

REFEREE STATEMENT
Call for academic position "Associate professor"
Scientific strand: 4.1 Physics Sciences
Faculty of Physics, University of Sofia "St. Kliment Ohridski"
announced in State Gazette no. 48 of 28/06/2022

This statement is prepared by Assoc. Prof. Dr. Kalin Angelov Gladnishki, Faculty of Physics, University of Sofia, as a member of the scientific jury for selection of an Associate professor in 4.1. Physics Sciences according to Document No. ПД38-449 /25.07.2022 of the Rector of University of Sofia.

Single candidate has submitted documents to participate in the announced call:

Dr. Georgi Ivanov Petkov

I. General description of the presented materials

1. Application data

For participation in the competition, the candidate Georgi Ivanov Petkov submitted a list of 45 publications, all of which are published in international peer-reviewed and indexed journals with an impact factor. Two of them are publications in journals with quartile Q1 and two in issues with quartile Q2. One of the titles presented is a chapter in a book. Not all of the presented publications are indexed in the databases (Web of science and Scopus) according to the requirements of ZRASRB, PPZRASRB. However, the part of the articles that are indexed in the mentioned international databases cover the minimum requirements of ZRASRB, PPZRASRB.

2. Applicant data

In 1986, Georgi Ivanov Petkov graduated from the Moscow Energy Institute, Russian Federation and received the qualification degree "Master", in the specialty of thermal physics engineer, "Nuclear power plants and devices".

In the period 1988 - 1992, the candidate was a doctoral student at the same university, where he defended his dissertation for the award of the scientific and educational degree PhD on the topic "Development of techniques and algorithms for modelling and analysis of the reliability of NPP systems".

In the period 1998 - 2000, he participated in the post-doctoral program of JSPS (Japan Society for Promotion of Science) at the University of Tokyo, School of Engineering, Department of Quantum Engineering and Systems.

In the period 2000 - 2001, the candidate participated in two projects as a visiting researcher at the Technical University of Lisbon, Portugal.

During 2002, Dr. Petkov was a visiting scientist for three months at the National Maritime Research Institute, Japan.

The career development of Dr. Georgi Ivanov Petkov:

In the period 1986 - 1988, Dr. Petkov held the position of Senior Engineer Operator at the Kozloduy NPP.

In the period 1992-1994, the candidate was a senior engineer in the company "Risk Engineering".

The candidate's first academic position is chief assistant in nuclear energy at the college of nuclear energy at TU Sofia, where he leads nuclear energy courses for undergraduate students.

In the period 1994 - 2014, Dr. Petkov successively held the positions of "chief assistant" (1994-2006) and "associate professor" (2006-2014) in the Department of Thermal and Nuclear Energy (TIAE), Faculty of Energy and Mechanical Engineering (EMF) of the Technical University in Sofia.

From 2008 to 2014, the candidate combined his teaching activity with work at the NPP - Kozloduy, where he held the position of head of the "Probability Analysis of Safety" group.

From 2014 to 2016, Georgi Petkov was a senior researcher at EC JRC IET Petten F05 Nuclear Reactor Safety Assessment Unit, Westerduinweg 3 P.O. Box 2,1755 ZG Peiten, The Netherlands.

From 2016 to 2018, the candidate was an independent consultant and researcher.

In the period 09.01.2018 - 30.11.2018 he held the position of "emergency procedure developer" at Dovre Group Plc (Areva NP SAS), Olkiluoto 3 Construction Site, Maapallonkuja 1 B FI-02210 Espoo, Finland.

From December 2018 to mid-2020, Dr. Petkov again works as an independent consultant and researcher.

3. Characteristics and analysis of the candidate's scientific works and achievements

Dr. Georgi Petkov's scientific interests are in the field of nuclear energy. List of 45 publications was submitted for the competition, including one book chapter, two in journals with Q1 and two in Q2 and the rest are publications with SJR.

