

EDUARD R. TSEKANOVSKIĬ
(to 80th birthday anniversary)



On March 15, 2017, a famous mathematician, professor, and a member of Advisory Board of MFAT, Eduard R. Tsekanovskii, celebrated his 80th birthday.

He was born in Odessa, Ukraine, in the family of an engineer and a piano teacher. After graduation from high school, E.R. Tsekanovskii entered the Odessa Pedagogical University. He was taught by well-known mathematicians of Mark Kreĭn's school, among others, M. Brodskii, Yu. Ginzburg, A. Kuzhel, S. Orlov, V. Potapov, M. Rutman, and L. Sakhnovich. In 1959 he graduated from the university with honor, receiving a degree in Mathematics and Mathematics Education. After an obligatory teaching assignment in a small village in Odessa's region, he became a Ph.D. student at the Kharkov Mining Institute (nowadays the Kharkov University of Radio-Electronics). His supervisor was an outstanding mathematician M. S. Livshits (Moshe Livsic), one of the founders of the spectral theory of non-self-adjoint operators in Hilbert spaces and their unitary invariants characteristic functions, and the creator of the open physical systems theory. In 1964, E.R. defended his Ph.D. thesis "Generalized Elements of Hilbert Space and Unbounded Operators" at the Physics and Engineering Low Temperature Institute in Kharkov. In this work he proposed a new approach based on the Yu. M. Berezansky theory of rigged Hilbert spaces for analysis of unbounded non-self-adjoint operators via their characteristic operator-functions.

In 1965, Eduard moved to Donetsk to continue his career at the newly established Donetsk State University. There, E.R. started a research seminar on Operator Theory which attracted a big group of talented students, and during 1970-1992, created the Donetsk school of Operator Theory. In 1970 E.R. defended his Doctor of Science dissertation "Theory of Generalized Extensions of Unbounded Linear Operators" and became

a Chair of the Mathematical Analysis Department of Donetsk State University in 1971. In 70s he and his collaborators developed a new extension theory of Hermitian operators in rigged Hilbert spaces named bi-extension theory. These results enabled E.R. to solve the M. Livsic problem in system theory: to describe J -contractive operator-valued functions which can be realized as transfer operator-valued functions of conservative systems with unbounded state-space operator. The conclusive results and findings of this work were published in collaboration with Yu.L. Shmuljan in 1977 in Russ. Math. Surveys (Uspekhi Mat. Nauk). The main topic of his research activity in the 80-s was the theory of proper accretive and sectorial extensions of a nonnegative symmetric operator as well as the related extension theory of Hermitian contractions elaborated in a series of his own and joint papers with Yu. Arlinskiĭ, V. Derkach and M. Malamud that allowed to solve the Phillips-Kato type problem about existence and description of all proper accretive and sectorial extensions of non-negative symmetric operators with dense domain. The criterion for existence, parametric representation of all corresponding non-self-adjoint contractive extensions of Hermitian contractions and the formula for canonical and generalized resolvents of non-self-adjoint contractive extensions of Hermitian contraction have been established as well. These results substantially complete the M.G. Kreĭn research regarding self-adjoint contractive extensions of Hermitian contraction.

Working at Donetsk State University (1965–1992), E.R. has been a supervisor of ten Ph.D. students, some of them became internationally recognized mathematicians and nowadays are heading their own mathematical groups. In 1991 at the Institute of Mathematics of the Ukrainian Academy of Sciences, E.R. Tsekanovskiĭ defended another Doctorate Dissertation “Analysis of Unbounded Non-self-adjoint Operators and Their Characteristic Functions in Rigged Hilbert Spaces”. In 1992 E.R. immigrated to USA and started there a new page of his life. Between 1992 and 1998 E.R. was working at U.S. colleges and universities rising again to the rank of tenure Full Professor at Niagara University in 2006. Now, after his official retirement, he keeps the title of Professor-Emeritus of Niagara University.

In the USA, E.R. continues his joint research with Yu. Arlinskiĭ on the sectorial extension theory of nonnegative symmetric operators, applications to singular perturbations of unbounded self-adjoint operators, direct and inverse spectral analysis for finite and semi-finite non-self-adjoint Jacobi and CMV matrices (with Yu. Arlinskiĭ and L. Golinskiĭ), interpolation theory (with D. Alpay), and on the realization problem for matrix-valued Herglotz-Nevanlinna functions in system theory (with S. Belyi, H. de Snoo, S. Hassi). In 2011 substantial part of this work was summarized in the book (joint with Yu. Arlinskiĭ and S. Belyi) “Conservative Realizations of Herglotz-Nevanlinna Functions”, published in Birkhäuser series on Operator Theory: Advances and Applications. In a series of papers published in collaboration with K.A. Makarov, non-negative symmetric operators invariant under affine group of scaling transformations have been studied. It has been discovered and proved that both the Friedrichs and the Kreĭn-von Neumann extensions of such operators are scale invariant as well. They also proved the existence of non-self-adjoint dissipative solutions of operator commutation relations of Quantum Mechanics. The matrix-valued version of the well-known Aronszajn-Donoghue theory and modification of Krein’s resolvent formula were obtained in a series of joint papers with F. Gesztesy and F. Gesztesy-K.A. Makarov, respectively.

E.R. has published over 100 refereed articles in internationally recognized journals and continues to pose and solve new interesting problems in pure mathematics, mathematical physics, and system theory.

We would like to stress that E.R. is not only a great mathematician but also an exceptional friend, a person of charming personality and extraordinary sense of humor. He was a founder of the tourist kayaker club in Donetsk and introduced many of his

students to summer tourist trips. Responsive, and compassionate he is always ready to help his friends and colleagues who find themselves in difficult life situations.

Colleagues, friends, and students of E.R. Tsekanovskii from Ukraine and other countries congratulate him with his jubilee and wish him good health, happiness, and long years of scientific activity.

Editorial Board