

OPINION

for a competition for occupation of the academic position “Professor”

in the field of higher education:	4. Natural sciences, Mathematics and Informatics
professional field:	4.6. Informatics and Computer Science
scientific specialty:	Informatics (Modern technologies for preservation, accessibility and protection of scientific and cultural heritage)
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for the needs of:	Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences (IMI-BAS), Software Technologies and Information Systems Department
prepared by:	Dr. Mariya Mihaylova Nisheva-Pavlova, Professor at IMI-BAS
member of the scientific jury of the competition, according to:	Order № 11 / 29.01.2021 of the Director of IMI-BAS

Only one candidate has submitted documents for participation in the announced competition:
Assoc. Prof. Dr. Galina Todorova Bogdanova, IMI-BAS.

I. General description of the submitted materials

1. Details of the application

The documents of the applicant comply with the requirements of the Act of the Development of the Academic Personnel of the Republic of Bulgaria (ADAPRB), the Rules for the Implementation of the Act of the Development of the Academic Personnel of the Republic of Bulgaria (RIADAPRB), the Rules for the conditions and the order for acquiring scientific degrees and for occupying academic positions in BAS and the specific regulations for the Institute of Mathematics and Informatics – BAS.

The applicant has submitted for the competition:

- European CV,
- Copy of higher education diploma and copy of diploma for postgraduate specialization,
- Copy of diploma for educational and scientific degree “Doctor”,
- Full list of publications,
- Lists of publications and other materials presented at the competition,
- Reference for original scientific and applied scientific contributions (in Bulgarian and in English),
- Abstracts of the publications of Assoc. Prof. Dr. Galina Bogdanova presented at the competition (in Bulgarian and in English),

- Copies of the publications presented at the competition,
- Full list of citations of publications of Assoc. Prof. Dr. Galina Bogdanova,
- List of citations presented at the competition,
- Copy of the publication for the competition in State Gazette,
- Certificate of internship in the speciality,
- Copy of certificate for occupation of the academic position “Associate Professor”,
- Other information at the candidate's discretion: list of defended PhD students, list of research projects in which the candidate is a supervisor or participant, etc.,
- Reference for the fulfillment of the minimum national requirements and the requirements of IMI – BAS for the professional field 4.6. Informatics and Computer Science,
- Declaration in connection with Art. 29, para. 1, item 3 of ADAPRB.

2. Details of the applicant

The applicant Assoc. Prof. Dr. Galina Bogdanova has a higher technical education, completed in 1981 at TU – Sofia. In 1982 she completed a postgraduate specialization in Applied Mathematics at the Center for Applied Mathematics at TU – Sofia. In 2000, after successfully defending a dissertation on “Bounds for optimal cods” she received a doctoral degree in Informatics. From 1981 to 1988 she worked as a programmer at TICC - Veliko Tarnovo. Since 1989 he has been working at IMI – BAS, Veliko Tarnovo branch, consecutively as a mathematician, assistant professor and associate professor.

3. General characteristics of the scientific works and achievements of the candidate

The research activities of Assoc. Prof. Dr. Galina Bogdanova and the topics of her scientific works are entirely in the field of competition. She has presented at the competition 25 publications, which do not repeat those of the previous procedures for acquiring of her doctoral degree and holding the academic position of associate professor. Eleven of these publications have IF and/or SJR.

In accordance with the requirements of the rules for the specific conditions for acquiring scientific degrees and for occupying academic positions at IMI – BAS, the candidates for an academic position of professor in professional field 4.6. Informatics and Computer Science must have: 50 points in group of indicators “A”, at least 100 points in group of indicators “B”, at least 220 points in group of indicators “Г”, at least 140 points in group of indicators “Д”, at least 150 points in group of indicators “E”. Each of these conditions is stronger than the corresponding requirement under Art. 1a, para. 1 of the RIADAPRB.

According to the submitted documents the applicant covers:

- 50 points in group of indicators “A”,
- 100 points in group of indicators “B”,
- 342 points in group of indicators “Г”,
- 264 points in group of indicators “Д” (accumulated on the basis of 44 citations indicated by the applicant),
- 440 points in group of indicators “E”.

Therefore, the minimum national requirements and the additional requirements under Art. 1a, para. 2 and para. 3 of the RIADAPRB for occupation of the academic position of “Professor” in the

professional field 4.6. Informatics and Computer Science have been completely covered and exceeded by Assoc. Prof. Dr. Galina Bogdanova.

