

POSITION

by competition for an academic position Associate Professor
professional field 5.3 Communication and computer equipment (Microwave equipment and
communications),
for Sofia University "St. Kliment Ohridski "(Sofia University),
Faculty of Physics, announced in SG no. 21 of 15.03.2022

Applicant: Hristomir Hristov Yordanov, PhD, Head Assistant Professor, TU-Sofia

Member of the Scientific Jury: Jivko Gospodinov Kissovsky, PhD, Associate Professor

1. Details of the application

The documents submitted for the competition by the candidate comply with the requirements of ZRASRB, PPZRASRB and the Regulations on the terms and conditions for acquiring scientific degrees and holding academic positions at Sofia University "St. Kliment Ohridski "(PURPNSZADSU).

For participation in the competition the candidate Head Assistant Professor Dr. Hristomir Hristov Yordanov presented a list of a total of 38 publications, incl. 35 publications in international scientific journals and scientific forums, 1 book, 2 book chapters and 2 patents. There are also two certificates for his award with a Marie Curie Scholarship and a guest researcher of the Fulbright program, as well as participation in 3 international projects (coordinator for Bulgaria of 2 of them).

The candidate has submitted all the necessary application documents, which confirm his competence and qualification on the topic of the announced competition for associate professor.

2. Details of the candidate

Brief professional and biographical data about the candidate.

After obtaining a bachelor's degree in Radiocommunications from the Faculty of Telecommunications at the Technical University of Sofia, Hristomir Yordanov continued his education as a Master in the Department of High Frequency Engineering at the Technical University, Munich (Germany). After completing the master's program he continued to work as a research associate at the department and developed a dissertation on "Wireless and wired communication in and between integrated circuits." The candidate have continued his career development at the Technical University of Sofia, working on a project of the European program "Marie Curie". After the end of the project he was successively elected assistant and head assistant professor at the Faculty of Telecommunications at TU-Sofia.

3. General characteristics of the researcher and achievements of the candidate

A total of 38 publications were presented for the competition for associate professor in field 5.3 Communication and Computer Engineering. 10 publications were selected from referenced and indexed publications in the scientific databases of Scopus and Web of Science, which are equivalent to a monograph. The candidate's points on indicator B are 135.57, which exceeds the minimum of 100 points. According to indicator G, 12 publications were selected, of which 5 were referenced and indexed, 6 are not and one monograph on the candidate's thesis is presented. The number of points 215 on indicator G also exceeds the minimum requirements of 200 points. As on the indicator D the points are 60, evaluating six citations of the referenced publication of the candidate. The total number of points exceeds the minimum number of points for the academic position of "associate professor" by more than 60 points. Data for participation of the candidates in three international projects are presented, in two of them being a coordinator for Bulgaria.

The candidate's publications were assessed and his scientometric indicators are above the national minimum requirements, provided in accordance with PPZRACRB and PURPNSZAD of Sofia University for Sofia to hold an academic position "associate professor" in area 5.3 Communication and Computer Engineering / Technical Sciences.

4. Characteristics and evaluation of the teaching activity of the candidate

The candidate has over 7 years of teaching experience as an assistant and Head Assistant Professor at TU-Sofia with full number of classes .

5. Content analysis of the scientific and scientific-applied achievements of the candidate contained in the materials for participation in the competition

The scientific contributions presented in this competition can be divided into several different areas and also as scientific, scientific-applied and applied contributions.

In the first area, the contributions can be indicated as the main ones in G2 "Wired and Wireless Inter-Chip and Intra-Chip Communications", B3. Nanoelectronics-Based Integrated Antennas, and B4. Si and SiGe Based Monolithic Integrated Antennas for Electromagnetic Sensors and for Wireless Communications, which are scientifically applied and relate to the results of the study of antennas using metal structures in the integrated circuits. These contributions include developing numerical models and measuring experimental prototypes, developing methods for manufacturing antennas on high-impedance silicon substrates to reduce substrate losses, modeling and optimizing wireless channels for communication between integrated circuits based on integrated antennas.

The main contributions of the candidate are in the second area, where he has studied of the interference in the integrated antennas, which use the power supply wires of the integrated circuits as electrodes. They are expressed in the development of models for experimental determination and

measurement of interference levels in integrated antennas induced by digital circuits. The results of these studies are presented in B8. Digital Interference in Monolithic Integrated Antennas and G8. An Experimental Setup for Switching Noise Measurement in Monolithic On-Chip Antennas, summarized in B7. Maximizing Throughput in Chip to Chip Communications. The scientific-applied contribution of these studies is confirmed by the large number of citations of the article D1. On-Chip Monolithic Integrated Antennas Using CMOS Ground Supply Planes, as the main contribution to the publications is the work of the candidate.

The development of methods for the synthesis of equivalent circuits of integrated antennas and the synthesis of equivalent circuits of communication channels between integrated antennas can be considered as scientific contributions of the applicant and they are reflected in Articles B2. Generation of Network Models for Planar Microwave Circuits by System Identification Methods, B5. Network model of on-chip antennas, B6. Combined lumped element network and transmission line synthesis for passive microwave structures, and Γ 3. Equivalent Circuit Models for Linear Reciprocal Lossy Distributed Microwave Two-Ports Devices. The theoretical contributions to the recognition of the geometric shape of an object based on a radar signal based on neural networks reflected in articles G9 should also be noted here “ Neural Networks for Scattering Signal Based Object Recognition” and G10. Object Recognition Using Neural Networks and Complex Reflection Signals.

As an application of scientific achievements in practice, I accept the applicant's contributions to the development of instruments for measuring moisture in bulk materials and comparing the uncertainty of the various measurement methods described in Article B9. "Calibration Techniques for Microwave Moisture Meters", as well as the application of various methods for measuring and calibrating phased array antennas (D11. Phased Antenna Array Cross-Polarization Tuning and D12. Method for Antenna and Probe Alignment in a Near-Field Test Setup.)

The importance of the contributions for science and practice is confirmed by their application in specific realizations and their application in the education of the students. The candidate's participation in many international scientific forums, project teams and participation in established world scientific programs is proof of his good performance in the scientific community in our country and abroad.

6. Critical remarks and recommendations

The candidate has a large number of high-level publications that can be published in refereed and indexed journals.

7. Personal impressions of the candidate

In my several conversations with the candidate, he showed high erudition and competence in the field of microwave technology and communications. Proficiency and use of modern software

packages for the simulations of microwave devices is essential for the research and training of the students in this field.

8. Conclusion on the application

After getting acquainted with the materials and scientific works presented in the competition and based on the analysis of their significance and the scientific, scientific-applied and applied contributions contained in them, I confirm that the scientific achievements meet the requirements of ZRASRB, the Regulations for its application. and the relevant Regulations of Sofia University "St. Kliment Ohridski "for holding the candidate for the academic position“ Associate Professor ”in the scientific field and the professional field of the competition. The candidate meets the minimum national requirements in the professional field and plagiarism is not established in the scientific works submitted to the competition.

I give my positive assessment of the candidate.

II. OVERALL CONCLUSION

Based on the above, I recommend the scientific jury to propose to the competent authority for selection of the Faculty of Physics of Sofia University "St. Kliment Ohridski" to elect a Head Assistant Professor Dr. Eng. Hristomir Hristov Yordanov at the academic position of "Associate Professor" in the professional field 5.3 Communication and Computer Engineering (Technical Sciences).

28.06. 2022

Scientific jury member :

(Assoc. Prof. Dr. Jivko Gospodinov Kissovsky)