

STANDPOINT

on the competition for occupation of the academic position
“Associate Professor” in the Professional Field 4.5 Mathematics (Probability Theory and
Mathematical Statistics), announced in State Gazette issue 99/20.11.2020,
with a single candidate: Ch. Assist. Dr. Petar Ivanov Kopanov

Member of the scientific jury: Prof. D.Sc., Snezhana Georgieva Gocheva-Ilieva,
guest-professor at the Faculty of Mathematics and Informatics, University of Plovdiv “Paisii
Hilendarski”, Department of Mathematical Analysis

The basis

By order № P33-636 of 19.02.2021 of the Rector of Plovdiv University "Paisii Hilendarski" (PU) I was appointed a member of the scientific jury in the above competition for the academic position of "Associate Professor" at PU.

1. General presentation of the procedure and the candidate

In the announced competition the only candidate is Ch. Assistant Professor Dr. Petar Ivanov Kopanov. The candidate has submitted all the required documents for the procedure, described in the Regulations of the University of Plovdiv for development of the academic staff, which I accept without special remarks. Ch. Assistant Professor Dr. Kopanov holds a PhD in Probability Theory and Mathematical Statistics, with a dissertation defended at the Faculty of Mathematics and Informatics at Sofia University "Kliment Ohridski" in 1996. He has a total work experience of over 34 years, of which 33 years of teaching experience. Since 1989 works as an assistant, senior and chief assistant in FMI at PU, respectively in the departments: Probability Theory and Mathematical Statistics (1989-1998), Applied Mathematics and Modeling (1998-2020) and Mathematical Analysis (since 2020). Of these, 6 are in editions with impact factor (IF) and 3 - with impact rank (SJR) without IF. Three of the publications are listed as habilitation work (in the List for fulfillment of the minimum national requirements for associate professor, indicator B4). The citations submitted for the competition are a total of 16, of which 5 are in editions with IF, 4 - in Scopus (without IF), 1 - only in Zentralblatt für Mathematics. In my opinion, the materials presented in the competition are in sufficient volume and at a good level.

2. Assessment of the candidate's pedagogical preparation and activity

Ch. Assistant Professor Dr. Kopanov has extensive experience in teaching and learning. He has lectured and practiced in the following disciplines: Probability Theory and Mathematical Statistics, Probabilities and Applied Statistics, Applied Statistics, Modern

Statistical Decision Making Methods, Statistical Software (R Language), Mathematical Optimization, Software Systems in Mathematics (Wolfram Mathematica) and others. He has also prepared and conducted 10 different elective courses, including: Optimization tasks in the processes of pattern recognition, Tasks for preparation of competitions in mathematics, Selected tasks from competitions in mathematics, Nonlinear and stochastic optimization, etc. There are 4 textbooks for students in the field of this competition, co-authored with colleagues from FMI. Over the years he has been a scientific supervisor of 35 graduate theses. Another of his main pedagogical activities is the preparation and management of the FMI teams for participation in student Olympiads such as the National Student Olympiad in Mathematics and CompMath "Academician Stefan Dodunekov" from 2012 until now. Under his leadership, students in FMI teams have won a number of awards.

A very high assessment can be given for his pedagogical preparation and activity.

3. Main scientific and scientific-applied contributions of the candidate

The scientific contributions of Ch. Assistant Professor Dr. Kopanov in the publications submitted for the competition are in the field of probability theory and mathematical statistics (PTMS) and their application. In the self-assessment of the candidate's scientific contributions, the 18 scientific publications are systematized in 6 groups. This is not appropriate and I will consider them in 3 groups: (1) Research and contributions in the field of probability theory (PT); (2) Applications of PT in differential equations; (3) Other applications of PTMS.

In (1) are grouped 4 publications, all with theoretical results from PT. Publications [4, 5] are important, in which new, constructive type of conditions are proposed for the possibility to unambiguously determine the distribution depending on its moments. Other results from this group are related to the Bernoulli process and the Cauchy distribution.

Seven articles are classified in group (2), with applications of PT in the theory of impulse differential equations. It is assumed that the moments in which the pulses occur are random and are described as random variables with known distributions. With the help of Lyapunov stability and other techniques, the existence, uniqueness and stability of the solutions of some types of differential equations have been studied. Specific examples are given.

In group (3) are the other 7 articles with application of PTMS. In three of the articles, stochastic models of sociological agents in networks are constructed. Agents are stochastic automata exchanging random signals. The aim is to obtain patterns of behavior for predicting evolution and generating new structures from sociological networks. Another study concerned the processing of empirical data from medicine with PTMS methods to study the impact of a new treatment method on two control groups of patients. Some applications of PTMS in the field of cosmology and informatics are also included.

The balance sheet shows that in the first two groups (11 articles) the contributions have mainly theoretical and theoretical-applied character, and the other 7 articles are scientific-applied. The results of the candidate included in this procedure for associate professor, except through publications in journals, have been disseminated among the scientific community with reports at 7 international and national conferences.

In my opinion, the research and scientific-applied activity of Ch. Assistant Professor Dr. Kopanov generally correspond to the professional field and the scientific specialty of the competition. I do not detect plagiarism in the presented scientific publications.

4. Critical notes and recommendations

As a remark I can point out that in the self-assessment of the contributions, the candidate has not properly identified and presented the 3 publications ([4, 5, 6]) as a habilitation thesis, according to criterion B4 of the Regulations on the Implementation of the Law for the Development of the Academic Staff in the Republic of Bulgaria (LDASRB).

CONCLUSION

Based on the submitted documents on the procedure, scientific papers and scientometric indicators of the candidate, I believe that in qualitative and quantitative terms they meet both the minimal national requirements of the LDASRB and the Regulations of Implementation of the LDASRB in the professional field of the competition and additional requirements of FMI of PU. This gives me grounds to give an **overall positive assessment** of the candidate and to propose Ch. Assistant Professor Dr. Petar Ivanov Kopanov to take the academic position of "Associate Professor" in the professional field 4.5 Mathematics (Probability Theory and Mathematical Statistics), for the needs of PU "Paisii Hilendarski".

Date: 22 March 2021
Plovdiv

MEMBER OF THE SCIENTIFIC JURY:
/Prof. D.Sc. Snezhana Gocheva-Ilieva/