

REVIEW

for Associate Professor **Leoneed Mihaylov Kirilov**, PhD
on a competition for the academic position "**professor**"
in a professional field 4.6 Informatics and computer sciences, specialty "Informatics",
announced in SG no. 87/15.10.2024.

Reviewer: Acad. **Ivan Petkov Popchev**, BAS.

Pursuant Art. 4 para. 2 of ADASRB and decision of the Scientific Council of IICT-BAS (protocol No. 12 of 27.11.2024) by order No. 311/13.12.2024 of the Director of the Institute of Information and Communication Technologies – Bulgarian Academy of Sciences corresponding member S. Margenov I have been appointed as a member of the Scientific Jury in the competition for the academic position of "**Professor**" in the professional field 4.6 Informatics and computer sciences - specialty "Informatics", announced in State Gazette issue 87/15.10.2024 for the needs of the "Information Processes and Decision Support Systems" section.

As a reviewer, I have received all documents submitted for participation in the competition.

According to ADASRB, the Rules for the implementation of the ADASRB and the Regulations of the specific conditions for acquiring scientific degrees and for holding academic positions at IICT-BAS, the candidates for professor must meet certain conditions.

Art. 29(1) Candidates to take the academic position "Professor" shall meet the following conditions:

1. have acquired an educational and scientific degree "Doctor"...;
2. have held the academic position of "Associate Professor" in the same or another higher school or scientific organization for not less than two academic years ...;
3. have presented a published monographic work or equivalent publications in specialized scientific issues ..., which do not reproduce those submitted for awarding the educational and scientific degree "Doctor", the scientific degree "Doctor of Science" and for holding the academic position "Associate Professor";
4. have presented other original scientific research works, publications, inventions and other scientific and scientific-applied developments or artistic creative achievements, which are evaluated as a whole;
5. to meet minimum national requirements under Art. 2b, para. 2 and 3, and the requirements under Art. 2b, para. 5, respectively;

6. to have not plagiarism proven as per legally established order in the scientific works.

Assoc. Prof. L. Kirilov PhD **meets the conditions under Art. 29(1).1** as he presented the Diploma for the educational and scientific degree "Doctor" No. 28987, 30.06.1993.

Assoc. Prof. L. Kirilov PhD **meets the conditions under Art. 29(1).2** according to the presented document No. 763/20.11.2024, signed by Corr. Member S. Margenov - Director of IICT-BAS, with which it is confirmed that he has held the academic position "Associate Professor" for 24 years 11 months.

Assoc. Prof. L. Kirilov PhD **meets the conditions under Art. 29(1).3** as he has presented a published monographic work "Emil Bournaski, Rossen Iliev, Leoneed Kirilov. Computer modeling of hydrological processes and river basins management. Sofia. 2021. Prof. Marin Drinov Publishing House of Bulgarian Academy of Sciences. 317. ISBN 978-619-245-192-9".

Assoc. Prof. L. Kirilov PhD has **a total of 138 publications to date** and a "List of publications for participation in a competition acquiring for the academic position of "Professor", which includes a total of **19 publications**.

A brief analysis of these publications showed the following:

- 1 publication is a monograph (No. 1);
- 3 publications are in journals with **IF of WoS and SJR** (№№ 2-IF-Q4, SJR-Q3; 5-IF-Q4, SJR-Q3; 18-IF-Q3, SJR-Q2);
- 10 publications are in journals or series with **SJR** (№№ 3, 4, 7, 8, 9, 10, 12, 15, 16, 17);
- 3 publications are in journals (№№ 11 in IEEE, №№13, 14 in ACM);
- 1 publication is in conference proceedings (№6 in IEEE).

The presented "**List of citations**" contains 41 citations (28 in WoS/Scopus, 6 in ZentralBlatt, 6 in ACM, 1 in Matscinet).

Assoc. Prof. L. Kirilov was the supervisor of **one successfully defended doctoral student – Yasen R. Mitev (2024)**.

Assoc. Prof. L. Kirilov PhD **meets the conditions of**

- **Art. 29(1).4** as he has presented **18 original scientific research works and other scientific and applied scientific developments – participation in 7 international and 16 national projects, management of 3 national projects with attracted funds of 333 500 BGN and leader of 2 Bulgarian teams in international projects;**
- **Art. 29(1).5** as he **meets the minimum national requirements** under Art. 2b, para. 2 and 3, and respectively the requirements under Art. 2b, para. 5 and the **requirements of IICT-BAS**. The reference for the fulfilment of the requirements

with the number of 1274 points was presented, which is **182% fulfilment of the requirements of IICT-BAS**;

- **Art. 29(1).6** as there is no legally proven plagiarism in the scientific works.

