

Editorial

This is the special issue of the journal “Modern Stochastics: Theory and Applications”, for which the papers on the occasion of Professor Dmitrii Silvestrov’s 70th birthday are collected.

Dmitrii Silvestrov is a prominent mathematician, who started his scientific research activity at Kyiv probabilistic school and became famous and world-wide recognized for his achievements in the theory of stochastic processes, actuarial and financial mathematics, mathematical modeling of stochastic systems. Maintaining over years strong links with Ukrainian mathematicians, he has also developed scientific cooperation with scientists in many countries.

Dmitrii Silvestrov began his scientific and teaching career at the Mechanics and Mathematics Faculty of Taras Shevchenko National University of Kyiv. He defended his Candidate of Science (Ph.D.) dissertation devoted to limit theorems for semi-Markov processes in 1969, and in 1973 he received the Doctor of Science degree, having developed in his doctoral dissertation an advanced theory of limit theorems for randomly stopped processes, which gives effective general conditions for weak convergence and convergence in topologies U and J for compositions of càdlàg processes. Later, D. Silvestrov presented the extended variant of the theory of limit theorems for randomly stopped stochastic processes in his book *Limit Theorems for Randomly Stopped Stochastic Processes*, Springer, London (2004).

In 1974, D. Silvestrov took up a Professor position at the Department of Theory of Probability and Mathematical Statistics at Kyiv University. At that time, his research interests focused on the renewal theory and ergodic theorems for perturbed stochastic processes; he obtained the results concerned with a generalization of the classical renewal theorem to the model of perturbed renewal equations and the exact coupling and ergodic theorems for perturbed regenerative and semi-Markov type processes. In 1980s, D.Silvestrov’s studies were also related to applied statistics and development of statistical software.

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In the beginning of 1990s, Dmitrii Silvestrov, in collaboration with Professor M. Gyllenberg, started to study quasi-stationary phenomena in perturbed stochastic systems with random lifetimes. The results of these research studies, in particular new types of exponential asymptotic expansions for perturbed regenerative, semi-Markov and risk processes, are presented in their joint book: M. Gyllenberg, D.S. Silvestrov, *Quasi-Stationary Phenomena in Nonlinearly Perturbed Stochastic Systems*, Walter de Gruyter, Berlin (2008).

In 1999, Dmitrii Silvestrov obtained a Professor position at the Mälardalen University (Västerås). He started an intensive research in the area of stochastic approximation methods for modulated price processes and American-type options. His main results in this area are presented in the two-volume monograph: D.S. Silvestrov, *American-Type Options. Stochastic Approximation Methods*, Walter de Gruyter, Berlin, Vol. 1 (2014), Vol. 2 (2015).

In 2009, Dmitrii Silvestrov has got a prestigious Cramér Professor position at the Department of Mathematics, Stockholm University. The current Silvestrov's research is presented in the above mentioned two-volume monograph. His most recent studies are related to asymptotic expansions for singularly perturbed nonlinear semi-Markov processes.

During the 50 years of intensive research work Professor Dmitrii Silvestrov published 10 books, more than 150 research papers, and co-edited 13 collective works in the area of stochastic processes. Under his supervision 22 students defended their Ph.D. dissertations.

In this special issue the papers of Professor Dmitrii Silvestrov's students and colleagues are included and also the papers, topics of which are related to areas of D. Silvestrov's research.

K. Kubilius
Yu. Mishura
L. Sakhno