OPINION

by Asc. Prof. Stanislav Nikolaev Harizanov IICT-BAS, on documents, submitted for participation in a competition for the academic position of Professor in professional area 4.5 "Mathematics", scientific specialty "Computational Mathematics (High-Performance Computing Methods and Algorithms)" with candidate Ivan Dimov Lirkov

By Order No.166 / 13.07.2021 of the Director of Institute of Information and Communication Technologies at Bulgarian Academy of Sciences, Prof. Galia Angelova, pursuant to Article 4, Paragraph 2 of the "Law on the Development of Academic Staff in the Republic of Bulgaria" and Decision of the Scientific Council of IICT-BAS (Protocol No.6 / 23.06.2021) I have been appointed a member of the Scientific Jury under procedure for academic position of Professor in professional area 4.5 "Mathematics", scientific specialty "Computational Mathematics (High-Performance Computing Methods and Algorithms)", announced for the needs of the "Department of Scientific Computations with Laboratory on 3D Digitization and Microstructure Analysis" in State Gazette issue 45 from 28.05.2021. As a member of the Scientific Jury on 03.08.2021 I received all the documents, attached to the application, addressed to the Director of IICT-BAS by the only candidate for the competition Assoc. Prof. Ivan Dimov Lirkov. Those documents are in accordance to the Law on the Development of Academic Staff in the Republic of Bulgaria, the rules for its implementation and the specific requirements introduced in the regulations of IICT-BAS.

1. Short biographical information

Ivan Lirkov was born in Bourgas on 25.12.1963. He majored in Mathematics and graduated from the Faculty of Mathematics and Informatics at Sofia University "St. Kliment Ohridski" in 1988. Meanwhile (1987-1988) he started developing parallel algorithms for the Center for Informatics and Computer Technology (CICT). He worked as a teacher at PMG "Acad. Nikola Obreshkov" - Bourgas before returning at CICT, where he received a PhD in Mathematics in 1997. Since 1994, Ivan Lirkov has been working at the center, following the

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several restructurings of the unit throughout the years (CICT → CLPP-BAS → IPP-BAS → IICT-BAS). He became an Associate Professor on 28.06.2002.

2. General description of the presented materials

The candidate has presented a full list of 75 scientific publications, 44 of which are included for consideration within the competition. The latter are from the period 2007 - 2021 (i.e., after he became an Assoc. Prof.); 43 are referenced in the databases Scopus and/or Web of Science, from which 5 articles are in scientific journals with Impact Factor (3 in Q1, one in Q3, and one in Q4) and 28 articles are in series with Impact rank; 37 are in international scientific journals or series, while 7 are in referenced proceedings of international conferences. It is worth mentioning that a huge part of the considered publications are related to contributed talks at renowned thematic international scientific forums, which is an indication not only for the relevance and excellence of the conducted research but also for the recognizability of Ivan Lirkov within the scientific field. Thus, it is not surprising that there is an international collaboration in more than half of the papers.

3. Impact of the candidate's scientific publications in the literature

Twenty publications of the candidate have been independently cited 64 times in total by scientific papers, referenced and indexed in world renowned scientific information databases (Scopus).

4. General characteristics of the applicant's activities

   (a) Scientific and applied scientific activity

   Ivan has authored and co-authored 75 research publications and directed 4 national and 2 international (as a coordinator for the Bulgarian team) research projects. He was a member of another 6 national and 10 international research projects.

   (b) Contributions

   The applicant's contributions in the presented materials are undoubted and have both scientific and applied scientific nature. They are divided in four groups.

- Development of numerical methods and parallel algorithms for approximant solving of 2D and 3D boundary value problems.
- Development of HPC methods for efficient numerical solving of nonlinear optimization problems.
- Parallel algorithms and applications on distributed computational systems.
- Novel information technologies.

5. Evaluation of the personal contribution of the applicant

I have no doubt about the personal contribution of the applicant in the presented publications. The work in larger international groups is typical for the development of HPC methods and algorithms due to the necessity of infrastructural access and the usage of various computer architectures.

6. Critical remarks

I have no critical remarks, which could question the contributions of the applicant and which would affect my overall positive assessment.

7. Conclusion

The presented materials convincingly prove the high professionalism of Assoc. Prof. Dr. Ivan Lirkov, the importance of his scientific achievements and their scientific impact. My personal impressions confirm the above conclusions. Further, the collected points at each of the competition components significantly surpass the required IICT-BAS minima – – 162/100, 734/260, 384/140, and 498, 9/150 for components C, D, E, and F, respectively.

Given the above, I wish to **strongly propose to the Scientific Jury to make a recommendation to the Scientific Council Assoc. Prof. Dr. Ivan Dimov Lirkov to be elected for the academic position "full professor"** in professional area 4.5 "Mathematics", scientific specialty "Computational Mathematics".

September 6, 2021   Member of the scientific jury: _____
Sofia, Bulgaria

Assoc. Prof. Dr Stanislav Harizanov

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