The materials for the competition contain "**Abstracts of the Scientific Works**" in Bulgarian and English languages.

According to Art. 29(3) of the ADASRB, the candidates in the competition submit a "**Reference for the original scientific contributions**". Assoc. Prof. L. Kirilov PhD has submitted "**Reference for the original scientific and scientific-applied contributions**" in 4 thematic directions. The **contributions** are: 20 scientific and 2 scientific-applied.

Briefly, the scientific contributions can be presented as follows:

- 1. Hydrological models of the catchments** of the Mesta and Struma rivers
- 2. Hydrological models for analysis of extreme events** (heavy rain and flooding)
- 3. Models for water evaluation and planning (water balances)** of the Mesta and Struma rivers
- 4. Two-step lattice Monte Carlo method for optimization of bimetallic nanoalloys** (simulated annealing on a larger lattice followed by simulated diffusion)
- 5. Combined method for optimization of metal nanostructures** (lattice Monte Carlo method and molecular dynamics method)
- 6. Model for estimating the volume of medical assistance in the event of a natural disaster – earthquake** (based on the generalized network apparatus)
- 7. Prototype of a BigData platform** implemented with FIWARE components.
- 8. Model for optimal management of a portfolio of financial assets** (necessary conditions)
- 9. Generalized scalarization model for solving multiple objective problems** with continuous and/or integer variables
- 10. Interactive population-based evolutionary algorithm** for solving multi-criteria convex integer problems

Scientific and applied contributions:

- 1. A software product Tsuyoyama** has been developed based on the proposed methods for optimization of metal nanostructures
- 2. A Web-based decision support system WebOptim** has been developed to solve multiple objective problems with continuous and/or integer variables.

The world's scientific databases provide the following **summarized "scientometric image"** for the whole work of Assoc. Prof. L. Kirilov PhD.

Web of Science:

Leo Kirilov (Kirilov, Leoneed) H-Index = 4, 17 Publications, 56 Sum of Times Cited, 50 Citing Articles, 67 Verified peer reviews

Kirilov, L. H-Index = 2, 4 Publications, 5 Sum of Times Cited, 5 Citing Articles

Kirilov, LM (KIRILOV, L) H-Index = 1, 2 Publications, 16 Sum of Times Cited, 16 Citing Articles

Total: H-Index = 5, 23 Publications, 77 Sum of Times Cited, 71 Citing Articles, 67 Verified peer reviews

Scopus:

Kirilov, Leonid 1 Documents, 19 Citations without self citations of all authors,

Kirilov, Leoneed M. 41 Documents, 130 Citations by 107 documents, h-index = 6

Total: H-Index = 7, 42 Publications, 149 Sum of Times Cited, 126 Citing Articles,

Google Scholar: Citations 425, **h-index 11**, i10-index 13

Researchgate: 239.5 Research Interest Score, 250 Citations, **h-index 9**

ACM Digital Library: 6 Publications, 6 citations

IEEEExplore: 4 Publications, 19 Citations

MATHSCINET 6 Publications

Zentralblatt 13 Publications, 6 Citations

Bas.academia.edu 29 Publications, 181 Citations

The "scientometric image" shows a successful and productive activity. The elements of the "scientometric image" can be subject to self-analysis and research guidelines.

I have known the candidate in the competition since he joined the Institute of Technical Cybernetics and Robotics - BAS in 1987 as a specialist in the Cybernetic Systems section. Over the years, Assoc. Prof. L. Kirilov PhD has developed and established himself as a thorough, searching and effective researcher and organizer of national and international teams.

CONCLUSION

All conditions according to ADASRB, the Rules of the implementation of the ADASRB and the Regulations of the specific conditions in the IICT-BAS has been fulfilled and I give a definite **positive** evaluation for the selection of Assoc. Prof. Leoneed Mihaylov Kirilov PhD in the competition for the academic position of "Professor" in professional field 4.6 Informatics and Computer Sciences, speciality "Informatics".

I strongly recommend to the Scientific Jury to unanimously propose to the Scientific Council of IICT-BAS to select Associate Professor Leoneed Mihaylov Kirilov PhD for the academic position "Professor" in professional field 4.6 Informatics and Computer Sciences, speciality "Informatics".

December 21, 2024

Sofia

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