DIFFERENTIAL EQUATIONS
AND
CONTROL PROCESSES
N 2, 2018
Electronic Journal,
reg. N ФС77-39410 at 15.04.2010
ISSN 1817-2172

http://www.math.spbu.ru/diffjournal
e-mail: jodiff@mail.ru

In Memoriam of Gennady A. Leonov: Editor-in-Chief of Differential Equations and Control Processes Journal

Gennady A. Leonov (1947-2018)

Gennady Alekseevich Leonov, Editor-in-Chief (2010-2018) of the journal of Differential Equations and Control Processes, passed away on April 23, 2018 after a short battle with a grievous illness. The prolific life of Gennady Leonov as a scholar and educator ended tragically at the zenithal time of his indisputable scientific creativity and academic leadership. He was a laureate of the State Prize of USSR (1986), a Corresponding member of Russian Academy of Sciences (2006), a foreign Member of the Finnish Academy of Science and Letters (2017), a Highly Cited Researcher of Russian Federation (2016, 2017), and a bearer of

many notable awards and well-deserved recognitions [1].

Gennady Leonov was born in St. Petersburg (at that time Leningrad) on February 2, 1947. Just as many ambitious youths of his generation, Gennady combined factory work during the day with studies in the evening to allow for a fast track (two vs. three years) graduation from high school followed by highly competitive enrollment (1964) into the cohort of mathematics students at the Mathematics and Mechanics Faculty of Leningrad State University, the very place he would later be Dean for 30 years (1988-2018). In 1969, Gennady began his post-graduate studies within the scientific group of V.A. Yakubovich at the Leningrad State University [1,2]. In 1971, under the supervision of A.Kh. Gelig he defended, ahead-of-schedule, his Candidate of Science dissertation in which a negative answer to a famous in control theory Azermans conjecture was given in the most general case. Gennady then joined a newly developed Department of Theoretical Cybernetics (chaired by V.A. Yakubovich) as assistant professor in 1971 and was soon promoted to associate professor. In 1983, Gennady Leonov defended the second (Doctor of Science) dissertation titled "Stability in the Whole", and became full professor in 1985. By carrying on and expanding work by V.A. Yakubovich and V.A. Pliss, his major academic forefathers, and, at the same time, drawing on the ideas rooted in the school of A.A. Andronov, Professor Leonov was able to establish his own scientific school of control theory, qualitative theory of dynamical systems and their applications in science and engineering. His scientific interests focused on qualitative methods for the study of stability and oscillations in control systems [3–5], electrical and electromechanical models with cylindrical phase space [3, 6, 7], chaotic dynamics [8–10], and stabilization of control systems [11, 12]. He supervised five Doctors of Science (a habilitation degree), 16 Doctors of Philosophy (PhD), and 37 Candidates of Science[2]. Among the recent works of the Leonov scientific school are papers on hidden attractors [13–22], control systems with discontinues characteristics [23] and hysteresis [24], homoclinic orbits [25–28], Lyapunov exponents and Lyapunov dimension of attractors [22, 29–32], modern phase synchronization models used in computer architecture and global navigation systems [33–40], time-delay feedback stabilization [41–43], Sayano–Shushenskaya power station accident [44], the Keldysh problem of flutter suppression [45, 46]. Professor

[1]Personal webpage `http://www.math.spbu.ru/user/leonov/index_en.html`;
Google scholar profile `https://scholar.google.ru/citations?hl=en&user=_zv2pFwAAAAJ`;
Wikipedia article `https://en.wikipedia.org/wiki/Gennady_Leonov`;
Scientific School of Gennady Leonov. Film series "Matrix of Science"
`https://www.youtube.com/watch?v=X3bla8IYcvk` (in Russian)

[2]Mathematics genealogy project `http://www.genealogy.ams.org/id.php?id=105152&fChrono=1`

Leonov was instrumental in bringing to fruition his insightful proposal of splitting the study of the problems of cybernetics in two parallel tracks theoretical cybernetics, dealing mostly with the synthesis and adaptation of new systems, and applied cybernetics, concerned with the rigorous study of the existing systems. As a result, in 2007, in close collaboration with N.V. Kuznetsov, he established a new Department of Applied Cybernetics of which the former became the first academic appointee. Over the last decade, the department has accepted annually about 20 third-year university students; the most successful ones being invited for post-graduate studies and the best of the best were selected for participation in the joint Russia-Finland program of PhD studies, which was organized in cooperation with the Dean of the Faculty of Information Technology, P. Neittaanmäki (University of Jyväskylä, Finland). On the merits of his outstanding research, Professor Leonov had secured a rightful place in the St. Petersburg school of control theory, the eminent representatives of which have been Corresponding Members of Russian Academy of Sciences A.I. Lurie (1901-1980), V.A. Yakubovich (1926-2012), and V.I. Zubov (1930-2000). He was a member of St. Petersburg regional group of the Russian National Committee of Automatic Control chaired by Academician V.G. Peshehonov. In 2011, upon the recommendation of Academician A.B. Kurzhanski, Chairman of Russian National Committee of Automatic Control, he was elected to the Council of International Federation of Automatic Control and served full two-term limits (2011-2017) there.

In 1988, Professor Leonov was elected to become Dean of Mathematics and Mechanics Faculty, a position he held continuously till the very last day of his life. In the 1990s, during difficult years for Russian science, Professor Leonov was instrumental in preserving rich traditions of scientific achievements of mathematicians, mechanical engineers, and astronomers of the Faculty. At the same time, Professor Leonov was successful being not only the major custodian of celebrated traditions of the St Petersburg University mathematics, but also persevering his own research advancement. As Dean, he paid great attention to the issues of mathematics education at all levels [47–50].

We with great respect, immense admiration, and profound grief celebrate the prolific life of our never-to-be-forgotten Friend Teacher and Colleague by acknowledging his intellect, talents, kindness, wisdom and acumen, while expressing confidence that his qualities will serve as a guiding star for anyone with true aspirations to become a productive member of the modern society.

Editorial Board of "Differential equations and control processes" journal

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