



Obituary for Yurii Alexeevich Mitropolskii (1917 – 2008)



The mathematical world is very saddened and shocked to learn about the unexpected death of Yurii Alexeevich Mitropolskii in Kiev, Ukraine on June 14, 2008.

Yurii Alexeevich Mitropolskii was born on January 3, 1917 in the Charnysh's estate located in Kobelyakskiy district of Poltava province.

During the civil war (in 1918), the Charnysh's residence was completely destroyed. It was common for that time. Consequently, the Mitropolskii's moved to Kiev. In 1932, Yurii Alexeevich finished a 7-years school in Kiev followed by his employment at a cannery. In 1938, Yurii Alexeevich graduated from a high school with honors. In the same year, he was accepted at Kiev University in the department of mathematics and physics.

Upon completion of his third year at Kiev University, when on the day of June 22, 1941, the fascist Germany attacked the Soviet Union, Yurii Alexeevich married his university mate Alexandra Ivanovna to live together happily for more than 60 years.

On July 7, 1941 Yurii Alexeevich joined the Soviet Army and was stationed in an armor division in the city of Chuguyev. In October of 1941, according to the decree issued by the Defense Secretary S.K. Timoshenko, all fourth and fifth years college students were eligible to continue their degrees at the corresponding universities, with forthcoming appointments at military academies. Yurii Alexeevich was sent to the city of Kzyl-Orda in Kazakhstan where Kiev University was evacuated to. In March of 1942, Yurii Alexeevich successfully passed all exams and graduated from Kazakh University and then was sent to Ryazan Artillery Academy in the city of Talgar, which he graduated from in March of 1943 in the rank of a lieutenant. He was sent to the Stepnoy battlefield thereafter.

In 1946, after being discharged from the army, Yurii Alexeevich joined the Ukrainian Academy of Sciences in Kiev in the capacity of a Junior Scientist. In 1948 Yurii Alexee-

vich received his Candidate of Science degree (the Western equivalent of a Ph.D. degree). His thesis was titled "Investigation of resonance phenomena in nonlinear systems with variable frequencies". In the same year he joined the Institute of Constructive Mechanics of the Ukrainian Academy of Sciences (now S.P. Timoshenko's Institute of Mechanics of the National Academy of Sciences of Ukraine) in the capacity of a Senior Scientist under the supervision of N.N. Bogoliubov.

In 1951 he was awarded a Doctor of Science degree (the Western and Eastern European equivalent of Habilitation Degree). His thesis was titled "Slow processes in nonlinear oscillatory systems with many degrees of freedom". Earlier he moved to the Institute of Mathematics of the Ukrainian Academy of Sciences where he was appointed a Senior Scientist. In 1953 Yuri Alexeevich was promoted to the rank of Professor and Department Head in the same Institute. In 1956 he became the Associate Provost of Science of this Institute and in 1958 he was appointed its Director. He remained in this capacity up until 1988. Since 1988 he has served as the Honorary Director of the Institute of Mathematics.

In 1958, Yuri Alexeevich was elected the Corresponding Member of the Academy of Sciences of Ukrainian SSR and in 1961 he was elected the Full Member of the Academy of Sciences of the USSR (now the Russian Academy of Sciences), then the most prestigious academic title in the USSR.

During the years of his scientific activity, Yuri Alexeevich Mitropolskii has obtained numerous fundamental results in nonlinear mechanics and differential equations. The results of his prolific research were manifested in more than 700 articles and 50 monographs, of which most essential are "Nonstationary Processes in Nonlinear Oscillating Systems" (1955), "Asymptotic Methods in the Theory of Nonlinear Oscillations" (1964), "Averaging Method in Nonlinear Mechanics" (1971), and "Nonlinear Mechanics. Single-Frequency Oscillations" (1997).

We present an overview of his most significant work. The main directions of his science investigations are the following:

- Development of Asymptotic Methods in Nonlinear Mechanics
- The Development of the Single-Frequency Method
- Contribution to the Method of Integral Manifolds
- The Method of Accelerated Convergence
- The Averaging Method
- Asymptotic Methods and Averaging Method for Distributed Parameter Systems
- Contribution to the Theory of Systems with Delay and Small Parameter
- Development of the Theory of Random Oscillating Processes
- Contribution to the Theory of Decomposition of Systems

Since 1958, Mitropolskii has focused his attention on the development of the Institute of Mathematics of Academy of Science of the USSR. He initiated new departments setting up to facilitate research in the areas of algebra, probability theory, real and functional analysis, and mechanics of special systems.

