

ПЕРСОНАЛИИ

Andrei Ivanovich Kibzun (to Anniversary Since Birth)



In July 2021 Andrei I. Kibzun, head of the department “Probability Theory and Computer Modeling” of Moscow Aviation Institute (National Research University), doctor of physical and mathematical sciences, professor, laureate of the Government Prize in the field of science and technology celebrated his 70th birthday. Professor Andrei I. Kibzun is a well-known scientist in the field of stochastic programming, optimization theory and optimal control. He has published more than 270 articles in Russian and foreign scientific journals, 4 monographs, 8 textbooks. Andrei I. Kibzun conducted strenuous scientific activities, starting with the school and student benches. In 1980 and 1981 he was the winner of the competition for the title of best young scientist of Moscow Aviation University (MAI). Repeatedly, in 1981, 1996, 2000 and 2003 Andrei I. Kibzun received prizes named after the 25th anniversary of MAI for a complex of scientific and educational works. In 2000, he received the prize of the Government of the Russian Federation in the field of science and technology for developing a methodology for probabilistic analysis of the parameters of separation of satellites from the Breeze-M booster. In 2015, Andrei I. Kibzun, together with a team of authors, was awarded the Prize of the International Academic Company Science/Interperiodics for the best publication in its journals.

His passion for mathematics Andrei I. Kibzun began back in 1966 in physical and mathematical school No. 18 at Moscow State University, led by academician A.N. Kolmogorov. Mathematics attracted Prof. Kibzun primarily with the logic of construction and a wide range of possibilities for practical application. In 1974, he graduated with honors from the Faculty of Aircraft of MAI, and in 1975 Andrei I. Kibzun graduated with honors from the Faculty of Mechanics and Mathematics of Moscow State

University. Further scientific activity for many years connected Andrei I. Kibzun with MAI, where he successfully completed graduate school, defended his Ph.D. and doctoral theses, and since 1990 he headed the department “Probability Theory and Mathematical Statistics” of MAI, which later changed its name to “Probability Theory and Computer Modeling”. At this department, the scientific team headed by Andrei I. Kibzun successfully applied in practice the obtained scientific results in such fields, as the optimal control of aircraft in terms of probabilistic and quantile quality, solving transport and logistics problems, financial mathematics in the field of obtaining a probability-guaranteed result when forming a portfolio of securities and solving the problem of optimal investment, processing the results of statistical analysis or simulation in problems for estimating probability of achieving desired result, distance learning. As part of the work, more than 10 commercial contracts were successfully executed, packages of applications that passed state registration were formed, and a software complex of probabilistic and quantile optimization and statistical modeling was developed. The efforts of the scientific team led by Andrei I. Kibzun were supported by more than 20 different international and Russian grants, including grants of the Russian Foundation of Basic Research, grants of the Russian Scientific Foundation and grants of the Ministry of Science and Higher Education of the Russian Federation. The department has developed an adaptive learning management system CLASS.NET with a large package of mathematical optimization programs to support functioning and adaptation. Each semester, this system is used by more than 4,000 users of MAI and other universities.

Andrei I. Kibzun is the head of the scientific school for the optimization of stochastic systems with probabilistic and quantile criteria, the only one in the Russian Federation for stochastic programming. Under his leadership, 7 doctoral and 20 Ph.D.’s theses on physical and mathematical topics were defended. In recent years, the main scientific results are new algorithms for solving single-stage and two-stage problems of probabilistic and quantile optimization with a discrete distribution of random parameters, based on the method of reducing these problems to deterministic problems of mixed programming, as well as results in the field of sampling continuous distributions of random parameters and evidence of convergence of the solution of the obtained approximation problems to the precise solution of the problem. Prof. Kibzun conducts a large editorial and socio-scientific activity, being a member of the editorial boards of three leading scientific journals: two Russian journals, which are included in the List of Higher Attestation Commission – “Automation and Remote Control”, “Bulletin of Computer and Information Technologies”, as well as the foreign journal “Applied Stochastic Models in Business and Industry”. Andrei I. Kibzun is a member of the Higher Attestation Commission expert council on control, computer engineering and computer science; member of two specialized councils for the defense of doctoral dissertations; the member of Scientific and methodical council for mathematics at the Ministry of Science and Higher Education of the Russian Federation.

Andrei I. Kibzun always paid great attention to educational and methodological work, which was reflected in the publication of 8 textbooks on mathematical disciplines and in the development of computer courses on Probability Theory and Mathematical Analysis, designed to work on the Internet in the cathedral learning management system CLASS.NET.

Disciples and colleagues of Andrei I. Kibzun: A.V. Bosov, A.V. Borisov, B.V. Vishnyakov, S.A. Zabelin, S.V. Ivanov, A.N. Ignatov, Yu.S. Kan, V.L. Miroshkin

congratulate him with a significant date in his life, wish him good health and new successes in scientific and pedagogical activities.

