R E V I E W

Related to a competition for the Academic position of 'Professor',

in the field of higher education

4. Natural Sciences, Mathematics and Computer Science

professional field

4.6 Informatics and Computer Sciences

with a candidate

Associate Professor Nina Christova Dobrinkova, Ph.D.

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Member of Scientific Jury according to the Order № 310/13.12.2024

of the Director of the Institute of Information and Communication Technologies – Bulgarian Academy of Sciences

The competition for the Academic position of 'Associate Professor', in the field of higher education 4. Natural Sciences, Mathematics and Computer Science, professional field 4.6 Informatics and Computer Sciences, for the needs of the Department Modelling and Optimization, Institute of Information and Communication Technologies (IICT) – Bulgarian Academy of Sciences (BAS) is announced in State Gazette Vol. 87/15.10.2024 according to the requirements in Act on the Development of the Academic Staff in the Republic of Bulgaria (ADASRB) and Regulations of ADASRB – IICT, BAS.

Documents for participation in the competition were submitted by a candidate – Assoc. Prof. Nina Dobrinkova, Ph.D. The documents for the competition are

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presented in accordance with the Regulations of ADASRB – Information and Communication Technologies – BAS.

According to the ADASRB and Regulations of ADASRB and Chapter 5 from Regulations on the specific conditions for obtaining scientific degrees and for holding academic positions in IICT – BAS, the candidate for the Academic position of 'Professor' Assoc. Prof. Nina Christova Dobrinkova fully meets the specified conditions and requirements.

Assoc. Prof. Nina Dobrinkova has defended her Ph.D. thesis "Information Systems for Simulating the Behaviour of Forest and Field Fires" (April 04, 2012), she was awarded the educational and scientific degree "Ph.D." in Informatics. Since June 29, 2016, she has been an Associate Professor, professional field 4.6 Informatics and Computer Sciences.

She works on a basic employment contract and her work experience is 18 years and 6 months, including as a Chief Assistant Professor – 16 years and 1 month, Associate Professor – 8 years and 3 months.

General description of the submitted materials regarding the research activity of the candidate

Assoc. Prof. Nina Dobrinkova participated in the competition with the following materials:

1. B3: Habilitation thesis – monograph – 1. A division protocol dated 18.09.2018 has been submitted for the monograph, which certifies that the author's contribution of Assoc. Prof. Dobrinkova is 68%.

2. G7: Scientific publications in journals/series that are referenced and indexed in world-renowned databases with scientific information (Web of Science, Scopus, Zentralblatt, MathSciNet, ACM Digital Library, IEEE Xplore and AIS eLibrary), outside the habilitation thesis – 17, of which 11 are publications in journals/proceedings with impact rank and 6 – in journals/proceedings without impact rank.

3. G9: Invention, patent or utility model, for which a protected document has been issued in due course – 1 utility model.

Assoc. Prof. Nina Dobrinkova is the independent author of 3 publications, in 11 publications she is the first author, which gives reason to believe that the candidate is the leading researcher in the presented studies. It is noteworthy that some of the

publications have an international team of authors. Her participation in a number of international conferences demonstrates the achieved wide dissemination of the results and the desire for active discussion with the scientific community.

The reference of the publishing activity shows that Assoc. Prof. Nina Dobrinkova meets the minimum requirements for holding the academic position of 'Professor' according to ADASRB and Regulations of ADASRB at IICT – BAS (Table 1).

Table 1. Scientometric indicators

Group of indicators	Minimum requirements for holding the academic position of 'Professor'	Number of points of Assoc. Prof. Nina Dobrinkova
А	50	50
Б	100	100
Г	260	317
Д	140	168
Е	150	410
Общо	700	1045

A list of 29 citations of the publications of Assoc. Prof. Nina Dobrinkova is presented. The presented citations meet the recommended requirements for citations.

Assoc. Prof. Nina Dobrinkova also participated in the competition with a utility model "System for analysis and control of the mechanical properties of biological tissues" with inventors Veronika Atanasova-Georgieva, Dichko Bachvarov, Ani Boneva, Rumen Andreev and Nina Dobrinkova. The utility model is valid until 31.05.2026.

Participation in research projects

According to the presented documents, Assoc. Prof. Dr. Nina Dobrinkova has participated in several scientific projects, as follows:

- leader of 2 projects (КП-06-КОСТ/23, SMART WATER);

- official representative/coordinator/team leader in 5 international projects (EVROS2010, GOES, CP4ALL, LANDSLIDE and a project under the Erasmus+Topic program);
- participant in the teams of 4 projects (3 under the National Science Found and 1 under the National Scientific Program "Environmental Protection and Risk Reduction from Adverse Events and Disasters").