There is no proven plagiarism in the scientific works of Assoc. Prof. Dr. Galina Bogdanova.

4. Evaluation of work on projects and other activities

The competition documents contain information about the candidate's participation in many successful research projects, for most of which she is the head of the working team. The candidate is the editor of numerous scientific collections and a leading participant in the creation of six digital scientific collections and museum collections. She has participated in the creation of a significant number of exhibitions in Bulgaria and abroad, as well as in the organization of more than 50 scientific events.

Assoc. Prof. Galina Bogdanova works actively with young researchers and PhD students. She has been the research supervisor of four successful PhD students, two of whom are currently university professors.

5. Analysis of the scientific and applied research of the candidate, contained in the materials for participation in the competition

The scientific papers, presented by Assoc. Prof. Galina Bogdanova for participation in the competition, contain original research results, which can be grouped and summarized as follows:

- Group 1: *Coding and protection of information* (publications [2], [3], [6], [12], [18 – 22], [25] according to the numbering in the list of papers submitted for participation in the competition). New methods for construction and classification of linear and nonlinear codes with certain properties have been developed and studied. The behavior of multiple codes after the application of different types of attacks in digital watermark protection was studied. Methods for image and text protection have been proposed, which have been applied in the creation of data protection tools in digital archives and repositories.
- Group 2: *Digitization and digital presentation of scientific and cultural heritage* (publications [4], [5], [7], [10], [17], [19], [23]). Integrated approaches for organization and compression of data in specialized digital archives are proposed, as well as approaches for design and management of digital repositories.
- Group 3: *Approaches, methods and standards for ensuring accessibility and training for people with special needs* (publications [1], [8], [9], [11], [13 – 16], [24]). A methodology for designing and building websites that meet the requirements for accessibility for people with special needs is proposed. A web accessibility guide has been created. Models of a specialized software system and a serious educational game have been developed, which take into account the needs of people with visual impairments.

All scientific papers submitted for participation in the competition are co-authored. I have no doubt about the applicant's significant personal contribution to them.

In my opinion, the aforementioned results characterize the candidate Assoc. Prof. Dr. Galina Bogdanova as a well-established scientist with significant achievements, which give reason to claim that she completely covers the concept of a leading researcher in the field of Informatics.

The significance of the applicant's research results is evidenced by their reflection in the works of other authors. Dr. Galina Bogdanova submitted data for a total of 281 citations of her publications in papers of other authors, 145 of which are indexed in Scopus.

6. Critical remarks and recommendations

I have no significant critical comments on the materials in the competition and in particular on the scientific works of Assoc. Prof. Dr. Galina Bogdanova. I found minor inaccuracies in some of the presented descriptions of the candidate's activities, which do not violate the overall very good impression of the evaluated application.

I am aware of the fact that serious research in the scientific field in which she works is generally a collective matter, but I recommend her to aspire in her future work to a certain number of single-authored publications, presenting results for which she has a key contribution.

7. Personal impressions of the candidate

I have no immediate personal impressions from the candidate's professional performances outside the competition.

8. Conclusion for this application

The scientific achievements of the candidate meet the requirements of ADAPRB and RIADAPRB, as well as the Rules for the conditions and the order for acquiring scientific degrees and for occupying academic positions in BAS and the specific regulations for the IMI-BAS.

In particular, the candidate satisfies the minimum national requirements in the professional field and no plagiarism has been established in the scientific papers submitted at the competition.

I give a **positive assessment** of the application of Assoc. Prof. Dr. Galina Bogdanova.

II. Overall conclusion

After getting acquainted with the scientific papers and materials presented in the competition, analyzing their significance and the scientific and applied contributions contained in them, I find it reasonable to give my positive assessment and to **recommend the scientific jury to vote on a proposal to the Scientific Council of IMI-BAS to select Assoc. Prof. Dr. Galina Bogdanova to take the academic position of "Professor" in the field of higher education 4. Natural sciences, Mathematics and Informatics, professional field 4.6. Informatics and Computer Science, scientific specialty Informatics (Modern technologies for preservation, accessibility and protection of scientific and cultural heritage).**

March 20, 2021

Signature:

(Prof. Maria Nisheva-Pavlova)