

ИНСТИТУТ ЗА КОСМИЧЕСКИ ИЗСЛЕДВАНИЯ И ТЕХНОЛОГИИ - БАН	
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## Opinion

on a competition for the academic position "Associate Professor" in SRTI-BAS, Area of Higher Education: 4. "Natural Sciences, Mathematics and Informatics"; Professional field: 4.4 "Earth Sciences"; scientific specialty: "Remote sensing of Earth and Planets",

candidate As. Prof. Dr. Eng. Hristo Stoyanov Nicolov

*Member of Scientific Jury:* **Prof. DSc. Yavor Chapanov**

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### General information about the candidate:

Ass. Prof. Dr. Eng. Hristo Stoyanov Nicolov is born in 1966. He graduated from high school in Cuba, Havana with a degree in mathematics and basics of programming, and higher education at the University of Mining and Geology "St. Ivan Rilski "(MGU), specialty Engineer in mining automation. He speaks 3 foreign languages. Since 1990 he has been working at the Bulgarian Academy of Sciences, first at the Laboratory of Solar-Terrestrial Influences, now at the Institute for Space Research and Technology. He led exercises for the course "Remote Sensing and Image Processing" at Moscow State University. He knows how to build and maintain a local network and servers.

### Submitted documents

The documents of Hristo Nikolov correspond to the requirements and criteria for the academic position "Associate Professor". The submitted papers and citations cover the minimum requirements for participation in this competition, and it should be noted that the remaining 100 scientific papers that are not included in the Ph.D. Thesis and this competition, also meet the criteria for the academic position of "Professor".

### **Scientific papers:**

40 publications are presented for participation in the competition. They are published in specialized scientific journals, Proceedings of International Conferences in Bulgaria and abroad, which meet the criteria and rules for its application for the academic position of "Associate Professor". Most of the publications are co-authored with experts from various fields of science, due to the interdisciplinary nature of the analysis and interpretation of space images in remote sensing methods. In 15 of the publications the candidate is the first author, which testifies to a significant personal contribution to the research.

In modern methods for studying natural and anthropogenic processes and phenomena on the Earth's surface are widely used remote sensing methods based on air and space apparatus, which are used to collect huge amounts of data on a daily basis. Reliable processing of these data sets and extraction of reliable information from them is possible with the development and implementation of specialized software using elements of artificial intelligence for training, determining and evaluating the parameters of the searched objects. In this sense, the published scientific works of Hristo Nikolov are especially relevant and the results of scientific research in them can be used in a number of practical areas.

It should be noted here that the total number of published articles with the participation of Assistant Professor Eng. Hristo Stoyanov Nikolov as an author or co-author is over 140, which is a good prerequisite for his career growth.

### **Evaluation of scientific contributions**

The contributions of Assistant Professor Hristo Stoyanov Nikolov, can be referred to the following categories: creation of new methods and algorithms, establishment of new facts and preparation of new software products. These contributions are closely related to the implementation of software products in the field of artificial intelligence, which allows them to be highly valued in order of the prospects of their application in practice.

The specific contributions to the works submitted for the competition are summarized by the candidate in three main groups as follows:

- Development and implementation of innovative mathematical methods for thematic processing of multichannel spectral data from various equipment for Remote Sensing;

- Construction of field laboratory complexes for conducting in-situ and Remote Sensing in synchronous and quasi-synchronous experiments for obtaining data from observations of the Earth;
- Use of multichannel spectral data from remote sensing in assessing the impact of risk processes on the environment of natural and techogenic origin.

In my opinion, the most important contributing aspects are related to the first group, where elements of artificial intelligence are used for training, determination and evaluation of the parameters of the objects, and to the third group, which is relevant for the practical applicability of research in the face of modern climate change.

### Participation in research projects

In his CV Hristo Nikolov has given information about his participation in research projects. Formally, this information is not required in the competitions for the academic position of "Associate Professor", but in this case it is indicative about the creative and labor activity of the candidate. Hristo Nikolov has been the leader of 4 international research projects and one national with funding from the NSF. He is a participant in 12 completed or current projects under contracts with NSF, 4 projects with national funding and 8 projects with international funding. It can definitely be said that Hristo Nikolov also meet the criteria for the academic position "Professor", due to the participation in these projects, the additional articles and their citations.

### CONCLUSIONS:

The analysis of the submitted materials allows me to conclude that the materials submitted by the candidate fully meet the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria and the regulations for its application for the academic position of "Associate Professor". I give a completely positive assessment to the candidate and I recommend to the scientific jury to propose to the Scientific Council of SRTI to elect Assistant Professor Dr. Eng. Hristo Stoyanov Nikolov to take the academic position of "Associate Professor" in the professional field: 4.4 "Earth Sciences"; scientific specialty: "Remote sensing of the Earth and the planets".

Sofia, 17.09.2020

Sign:.....  
(Prof. DSc. Yavor Chapanov)

