutions with compatible recurrence. Later, the term “Şcherbakov concordance” entered the specialized literature.

4. The general theory of compatibility was developed and based on this theory, various criteria for the existence of compatible solutions were established, as well as for the uniform compatibility of solutions of differential equations. Also, various classes of equations were investigated, including functional differential equations, difference equations or differential equations in infinite-dimensional spaces.

He published two monographs and more than 80 articles. The monographs are the following:

1. B. A. Shcherbakov. Topological Dynamics and Poisson Stability of Solutions of Differential Equations. Shtiintsa, Kishinev, 1972, 231 pp. (in Russian)

2. B. A. Shcherbakov. Poisson Stability of Motions of Dynamical Systems and Solutions of Differential Equations. Shtiintsa, Kishinev, 1985, 147 pp.

The famous american mathematician J. Hale, in his review of the first monograph of B. Şcerbacov, highly appreciated this work.

Professor B. Şcerbacov participated in the International Congress of Mathematicians (Moscow, 1966), international conferences (Kiev, 1969, 1981).

Despite the fact that about 30 years have passed since his last publication, his works continue to be cited in prestigious scientific journals and monographs.

Since 1960, Professor Boris Şcerbacov together with Professor Constantin Sibirschi were the leaders of the Chişinău seminar “Qualitative Theory of Differential Equations”. Together, they founded the valuable Chişinău School of Differential Equations, recognized far abroad.

He supervised four PhD theses of the following disciples: L. A. Chelysheva (1968), V. C. Dubălaru (1970), I. M. Ştefăniţă (1973), D. N. Cheban (1977).

Boris Şcerbacov was a dedicated teacher and an excellent lecturer. He was highly appreciated by colleagues and students.

For his remarkable results professor Boris Şcerbacov was awarded many Soviet and Moldovan distinctions: Laureate of the State Prize of the Republic of Moldova in the field of Science and Technology (1979), Laureate of the Prize “Academician Constantin Sibirschi” (1999), honorary title “Emeritus in Science” (1992), orders “Red Flag of Labor” (1976), “Lenin” (1986), medal “Labor Veteran” (1983). As a participant of the World War II, he was awarded an order and 4 medals.

An exceptional person, teacher and scientist, Professor Boris Şcerbacov passed away on March 11, 2017.

**David Cheban, Vasile Glavan, Valeriu Guţu,
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