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On the Occasion of the 100th Birthday of Academician Yu. A. Mitropolsky

Yury Alexeevich Mitropolsky was born on January 3, 1917, in the Charnyshs estate located in Kobelyaksky district of Poltava province. During the civil war, in 1918, the Charnyshs residence was completely destroyed which was of common occurrence at that time. Consequently, the Mitropolskys moved to Kiev.

In 1932, Yury Alexeevich finished a 7-year school in Kiev and was employed at a cannery. In 1938, he graduated from a high school with honors, and in the same year he was admitted to Kiev University to 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, Mitropolsky married his university mate Alexandra Likhacheva to live together happily for more than 60 years.

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

In 1946, after being discharged from the army, Mitropolsky joined the Ukrainian Academy of Sciences in Kiev in the capacity of a junior research fellow. In 1948, Mitropolsky received his Candidate of Science degree (the equivalent of Ph. D. degree). His thesis was titled "The 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. Timoshenkos Institute of Mechanics of the National Academy of Sciences of Ukraine) in the capacity of a senior research fellow to work under the supervision of N. N. Bogoliubov. In 1951 he received Doctor of Science degree (the equivalent of Habilitation Degree). His thesis was titled "Slow processes in nonlinear oscillatory systems with many degrees of freedom". Earlier he switched over to the Institute of Mathematics of the Ukrainian Academy of Sciences where he took up a position as a senior research fellow. In 1953 Mitropolsky was promoted to the rank of Professor and the Head of Department at the same Institute. In 1956 he became the Associate Provost of Science of this Institute and in 1958 became its Director. He had remained in this capacity up until 1988. Since 1988 he had served as the Honorary Director of the Institute of Mathematics.

In 1958, Mitropolsky was elected the Corresponding Member of the Academy of Sciences of Ukrainian SSR and in 1984 he became the Full Member of the Academy of Sciences of the USSR (now the Russian Academy of Sciences), being at that time the most distinguished academic rank in the USSR.

During the years of his fruitful scientific activity, Mitropolsky had obtained numerous fundamental results in nonlinear mechanics and differential equations. The results of his prolific research were manifested in more than 700 papers 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).

The main directions of his science investigations are as follows:

- development of asymptotic methods in nonlinear mechanics;
- 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.

An overview of his most significant works was published in the Journal of Nonlinear Dynamics and Systems Theory **6** (4) (2006) 309–318.

Since 1958, Mitropolsky had focused his attention on the development of the Institute of Mathematics of the Academy of Science of 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 that period of time, the post-graduate enrollment was substantially expanded. As the result of Mitropolsky'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 Mitropolsky's colossal scholarly activity, the Institute of Mathematics of the Academy of Science of Ukranian SSR has become the leading scientific center of mathematical research in Ukraine.

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

From 1961 to 1992 Mitropolsky had been the Head of the Department of Mathematics, Mechanics and Cybernetics at the Academy of Sciences of Ukrainian SSR. In 1992 Mitropolsky was appointed the Director of the International Mathematical Center of the National Academy of Science of Ukraine and the Counselor of the Presidium of the National Academy of Science of Ukraine. He had held this position until his death.

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

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

Mitropolsky has been one of the most celebrated scientists who has ever lived in Ukraine and Russia. Consequently, his research, scholarly and 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 the Soviet Union; Lyapunov Golden Medal; Certificate of the Presidium of Supreme Soviet; Certificate of the 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; Fifth Degree Yaroslav Mudryi Order; Bogdan Hmelnitskiy Medal; N. M. Krylov, N. N. Bogoliubov and M. A. Lavrentiev Prizes of the Presidium of the Academy of Sciences of Ukrainian SSR.

As surely as inside his country, Mitropolsky has been treated with a highest honor outside Ukraine and Russia. In 1971, he was elected the foreign member of Bologna Academy of Sciences (Italy). He was also awarded with Silver Medal of the 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.

On the 14th of June, 2008 the heart of Yury Alexeevich Mitropolsky stopped beating. The inscription on the gravestone at the Baikov cemetery in Kiev says: "The world of mathematics was the world of his life, his religion of purity and perfection" expressing the essence of the life and activity of the great mathematician and mechanical scientist of the 20th century.

Editorial Board of the Journal of Nonlinear Dynamics and Systems Theory respectfully notes his towering stature in Ukrainian and international mechanics and mathematics, his remarkable many-sided talent and outstanding organizational skills and human qualities.