

SHORT REPORT – OPINION
on a competition for occupation of the academic position
“Associate Professor”
in professional field 4.6 Informatics and Computer Science
(Programming),
by Sofia University St. Kliment Ohridski (SU),
Faculty of Mathematics and Informatics (FMI)
announced in State Gazette No. 21 of March 15, 2022.

This short report - opinion is prepared by Assoc. Prof. Dr. Ioannis Parmenion Patias from Sofia University St. Kliment Ohridski, FMI, as a member of the scientific jury for the competition according to Order No. РД 38-232/11.05.2022 of the Rector of SU.

One applicant has submitted documents for participation in the announced competition: Dr. Ivan Georgiev Hristov, Chief Assistant Professor at Dept. “Computer Informatics”, FMI, SU.

1. General description of the materials presented

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) and the Rules on the Terms and Conditions for Acquisition of Academic Degrees and Occupation of Academic Positions at SU (RTCAADOAPSU).

2. Details of the applicant

The applicant Chief Assist. Prof. Dr. Ivan Georgiev Hristov has a bachelor degree, completed in 2004 at the Sofia University St. Kliment Ohridski (SU), Faculty of Mathematics and Informatics (FMI), on Applied Mathematics, and Master degree on Mathematics in 2007. In 2014 he received a doctoral degree after defending a thesis on *“Numerical study of static and dynamic regimes in multilayer Josephson contacts”*.

He has worked consistently and continuously from 2007 to 2018 as an Assistant, Senior Assistant, Chief Assistant at Sofia University "St. Kliment Ohridski", FMI, at the Department of Numerical Methods and Algorithms, and from 2018 until today, as Chief Assistant at the Department of Computer Informatics.

3. General characteristics of the applicant's scientific work and achievements

The research activities of Chief Assist. Prof. Dr. Ivan Georgiev Hristov and the topics of his scientific works are entirely in the field of competition. He participates in the competition with 12 publications that do not repeat those of the previous procedure for the acquisition of his doctoral degree.

For the collective publications, in which the personal contribution of the individual co-authors is not explicitly indicated, I accept that all co-authors have an equal contribution.

There is no proven plagiarism in the scientific works of Chief Assist. Prof. Dr. Ivan Georgiev Hristov.

In accordance with the requirements under Art. 1a, para. 1 of the RIADAPRB, the candidates for an academic position of "Associate 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 200 points in group of indicators "Г",
- at least 50 points in group of indicators "Д".

RTCAADOAPSU does not define higher additional requirements than those specified in the RIADAPRB.

According to the submitted documents the applicant covers:

- 50 points in group of indicators "A" (according to the provided NACID reference),
- 120 points in group of indicators "B" (4 publications, 30 points each),
- 240 points in group of indicators "Г" (8 publications, 30 points each),
- 88 points in group of indicators "Д" (7 citations, 8 points each).

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 "Associate Professor" in the

professional field 4.6 Informatics and Computer Science have been completely covered Chief Assist. Prof. Dr. Ivan Georgiev Hristov.

4. General characteristics of the applicant's teaching activities

The teaching activities of Chief Assist. Prof. Dr. Ivan Georgiev Hristov are considerable in scope and diverse in content. He is a holder of the compulsory disciplines "Data Structures and Programming" and "Introduction to Programming" for the specialty of Applied Mathematics, Mathematics, Statistics at FMI.

Chief Assist. Prof. Dr. Ivan Georgiev Hristov has successfully supervised a defended diploma thesis. He works actively with his students, skillfully combining his in-depth theoretical knowledge with the accumulated many years of research experience.

5. Substantive analysis of the scientific and applied scientific achievements of the applicant, presented in the materials for participation in the competition

The scientific papers, presented by Chief Assist. Prof. Dr. Ivan Georgiev Hristov for participation in the competition, contain original research results, which can be grouped and summarized as follows:

- Group 1: Parallelization of the Taylor method, in order to improve the efficiency and accuracy in the calculations of long reliable trajectories for the Lorentz system. Use of OpenMP and MPI technologies for parallel programming in combination with the GMP library (in articles 1,2). In the article (6) a study was made to conserve the energy of combined explicit-implicit Taylor methods applied on Hamilton systems.
- • Group 2: Parallelization of differential methods for 2D systems of Gordon sine equations. Calculations have been performed on different hardware architectures (in Articles 3, 4, 5).
- • Group 3: Numerical simulation of different processes in long Josephson stacks (fluxon dynamics, transitions from static to dynamic mode) (in articles 7, 8, 9, 11, 10, 12).

The significance of the applicant's research results is evidenced by their reflection in the works of other authors. Chief Assist. Prof. Dr. Ivan Georgiev Hristov submitted data for a total of 7 citations of publications, with which he participates in the competition, in articles of other authors that were referenced and indexed in Scopus.

6. Critical notes and recommendations

I have no significant critical comments on the scientific papers of Chief Assist. Prof. Dr. Ivan Georgiev Hristov presented for participation in the competition. The materials of the candidate are prepared precisely enough and are structured in an inappropriate way. The candidate's contributions in the works submitted for participation in the competition are formulated at a well-chosen level of abstraction.

7. Personal impressions of the applicant

I have positive personal impressions from some of the teaching and project activities of the candidate in the last four years. I highly appreciate his professionalism, his efficiency in the work, his collegiality and his ability to create a good working atmosphere around him.

8. Conclusion on the application

Having become acquainted with the materials and scientific works presented in the competition and on the basis of the analysis of their significance and the scientific and applied scientific contributions contained therein, I **confirm** that the academic achievements of the candidate Chief Assist. Prof. Dr. Ivan Georgiev Hristov meet the requirements of the ADAPRB, the Regulations for its implementation and the corresponding Regulations of SU for the occupation of the academic position of "Associate Professor" in the professional field "Informatics and Computer Science". In particular, the applicant meets the minimum national requirements in the professional field and no plagiarism has been detected in his scientific papers submitted at the competition.

I give a **positive assessment** of the application of Chief Assist. Prof. Dr. Ivan Georgiev Hristov.

GENERAL CONCLUSION

Based on the above, **I recommend** the scientific jury to vote on a proposal to the Council of the Faculty of Mathematics and Informatics of Sofia University "St. Kliment Ohridski" **to select Chief Assist. Prof. Dr. Ivan Georgiev Hristov for the academic position of "Associate Professor" in the professional field 4.6 Informatics and Computer Science.**

June 12, 2022

Opinion prepared by:
(Assoc. Prof. Dr. Ioannis Parmenion Patias)