STATEMENT REPORT

for a competition for an academic postion „Associate Professor“
in a professional direction 4.1. „Physics Science“ (Experimental Nuclear Physics),
in Sofia University „St. Kliment Ohridski“,
Physics Department, announced in „ДВ“ number 103 from 10.12.2021 г.

The statement report is prepared by: Assoc. Prof. Dr. Elena Aleksandrova Stefanova, Institute for Nuclear Research and Nuclear Energy, Bulgarian Academy of Sciences, scientific topic «Experimental Nuclear Physics», from her position of a member of the scientific jury with respect to the Order № 20.1-20.9/ 13.01.2022 г. of the Rector of the Sofia University «St. Kl. Ohridski».

One candidate has applied for the position:
Assist. Prof. Dr. Strahil Boychev Georgiev

I. Overview Description of the presented materials.

1. Data for the participation inthe competition

The presented documents from the participant fulfill the requirements of ЗРАСРБ, ППЗРАСРБ and (ПУРПНСЗАДСУ).

For a participation in the competition Assist. Prof. Dr. Strahil Boychev Georgiev has presented 30 publications, as 26 of them are in group I, 1 in group II, 2 in group III, and one publication in a National Conference issue. He has presented a list of 85 quotations. He has 6 publications in Group I for the last 3 years. A list of publications together with the corresponding abstracts is given in Bulgarian and in English. Three (3) PhD students have defended their doctor degrees under his guidance. He has participated in four scientific projects. An inquiry of his teaching load from 2013 till 2021 is presented. An inquiry of his original scientific contributions is also available. The presented documents, lists and inquires reveal that the candidate fulfill the requirements and conditions of the competitive position.

2. **The candidate**

Strahil Georgiev has graduated the Physics Department of the Sofia University „St. Kl. Ohridski“, speciality „Medical Physics“. He defends a PhD degree in 2012. He works as an Assist. Prof. in the Physics Department of the Sofia Univesity. His work is connected with scientific work, care of scientific laboratory and teaching students.

3. **Overview characteristics of the scientific works and acheivements of the candidate**

The candidate participate for the position competition with 30 scientific publications, in 7 of which he has dominant contribution. These publications bring 605 points. The points are 400 if the publications with which the PhD theisis has been defended are removed. From these 30 publications, 26 are from group I, and 6 of them are published in the last 3 years. Besides that, the candidate has more publications that those with he applies for the position. He has 46 publications in renowned journals and 28 publications from conference talks. He is a coathor in a book chapter. All these reveals serious scientific production and active duties. The scientific research and results are part of his work in the Laboratories of „Dosimetry and Health Physics“, and „Metrology of Ionization Radiation“ of the Sofia University. Part of his work is to take care of these laboratories. Generally speking the scientific research and results are in the sphere of developing and application of methods of measurements of radioactive nobel gases, as for example radon. Indeed, most of the publications are in Nucl. Instr. and Meth. A (with Q1 rates), and Rad. Meas. (with Q1 and Q2 rates during the years). Such publications reveal serious researches.

Publications in such journals basically rules out a possible plagiarism.

There are no data for using the scientific results in other procedures and competitions.

The minimal national requirements, as well as the additional requirements of the Physics Department of the Sofia University are seriously exceeded.

4. **Characteristics and estimation of the teching activity of the candidate.**

Strahil Georgiev teaches students from 2013. The mean load of teaching from 2013 till 2021 is about 450 hours a year. The total teaching load for these years is 3618 hours, while the minimal requirement is 540 hours.

5. **Scientific and applied scientific achievements of the candidate .**

The scientific contributions of the candidate can be defined as new methods, development of existing methods, enrichment of existing knowledge, applied science and pure applications.

The main research of the candidate is devided to four main topics.

1. Development, improvement, and following application of methods for measurement of ^{222}Rn and ^{220}Rn, which methods are based on the fact that the emitted alpha particles form traces on CD/DVDs. It is a question of the indoor human exposition, coming from emitted from ^{222}Rn radiation. The method is cumulative and is based on the high absorption of polycarbonate for radon

from which are made CD/DVD and from the tracking characteristics of this material. Seven of the publications (12, 13, 16, 18, 23, 25, 28), with which the candidate applies are on this topic. The contributions of the candidate are presented as planning, preparing and running the experiments, processing and analysis of the materials, participation in the analysis of the experimental results, participation in preparation of the publication. The author has a dominant contribution in paper 18 and the idea of the proposed approach is his.

2. Development, improvement, and following applications of methods for measurement of radon and other radioactive noble gases, based on absorption of the gases in polymers. Methods for investigation of absorption of radioactive noble gases in different polymers have been developed. Also, different approaches of measurement of the activity absorption were developed. The advantages of these methods are the possibilities which the absorption of gases in polymers gives with respect to the concentration and the trapping of the radioactive noble gases in polymers. This topic is researched in 6 publications (14, 15, 17, 19, 20, 26). The contributions of the candidate are participation in planning, preparation and performing the experiments, participation in the analysis of the experimental data and participation in preparing the publications. In publication 15 the candidate is a corresponding author with a dominant contribution to the work. The contributions include the technique of preparing the polycarbomated powder, planning and performing of the experiment, analysis of the experimental data and preparation of the publication.

3. Investigation of the absorption characteristics of polymer materials with respect to radioactive noble gases. Investigations include also plastic scintillators. Development and improvement of methods for determination of the coefficient of distribution and length of diffusion of radioactive noble gases in polymers. Five publications (21,22,24,27,29) are presented for this topic. The candidate is a leding author in publication 29.

4. Development and validation of approaches for decreasing of the temperature shift in radon detectors with anti-thoron polymer membrane. Thoron is ^{220}Rn. The idea of these detectors is to allow in the sensitive volume of the detectors only the radon, but not the thoron. One publication 30 is presented for this topic and the author is a corresponding author. Three approaches for defending detectors with polymer membrane. The contribution of the candidate includes application and adaptation of existing theoretical model, investigation and calibration of the system of measurement of the radon and thoron, planning, preparation and performing of the experiments for researach and validation of the three approaches, analysis of the experimental results, preparation of the publication.

The publications, presenting for the competition are quoted 85 times, which brings 170 point, while the minimal requirement is 100 points. The results exceed the minimal requirement.

The candidate has given a H-factor 5, which covers the minimal requirements of the competition.

5. **Critics and recommendations**

I do not have critics.

6. **Personal impressions from the candidate**

I do not have personal impressions from the candidate.

7. **Conclusion of the candidate application**

After I had checked the presented materials and scientific publications for the competition, and analysed their importance and their scientific, applied scientific and application-oriented contributions, I **claim** definitely and with confidence that the scientific contributions of the candidate not only satisfy, but exceed the national as well as the Sofia University requirements of acquiring the academy position „Associate Professor“ in the given scientific sphere and professional direction of the competition. Particularly, the work the candidate has performed exceed the national requirements in the field. No plagiarism has been found in the presented scientific works.

I give with confidence a **positive** estimation of the candidate.

II. FINAL CONCLUSION

Based on all above, I **definitely recommend** to the scientific jury to propose to the competent authority of the Physics Department at the Sofia University „St. Kliment Ohridski“ to allow Strahil Boychev Georgiev to take the academic position „Associate Professor“ in professional direction 4.1 „Physics Science“ (Experimental Nuclear Physics).

..18.04..... 2022... г. The report is prepared by: Assoc. Prof. Dr. Elena Stefanova