Assoc. Prof. Nina Dobrinkova is extremely active in project-based research and I hope that in the future she will win and lead many more scientific projects. At the same time, it would be useful for her to focus on publishing her research results in leading scientific journals related to her areas of research in order to receive wider recognition for her work. The Scopus report shows that the candidate has only 34 indexed publications, 30 citations (excluding self-citations) and h-index = 4.

Her CV shows active expert activity.

She is a member of the academic board of the Center for Research, Development and Improvement of NATO Crisis Management and Disaster Response Capabilities, with decisions of the Center's Management Board of 20.10.2021. She prepares opinions and concepts for various municipalities in relation to crisis situations (floods, fires, landslides) and others.

Assoc. Prof. Nina Dobrinkova has one successfully defended Ph.D. student, Stefan Stefanov (Diploma No/date: 001398 / 05.10.2021), with the thesis title "Innovative methods for supporting decision-making in forest fires or floods", in the professional field 4.6. Informatics and computer science. She is currently the supervisor of a second Ph.D. student with the thesis title "Unified Platform for modeling and Automation of standardized information security management systems".

Scientific contributions

According to the "Reference for Scientific and Applied Sciences", the contributions of Assoc. Prof. Nina Dobrinkova are as follows:

1. A methodology for processing data from riverbeds has been developed and applied, based on geodetic surveys and Shezi's formulas for river runoff, so as

to obtain maximally realistic floodplains, which would be a priority in the event of a flood for the territory of the Svilengrad municipality and test areas in Armenia. [B1, D12, D15, D16, D17]

2. Web-based modules or systems have been developed and tested to support decision-making of emergency response services. All STEM and ICT training practices have been taken into account. [G1, G2, G4, G7, G8, G9, G10, G13]

3. Approaches and optimizations have been developed and tested for simulating forest and field fires in Bulgaria, with an emphasis on the need to develop a comprehensive map of possible combustion models for non-urbanized territories. In the case of a forest fire, information for real-time simulation does not exist due to the lack of hourly meteorological data in the affected areas. There is also a lack of data on the types of plants that make up the local flora. The simulation models divide grasses, shrubs and trees into 53 classes, which in Bulgaria the forestry enterprises do not know and do not use. This is a big problem because without properly described plants in the forest management plans, real-time simulations for Bulgaria cannot be carried out due to a lack of data. The proposed articles provide an opportunity to make a first rough sorting into the 53 possible classes on a general principle, and subsequently, with available field data, to proceed to optimizations and calibration of the obtained general models to more specific ones. [G3, G6, G11, G14]

4. The Dirichlet method has been developed and tested to predict the spread of a biological agent that has the potential to infect tissues very rapidly. During the COVID pandemic, a similar methodology has been applied to predict the spread of the virus that causes COVID. [G5]

5. A system for analysing and controlling the mechanical properties of biological tissues is a scientific and applied result that enables doctors to operate better in cases of bloodless surgery. [D18]

The formulation of the contributions of Assoc. Prof. Nina Dobrinkova could be clearer and better emphasize the interrelationships between the various studies. This would allow us to see more clearly how the acquired knowledge and skills have contributed to the development of the overall scientific activity and would allow us to more fully assess the overall contribution of the candidate.

However, the publications submitted for participation in the competition for the academic position of "Professor" demonstrate the activity and competencies of

Assoc. Prof. Nina Dobrinkova, as well as her contribution to science. Her research is relevant and significant.

CONCLUSION

Based on the above, I can state that **all requirements, conditions and criteria** of ADASRB, Regulations for the implementation of ADASRB, and Regulations for the implementation of ADASRB in IICT – BAS **are met and I give a positive conclusion for the election of Assoc. Prof. Nina Dobrinkovain a competition for the Academic position of 'Professor' in the professional field 4.6 Informatics and Computer Sciences**.

I propose to the esteemed Scientific Jury to vote on a proposal to the Scientific Council of IICT – BAS to elect Assoc. Prof. Nina Dobrinkovafor the Academic position of 'Professor' in the field of higher education 4. Natural Sciences, Mathematics and Computer Science, professional field 4.6 Informatics and Computer Sciences.

28.01.2025 г.   Scientific Jury mem   На основание

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