

OPINION

by competition for the academic position “Associate Professor” in professional area 5.2
“Electrical Engineering, Electronics and Automation”, scientific specialty “Application of the
principles and methods of Cybernetics in various fields of science”,
announced in State Gazette, no. 1 of October 11, 2022
with candidate: Iliyan Ivanov Petrov, Chief Assistant Professor, PhD
Member of scientific jury: Petko Hristov Petkov, Professor, DSc

1. General characteristic of the candidate’s research and applied scientific activity

The only candidate in the competition for obtaining the position “Associate Professor” in 5.2 Electrical Engineering, Electronics and Automation, scientific specialty “Application of the principles and methods of Cybernetics in various fields of science” at the Institute of Information and Communication Technologies – BAS – Dr. Iliyan Ivanov Petrov, Chief Assistant Professor at the IICT. The candidate participates in the competition with 20 works, of which 11 presented as equivalent to a habilitation work, 6 papers presented at scientific conferences abroad and 3 publications in non-refereed journals and conference proceedings. The topic of the dissertation for obtaining the scientific and educational degree “doctor” is in the field of Economics. The content of the works shows that the candidate has a sufficiently high qualification and works successfully in the field of technical and economic Cybernetics. Some of the publications are related to solving specific tasks, which shows a desire for applied activity. In particular, the spread of COVID-19 in Bulgaria during 2021 was studied. There is no data on participation in the development of research projects. The candidate also has a teaching activity. He was a lecturer in the “Banks and finances” program at the International Bank Institute of Bulgarian National Bank, conducting training in the “Corporate Finances” and “Credit Analysis” modules in professional education programs - Master’s level.

2. Basic scientific and applied scientific contributions

The candidate has two major scientific contributions related to the theoretical foundations of Cybernetics. First of all, based on concept of information entropy known in Cybernetics, original approaches have been developed for modelling and visualization the evolution of maximum and minimum entropy levels in systems with a gradually increasing and practically unlimited number of elements. Secondly, based on the results of information entropy modelling and visualization, the applicant's approaches to the analysis of the complexity of systems from the point of view of the concentration of distribution of resources and the resulting dominance and hierarchy in the interactions between the elements in the system. The results of these researches and developments has a universal character and can be used to analyze diversity and/or hierarchy (concentration), uncertainty and risk in systems from different fields of science and practice.

As scientific and applied contribution of the candidate, in the first place, the contributions to the improvement of the methods for multi-criteria analysis and decision-making (MCADM) can be noted. As a second applied contribution, I note the application of the advanced theoretical formulations and methodological approaches based on the principles of entropy and hierarchy and the methods of MCADM in the study of complex systems and processes in the field of Information Systems, Energy Systems and Markets and the spread of dangerous pandemics such as COVID-19.

In believe that the applicants' contributions are quite sufficient to acquire the academic position "Associate Professor".

3. Significance of the contributions for science and practice

The candidate contributions characterize him as a promising researcher with a desire to obtain new scientific results and use them in the analysis and management of specific systems. There is a sufficient number of publications with scientific and scientific-applied contributions. Information is presented on a total of 20 citations of the candidate's works in publications by Bulgarian and foreign authors.

4. Critical notes and recommendations

The candidate can be asked to increase publication activity in our and foreign journals so that his results can be more widely recognized by the scientific community.

5. Fulfillment of the minimum state criteria

I declare the fulfillment of the normative requirements regarding the national and institute scientometric data for the field "Technical sciences" for occupying the position "Associate Professor" according to a group of indicators as follows: A = 50 points, B = 660 points, G = 300 points, D = 160 points, E = 20 points. Since the minimum required number of points is 450 and the completed number is 1190, there is a significant excess of the regulatory requirements.

Conclusion

Based on the contributions in the candidate scientific works, his successful scientific research, applied and educational activities, I find it reasonable to propose Chief Assistant Professor Iliyan Ivanov Petrov to occupy the academic position of "Associate Professor" in the professional field "Electrical Engineering, Electronics and Automation" in the specialty "Application of the principles and methods of Cybernetics in various fields of science".

15.01.2023

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