

## OPINION

On a competition for the occupation of the academic position  
**Associate Professor at the Faculty of Physics of Sofia University**  
in specialty 4.1 Physical Sciences (Gravity, Relativity Theory)  
as announced in the State Gazette No. 65 of 16.8.2019

**Candidate: Petya Georgieva Nedkova, PhD, Chief Assistant Professor, Faculty of Physics, Sofia University.**

Opinion prepared by: prof. Valentina Petkova, corresponding member of BAS, at the Institute of Nuclear Research and Nuclear Energy of the Bulgarian Academy of Sciences.

The candidate was born in 1981 in Dobrich. She completed her higher education (Master Degree in Theoretical and Mathematical Physics) at the Faculty of Physics of Sofia University in 2008. She continued her studies as a PhD student in Theoretical and Mathematical Physics at the Faculty of Physics of Sofia University during 2009-2012 with Advisor Prof. Dr.Sci. Stoytcho Yazadzhiev. In 2012 she received her Dr. degree. Then in 2012-2013 she was post-doc at the University of Oldenburg, Germany. Since March 2013 she has been working at the Physical Faculty of Sofia University, first as Assistant Professor and since February 2014 as Chief Assistant Professor.

For the competition d-r Nedkova submitted 1 monograph (in co-authorship with prof. S. Yazadjiev) and 20 publications, 15 of which are in journals with Impact Factor. Publications with IF are distributed as follows: Phys. Rev. D (Q1) – 10, Eur. Phys. J. C (Q1) -2, Nucl. Phys. B (Q1) - 1, J. Cosm. Astroparticle Phys. (Q1) - 1, Phys. Lett. B (Q1) - 1. The candidate is the leading (corresponding) author in 12 of the publications with IF and in 3 of the others. The list of all her publications contains 25 articles, 17 of which with IF.

Her publications have at least 157 independent citations. Particularly cited, with more than 60 citations, is the work A10. in co-authorship with Dr. V. Tinchev and Prof. S. Yazadzhiev; in the last year alone this work has at least 26 independent quotes.

She has given talks at 12 international conferences, 4 of which are at the prestigious Marcel Grossmann Conferences.

D-r Nedkova has considerable teaching experience at Sofia University. She has directed two graduate students, one of whom, in conjunction with Professor Jutta Kunz, at the Faculty of Mathematics and Natural Sciences at the University of Oldenburg, Germany. She is the leader of two projects, one of the Young Scientists Session at the National Science Foundation and one project funded by the Sofia University. She has participated in several other projects, including the COST programme.

**D-r Petya Nedkova fully fulfills the normative criteria of the Faculty of Physics of the Sofia University for the academic position "Associate Professor".**

**General characteristics of the applicant's scientific activity:**

Dr. Nedkova's scientific work is in the field of modern theoretical and mathematical physics, and in particular, the mathematical foundations of general relativity and some applications. This meets the specification of the competition.

Her scientific contributions include:

Derivation and study of new exact solutions of the (generalized) gravitational field equations in high-dimensional space-time.

Classification of solutions describing space-time tunnels (" wormholes ") within Einstein-Maxwell-dilaton gravity.

Investigation of compact objects, including black holes, space-time tunnels, bare singularities, gravitational instantons; study of their thermodynamic properties.

Construction and study of the shadows of compact objects, including black holes, space-time tunnels, bare singularities;

- and others, systematized in the candidate's habilitation record.

I have very good personal impressions of Petya's talks at our seminar in theoretical physics given at the time when she was preparing her dissertation. Today, she is an established and successful scientist.

In my opinion, Dr. Petya Georgieva Nedkova fully fulfills the requirements for the academic position of Associate Professor at the Faculty of Physics of Sofia University and I strongly recommend that the Faculty Council of the Faculty of Physics of Sofia University chooses her for the position.

Date: 29.11.2019

V Petkova

/ prof. Valentina Petkova /