During this period of time, the post-graduate enrollment was substantially expanded. As the result of Mitropolskii's efforts, the Institute produced about 500 candidates of

science and more than 80 doctors of science for their further employments at national universities and research labs in Ukraine, Russia, and other countries. As a consequence of Mitropolskii's colossal scholarly activity, the Institute of Mathematics of Academy of Science of Ukrainian SSR has become the leading scientific center of mathematical research in Ukraine.

Mitropolskii began his pedagogical activity in 1948 at Kiev university to extend it up to 1989. Mitropolskii himself supervised and directed 100 Ph.D. and 25 Habilitation theses in physical and mathematical sciences.

From 1961 until 1992 Mitropolskii had been the Head of the Department of mathematics, mechanics and cybernetics at Academy of Sciences of Ukrainian SSR. In 1992 Mitropolskii was appointed the director of the International mathematical center of National Academy of Science of Ukraine and Counselor of Presidium of National Academy of Science of Ukraine. This position he had held until his death.

Mitropolskii has been much involved in editorial work. Since 1967, Mitropolskii has been the Editor-in Chief of the "Ukrainian Mathematical Journal" whose English translation is regularly published in the US. Since 1961, he has been an editorial board member of three Russian and three international journals. Mitropolskii was among main contributors to a 12-volume selected works by N.N. Bogoliubov in the area of mathematics and nonlinear mechanics.

The first international talk Mitropolskii gave in 1956 at the International congress of mathematicians in Bucharest, Romania. Since 1958, he has been an invited speaker to the International Mathematical Congresses held in Edinburgh, Scotland (1958), Stockholm Sweden (1962), Moscow, Russia (1966), Nice, France (1970), Vancouver, Canada (1974), Warsaw, Poland (1983), Berkeley, USA (1986), and Kyoto, Japan (1990). A series of lectures and talks on individual problems in nonlinear mechanics was given by Mitropolskii at various universities in the USA, China, Vietnam, Czechoslovakia, Poland, Mexico, Canada, Italy, and Yugoslavia and numerous international conferences.

His active cooperation over the past two decades with Vietnamese scientists in the area of nonlinear mechanics and theory of differential equations is worth mentioning.

Mitropolskii has been one of the most celebrated scientists who has ever lived in Ukraine and Russia. Consequently, his research, scholarly, pedagogical activities and public service have been highly revered. He was awarded by almost all known highest and most prestigious prizes ever given to a Soviet citizen. Here is the list of some of them:

Hero of the Socialist Labor; Honored Activist of Science of UkrSSR; Lenin Prize Laureate; State Prize Laureate of Ukraine; Federal Prize Laureate of Soviet Union; Lyapunov Golden Medal; Certificate of the Soviet Supreme Presidium; Certificate of Presidium of Supreme Soviet of UkrSSR; Lenin Golden Medal; Two Red Star Orders; October Revolution Medal; Labor Red Banner Medal; Second-Degree Great Patriotic War Medal; The Fifth Degree Yaroslav Mudryi Order; Bogdan Hmelnytskyi Medal;

N.M. Krylov, N.N. Bogoliubov and M.A. Lavrentiev prizes of Presidium of the Academy of Sciences of Ukrainian SSR.

Also, outside Ukraine and Russia, Mitropolskii has been treated with a highest honor. In 1971, he was elected the foreign member of Bologna Academy of Sciences (Italy) and awarded with a Silver Medal of Czechoslovak Academy of Sciences "For Achievements in Science and Deeds for the Mankind". The government of Vietnam awarded him with the "Friendship" Medals in 1987 and 2001.

Editorial Board of the Journal of Nonlinear Dynamics and Systems Theory express deep condolences to all Mitropolskiis relatives and loved ones. He will be missed by his friends, collaborators, and the entire mathematical community worldwide.