

EVALUATION STATEMENT

on the competition for the occupation of the academic position "Associate Professor"
in the professional field: **5.2 Electrical engineering, electronics and automation**,
Application of the principles and methods of cybernetics in various fields of science
(biomedicine);

announced in State Gazette No. 58 from 18.07.2025,

Applicant: PhD Eng. Dobromir Petkov Dobrev

Member of the scientific jury: Prof. DSc. Eng. Ivo Tsvetanov Iliev.

1. General characteristics of the applicant's scientific and applied research activity

For participation in the current competition, the only candidate, Dr. Dobromir Dobrev, has submitted materials in the individual categories, complying with the Higher Education Act, the Act on the Development of the Academic Staff in the Republic of Bulgaria, the Rules of the Bulgarian Academy of Sciences for the application of the preciously mentioned acts and the Regulations for awarding scientific degrees and for holding academic positions in the Institute of Biophysics and Biomedical Engineering (IBPhBME) - BAS. The publications presented are 36 and cover the period following the attainment of the educational and scientific degree of "Doctor" in 2001. Out of these, 14 are indexed in SCOPUS and/or Web of Science. This includes 10 publications with an SJR indicator, 8 that have an impact factor, as well as quartile distributions: 1 publication in Q1, 2 in Q2, and 1 in Q3. The content of the materials falls entirely within the scope of the competition. Four of the publications are single-authored, and the rest are co-authored, with only three of the candidate not being the first author. According to the submitted materials, I accept the distribution of points according to the required criteria, as follows:

Criterion	Minimal required scores	Presented	Assesment
A	50	50	Meets
B (B4)	100	340	Over exceeds
G (G7, G8)	200	292	Exceeds
D (D12)	50	100	Over exceeds

The review shows that the minimum national requirements according to the national acts and in the relevant regulations of IBPhBME-BAS are met, and apart from the mandatory PhD dissertation work, the other criteria are over exceeded.

2. Main scientific and applied contributions

The candidate's claims cover four thematic areas, in which he has formulated a total of 22 scientific and applied contributions. The most significant of them can be summarized as:

- Scientific and applied contribution related to the characterization and enrichment of existing circuits, devices and systems with new qualities, consisting of the design of two-electrode amplifiers for recording biosignals, without a referent electrode (ground free), suitable for operation with low supply voltages, as well as for achieving optimal

values of the amplifier circuits in terms of CMRR, input impedance, frequency bandwidth, tolerance of the elements used and price (publications B4.1-B4.5, G8.1-G8.3);

- Scientific and applied scientific contributions related to the creation of methods and devices with new qualities and parameters, expressed in modeling and synthesis of algorithms for the design of notch and band-pass comb filters for removing network and low-frequency interference in the ECG signal, with the possibility of adaptive correction, depending on the change in the network frequency. (publications G8.15-G8.21);
- Applied contribution related to the creation of methods and devices with new qualities and parameters, expressed in the implementation of circuit variants for automatic balancing of the input impedance bridge formed by the electrode impedances and the input impedances of the amplifier to suppress network interference (publications G8.7-G8.9, G7.1-G7.3). This contribution can also include the research and implementation of software methods for synchronous filtering of network interference (publications G8.10, G8.13 and 14, G7.4, B4.8);
- Scientifically applied contributions related to the synthesis of specific circuit implementations for recording photoplethysmographic signals and amplifying signals from capacitive sensors (publications B4.6 and 7, B4.10, D8.4), as well as to methods for digital signal processing using correlated multiple sampling to reduce low-frequency interference in measurement transducers (publication B4.9).

Given the number of publications, as well as my personal impression of the candidate during his participation in various national and international scientific forums, I accept that the formulated contributions accurately represent his significant participation in them.

Considering the number of independent publications and also based on my impressions of the candidate, during his participation in various national and international scientific forums, I believe that the formulated contributions accurately reflect his leading role in the research and the achieved results.

3. Significance of the contributions to the science and practice

The candidate's contributions are in an area of science that is of permanent interest to scientists and researchers, for the development of innovative engineering solutions applicable in medical practice. The significance of the contributions to science and practice is confirmed by the 196 citations found in 30 of the publications, h-index 6, as well as 2 international and 2 Bulgarian patents, and one application for a national patent.

4. Remarks and recommendations

I have no significant comments on the materials presented. I would recommend that when presenting the author's scientific achievements (contributions), they be summarized in thematic areas, and not in subgroups of specific realizations, which makes it difficult to assess their real significance.

5. Personal remarks and position of the reviewer

I have personal impressions of the research activities of Dr. Dobromir Dobrev. Over the years, he has established himself as a specialist in the field of medical electronics. His achievements and professional experience in the synthesis, modeling, and design of analog integrated circuits, as well as algorithms for digital processing of biomedical signals, are undeniable. The solutions he proposed, related to the removal of network interference in an electrocardiographic signal, are highly appreciated in the scientific community dealing with this problem.

CONCLUSION

The materials submitted for the competition provide an opportunity for an objective and multifaceted assessment of the candidate's qualities. Dr. Eng. Dobromir Dobrev is a scientist with serious and proven potential in the field of electronics. The scientific works presented contribute to solving current problems in the registration, analysis, and processing of biomedical signals.

It is evident from the materials presented that the regulatory requirements for holding the academic position of "Associate Professor" have been exceeded more than twice. This gives me reason for a positive assessment, and I confidently propose to award the candidate, Dr. Eng. Dobromir Dobrev, with the academic position of "Associate Professor" in the professional field: 5.2 ELECTRICAL ENGINEERING, ELECTRONICS AND AUTOMATION (Application of the principles and methods of cybernetics in various fields of science (biomedicine)).

Date: 04.11.2025



Reviewer: /Prof. DSc Ivo Iliev/