3.1) Comparison of the applicant's indicators with the requirements for occupation of the academic position Associate Professor

G. Petkov meets the minimum national requirements (points) for occupying the academic position of "associate professor", adopted with the "Rules for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria" on 19.02.2019.

Group	Indicator	Collected points
Group A	Indicator 1 (min. 50 points)	50 points
Group B	Indicator 3 or 4 (min. 100 points)	100 points* (from Indicator 4)
Group Γ	Indicator 5-10 (min. 200 points)	200 points (from Indicators 7 and 8)
Group Д	Indicator 11 (min 50 points)	52** points.

* - the candidate has submitted six publications under indicator 4 of group B. Some of these articles are not included in the databases (Web of science and Scopus), therefore the points they carry are reduced to 90. At the same time, article under number 5 in the list of publications submitted for participation in the competition, is not used for any of the other indicators and is indexed in the databases with SJR - that is, it brings 10 points to the candidate, which adds up to the required 100 points of indicators from group B.

** - the points do not coincide with those submitted by the candidate, but they cover the minimum requirements of ZRASRB, PPZRASRB.

As a summary of the review, the following can be concluded:

- The scientific works meet the minimum national requirements of ZRASRB for occupying the academic position "associate professor" in the scientific field and professional direction of the competition;
- There is no proven plagiarism in the academic works presented in the competition.

3.2) Scientific research activity

Dr. Petkov's research activity is related to the development of methods for modelling, research, evaluation and analysis of the reliability and risk of complex dynamic systems with human participation. More specifically, his scientific activity is aimed at modelling, evaluation and analysis of communication and decision-making under normal and emergency conditions of man-machine systems such as nuclear power plants.

Dr. Petkov's scientific research activity can be divided into three main groups depending on the direction of the research included in them:

1. Probabilistic analysis of the reliability and risk of nuclear energy installations and arrangements (complex systems and processes).
2. Probabilistic analysis of human-machine interaction in complex installations, systems and processes.

3. Probabilistic analysis of safety and accidents in complex installations, systems and processes.

The candidate's contributions can be summarized as follows:

Theoretical developments of a method for reliability and risk modelling and assessment, nuclear power plant reliability research, including diagnostics, monitoring and maintenance of readiness, reliability and safety.

Study of methods for modelling and assessment of the reliability of teams of operators in nuclear power plants, theoretical development of a method for modelling and assessment of the reliability of an operator and a team of operators in nuclear power plants. Development of systems for monitoring context, risk and support of risk-informed decisions, improvement of simulator training programs.

Study and assessment of fire hazard in nuclear power plants, study of aging processes in nuclear power plants, uncertainty and sensitivity analysis in probabilistic safety analysis.

4. Characteristics and assessment of the candidate's teaching activity

Throughout the years as a lecturer, the candidate has had a full academic workload, leading a wide range of compulsory and optional courses (lectures and exercises). The courses were oriented for bachelors, masters and doctoral students in nuclear energy. As an associate professor at the Technical University - Sofia, Dr. Petkov supervised the graduation and dissertation works of undergraduate, masters and doctoral students.

5. Conclusion on the application

After reviewing the materials and scientific works presented from the candidate and based on the analysis of their importance, scientific and applied contributions, I confirm that the scientific achievements meet the Bulgarian national requirements of ZRASRB and the Rules for its Application for holding of the academic position of Associate Professor in the scientific field and professional direction of the competition. In particular, the applicant meets all the minimum national requirements in the professional field and no plagiarism has been detected in the scientific papers submitted for the competition.

I definitely give my positive assessment of the application.

II. GENERAL CONCLUSION

On the basis of the mentioned above, I recommend the Scientific Jury to propose to the Faculty Council of the Faculty of Physics, University of Sofia "St. Kliment Ohridski" to elect Dr. Georgi Ivanov Petkov for the academic position of Associate Professor in the professional strand 4.1 Physics Sciences (Probability Analysis in Nuclear Technologies).

10.11.2022 г.

Statement prepared by.....

Sofia

(Assoc. Prof. Dr. Kalin Gladnishki)