A. V. Naumov, Moscow Aviation Institute, Moscow, Russian Federation

References

1. Malyshev V.V., Kibzun A.I. *Analiz i sintez vysokotochnogo upravleniya letatel'nyimi apparatami* [Analysis and Synthesis of High-Accuracy Aircrafts Control], Moscow, Mashinostroenie, 1987. (In Russian)
2. Kibzun A.I., Kan Yu.S. *Stochastic Programming Problems with Probability and Quantile Functions*, London, John Wiley & Sons, 1996.
3. Kibzun A.I., Kan Yu.S. *Zadachi stohasticheskogo programmirovaniya s veroyatnostnymi kriteriyami* [Problems of Stochastic Programming with Probabilistic Criteria], Moscow, Fizmatlit, 2009. (In Russian)
4. Kibzun A.I., Goryainova E.R., Naumov A.V. *Teoriya veroyatnostey i matematicheskaya statistika. Bazovyy kurs s primerami i zadachami* [Probability Theory and Mathematical Statistics. Basic Course with Examples and Problems], Moscow, Fizmatlit, 2002, 2005, 2007, 2014. (In Russian)
5. Kibzun A.I., Malyshev V.V. Generalized Minimax Approach to Solving Optimization Problems with Chance Constraints. *Izvestiya akademii nauk SSSR. Tekhnicheskaya kibernetika*, 1984, no. 1, pp. 20–29. (in Russian)
6. Kibzun A.I., Lebedev A.A., Malyshev V.V. On Reducing Problem with Probabilistic Constraints to the Equivalent Minimax. *Izvestiya akademii nauk SSSR. Tekhnicheskaya kibernetika*, 1984, no. 4, pp. 73–80. (in Russian)
7. Karp K.A., Kibzun A.I., Malyshev V.V. A Minimax Approach for Statistical Simulation of Complex Technical Systems. *Advances in Modelling and Simulation*, 1988, vol. 10, no. 3, pp. 35–46.
8. Kibzun A.I., Kurbakovskiy V.Yu. Guaranteeing Approach to Solving Quantile Optimization Problems. *Annals of Operations Research*, 1991, vol. 30, no. 1, pp. 81–94. DOI: 10.1007/BF02204810
9. Kibzun A.I., Zabelin S.A. Stochastic System Control in Fuzzy Environment. *Advances in Modelling and Analysis*, 1992, vol. 32, no. 3, pp. 45–55.
10. Kibzun A., Uryasev S. Differentiability of Probability Function. *Stochastic Analysis and Applications*, 1998, vol. 16, no. 6, pp. 1101–1128. DOI: 10.1080/07362999808809581
11. Kibzun A.I., Kuznetsov E.A. Analysis of Criteria VaR and CVaR. *Journal of Banking & Finance*, 2006, vol. 30, no. 2, pp. 779–796. DOI: 10.1016/j.jbankfin.2005.04.003
12. Kibzun A., Matveev E. Optimization of the Quantile Criterion for the Loss Function by a Stochastic Quasigradient Algorithm. *Annals of Operations Research*, 2012, vol. 200, no. 1, pp. 183–198. DOI: 10.1007/s10479-011-0987-z
13. Norkin V.I., Kibzun A.I., Naumov A.V. Reducing Two-Stage Probabilistic Optimization Problems with Discrete Distribution of Random Data to Mixed-Integer Programming Problems. *Cybernetics and Systems Analysis*, 2014, vol. 50, no. 5, pp. 679–692. DOI: 10.1007/s10559-014-9658-9
14. Kibzun A.I. Comparison of Two Algorithms for Solving a Two-Stage Bilinear Stochastic Programming Problem with Quantile Criterion. *Applied Stochastic Models in Business and Industry*, 2015, vol. 31, no. 6, pp. 862–874. DOI: 10.1002/asmb.2115

-
15. Ivanov S.V., Kibzun A.I., et al. Variable Neighborhood Search for Stochastic Linear Programming Problem with Quantile Criterion. *Journal of Global Optimization*, 2019, vol. 74, no. 3, pp. 549–564. DOI: 10.1007/s10898-019-00773-2
 16. Ivanov S.V., Kibzun A.I., Stepanova A.S. An Algorithm to Solve a Quantile Optimization Problem with Loss Function Having a Separable Structure and Its Application to an Aerospace Problem. *Applied Stochastic Models in Business and Industry*, 2019, vol. 35, no. 5, pp. 1269–1281. DOI: 10.1002/asmb.2475

Андрей Викторович Наумов, доктор физико-математических наук, профессор, кафедра «Теория вероятностей», Московский авиационный институт (национальный исследовательский университет) (г. Москва, Российская Федерация), naumovav@mail.ru.