

## S T A T E M E N T

On the competition for the academic position of "Associate Professor" at Plovdiv University "Paisii Hilendarski," as per the announcement in the "State Gazette," issue 98 of 19.11.2024, and on the website of Plovdiv University "Paisii Hilendarski," in the professional field 4.1. Physical Sciences (Physics of the Microscale, High Energies, and Elementary Particles), with the sole candidate - Senior Assistant Professor Dr. Mariana Filipova Shopova, Department of Educational Technologies, Faculty of Physics and Technology at Plovdiv University "Paisii Hilendarski."

By: Prof. Dr. Dimitar Vasilev Tonev, Institute for Nuclear Research and Nuclear Energy (INRNE) - Bulgarian Academy of Sciences, member of the scientific jury, pursuant to Order No. RD-22-96/17.01.2025 of the Rector of Plovdiv University "Paisii Hilendarski."

### **I. General Overview of the Submitted Materials**

The candidate, a Senior Assistant Professor at Plovdiv University "Paisii Hilendarski" and a physicist at INRNE - Bulgarian Academy of Sciences (BAS), has defended her PhD in Physics at INRNE-BAS. My personal impressions of her, dating back to that period, are of a scientist who consistently demonstrated exceptional analytical skills, a strong work ethic, and a commitment to advancing research in high-energy physics. All articles submitted for the selection process were published after she defended her PhD dissertation.

Senior Assistant Professor Dr. Mariana Filipova Shopova has presented a comprehensive set of documents that fully comply with the requirements of the Act for the Development of the Academic Staff in the Republic of Bulgaria (ADASRB), its Implementing Regulations (IR-ADASRB), and the regulations of Plovdiv University "Paisii Hilendarski." I consider that she has been justifiably admitted to the competition for the academic position of "Associate Professor." The declared indicators, in accordance with the University's Regulations under ADASRB for area 4.1. Physical Sciences, have been met as follows:

Group A: PhD - **50** points out of the required 50;

Group B: Habilitation work - scientific publications in refereed and indexed journals in globally recognized scientific databases – **150** points out of the required 100;

Group G: Associate Professor - Scientific publications in refereed and non-refereed journals in globally recognized scientific databases – **250** points out of the required 200;

Group D: Associate Professor – Citations, **160** points out of the required 50.

For the competition, Dr. Shopova has submitted 18 articles, all published in refereed journals with an impact factor. The quartile distribution is: Q1 – 8 publications, Q2 – 10 publications. Her Hirsch index (H-index) is 117 (according to Scopus).

**I emphasize that the results presented in the selection process meet even the highest standards of scientific organizations and universities in Bulgaria.**

## **II. Scientific, Applied Research, and Educational Activities of the Candidate**

Dr. Shopova's scientific contributions are in the field of high-energy physics and elementary particles – particle detectors, gas-filled detectors, trigger detectors, complex detector systems for high-energy particles, and physical research with muons. She actively participates in the CMS experiment at the LHC accelerator at CERN, collaborating with colleagues from the "High-Energy Physics" laboratory at INRNE-BAS.

Her work in the CMS collaboration at CERN includes experiment preparation, duty shifts during execution, data analysis, and participation in the publication process of results. She has made significant contributions to the group's efforts, ensuring the successful and reliable operation of the RPC (Resistive Plate Chambers) system.

Dr. Shopova is also actively involved in the modernization of the CMS muon system, focusing on testing and assembling detectors. Her deep knowledge of the working characteristics and specifics of detectors during experiments allows her to demonstrate excellent results.

Additionally, Gas Electron Multiplier (GEM) detectors are being installed in the closing sections of CMS. Notably, the cooling systems for these GEM detectors are manufactured and tested in Bulgaria, at INRNE-BAS. This achievement is particularly noteworthy, as it highlights the significant contributions of Bulgarian scientists not only in conducting experiments and analyzing data but also in the development and rigorous testing of essential scientific equipment, reinforcing the country's role in high-energy physics research.

## **III. Teaching and Science Popularization Activities**

Dr. Shopova's teaching activity also deserves special attention. She teaches students in both undergraduate and master's programs. She has developed and teaches three lecture courses at the undergraduate level and five courses at the master's level. Additionally, she supervises the theses of numerous students.

She is also highly active in science popularization, having organized numerous public outreach events, lectures, and educational workshops. She plays a key role in the annual Research Reactor visits at INRNE-BAS and has contributed to the development of educational programs that enhance public understanding of nuclear and particle physics. Every year, under her leadership, visits and lectures at the Research Reactor of INRNE-BAS are organized. She arranges student visits to the Kozloduy Nuclear Power Plant, where young colleagues have the opportunity to familiarize themselves with nuclear facility operations. Dr. Shopova actively participates in organizing international masterclasses in Bulgaria and contributes to CERN's training program for Bulgarian teachers.

She carries out all these activities with enthusiasm and dedication, which deserves high recognition.

#### **IV. Conclusion**

**Based on the above, I consider that Senior Assistant Professor Dr. Mariana Filipova Shopova fully meets the requirements set out in the Regulations of Plovdiv University "Paisii Hilendarski" for the application of the Act for the Development of the Academic Staff in the Republic of Bulgaria. She is fully qualified for the academic position of "Associate Professor" in the professional field 4.1. Physical Sciences, scientific specialty "Physics of the Microscale, High Energies, and Elementary Particles."**

**Therefore, based on her significant scientific contributions, extensive teaching experience, and dedication to research and education, I strongly recommend that the members of the Scientific Jury and the Faculty Council of the Faculty of Physics and Technology at Plovdiv University approve her candidacy.**

Member of the Scientific Jury:

Prof. Dr. Dimitar Tonev

Sofia, 06.03.2025