

Review

by associate professor Dr Ivan Dimov Lirkov
Institute of Information and Communication Technolo-
gies, Bulgarian Academy of Sciences
on documents, submitted for participation in a competi-
tion for the academic position of Professor in professional
area 4.5 “Mathematics”, scientific specialty “Mathemat-
ical Modeling and Application of Mathematics” (in ecol-
ogy) with candidate Krassimir Todorov Georgiev

In the announced competition for the academic position of “Professor”, for the needs of IICT-BAS as the only candidate participating Assoc. Prof. Dr. Krassimir Georgiev from IICT-BAS. The applicant has submitted a complete set of documents in accordance with the requirements of the Rules for the specific conditions for acquiring scientific degrees and for occupying academic positions at IICT-BAS, Art. 9. (1), to occupy the academic position “professor”.

1. Short biographical information

Krassimir Georgiev graduated from the Sofia University “St. Kliment Ohridski” in 1978 with Master’s Degree in Mathematics, specialization in Mathematical modeling. In 1984 he defended his thesis on the topic “Application of the Fragment Method for Solving Plane Problems in the Theory of Elasticity”. In 1996 he has been elected for the academic position “associate professor” at the Central Laboratory for Parallel Processing - BAS.

2. General description of the presented materials

Publications — 51, of which 22 are articles in scientific journals with Impact Factor, 25 are articles in series with Impact rank, and 3 book chapters.

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

Twenty four from the publications have been cited in 52 scientific papers, referenced and indexed in world famous scientific information databases (Scopus and Web of science), 16 of them are in scientific journals with Impact Factor in Q1.

4. General characteristics of the applicant's activities

The submitted documents show that the applicant meets the minimum requirements for candidates to occupy the academic position of “professor” according to Art. 29.(1) of the ZRASRB, as follows:

- (a) He has a Ph.D. degree.
- (b) Has held the academic position of “Associate Professor” in the same scientific organization for more than five years and was a member of scientific research teams.
- (c) He has presented publications in specialized journals, equivalent to the monograph which do not repeat the publications presented for acquiring educational and scientific degree “doctor” and for occupying the academic position “associate professor”.
- (d) He has also submitted other original research publications.
- (e) He meets the minimum national requirements of art. 2b, paragraph 2 and 3 respectively of the requirements of art. 2b, paragraph 5.
- (f) There is no legal plagiarism proven in scientific works.

Krassimir Georgiev presented a reference on the fulfillment of the minimum national and specific requirements of IICT-BAS for occupation of the academic position of “Professor” in professional direction 4.5. “Mathematics”, scientific specialty “Mathematical Modeling and Application of Mathematics”, which is true. It shows that the candidate fulfills, as some of them, significantly exceeds, the minimum requirements of IICT-BAS for occupying the academic position of “professor”.

It also meets Art. 2., paragraph 5. of the BAS regulations: “The candidates for the academic position of “professor” have a clearly defined scientific subject in which they are leading researchers”. Dr. Georgiev is a leading specialist internationally recognized in the field of mathematical modeling and the application of mathematics, in particular modeling of the transfer of pollutants. He has extensive experience in their application in the field of ecology, computer simulation, computer modeling of processes and phenomena in mechanics, medicine, etc. Evidences for this are his publications in prestigious international journals and his participation in many international projects.

(a) Scientific and applied scientific activity

Krassimir has authored and co-authored more than 100 research publications and in the last years has participated in 25 research projects, of which: leader of 5 international and 4 national, participant in 10 international and 6 national projects.

(b) Contributions

The applicant’s contributions in the presented materials have scientific and applied scientific nature and are undoubted.

- Contributions in the field of mathematical and computer modeling of air and water transport of pollutants.

- The relationship between air pollution and climate change.
- Simulations on different types of supercomputer architectures.
- Analysis of the process of transfer of polluted water in porous media and removal of pollutants in them.
- Numerical modeling and computer simulations of the processes during the transport of contaminated water using available experimental data.
- Data analysis in horizontal underground wetlands.
- Contributions in the field of mathematical and computer modeling of processes and phenomena in mechanics, medicine, etc.
 - Development of numerical methods, algorithms, and computer models of coupled systems.
 - Stable numerical homogenization, allowing for transition between different physical models.
 - Adaptive time-stepping algorithms.
 - Computer experiments on parallel computer architectures.
 - Mathematical modeling and computer simulation of liver ablation processes.
- Contributions related to Richardson extrapolation and Runge-Kutta methods in solving important problems in computational practice.
- Contributions in the field of seismic construction mechanics.
 - Seismic strengthening of civil engineering systems.
 - Numerical approach for the estimation of seismic interaction on the reaction of concrete structures reinforced by cable ties.

5. Evaluation of the personal contribution of the applicant

I have no doubt about the personal contribution of the applicant in the presented publications.

6. Critical remarks

I have critical remarks on the information provided for the minimum national requirements of art. 2b, paragraph 2 and 3 and the organization of a reference for the original scientific and applied scientific contributions, which do not affect the overall evaluation of the activities of Dr. Georgiev.

7. Conclusion

The presented materials and scientific studies presented in the competition prove unambiguously the high professionalism of Assoc. Prof. Dr. Krassimir Georgiev. The analysis of the materials shows the importance of his scientific and applied contributions and their scientific impact. My personal impressions confirm the conclusions based on these materials.

Given the above, I wish to propose to the Scientific Jury to make a recommendation to the Scientific Council Assoc. Prof. Dr. Krassimir Todorov Georgiev to be elected for the academic position "full professor" in professional area 4.5 "Mathematics", scientific specialty "Mathematical modeling and application of mathematics".

October 2, 2019
Sofia

Reviewer: .



assoc. prof. Dr Ivan Lirkov