

## OPINION

by Prof. Dr. Lyuben Georgiev Valkov

on the materials presented for participation in a competition for occupying the academic position "Professor" in the professional direction 4.5 "Mathematics", Scientific specialty Different Equations, Hamilton Systems With a single candidate Associate Professor DN Ognyan Borisov Hristov

### 1. Description of the submitted documents

By Order No.DR-38-519/29.08.2023 On the grounds of Art. 117 (1), para. 2 of the Academic Staff Development Act in The Republic of Bulgaria (ZRASRB) and the decision of the first jury meeting, Conducted on 31.08.2023 I am appointed a member of the scientific jury by procedure to occupy the academic position "Professor" in the field of higher education 4. Natural Sciences, Mathematics and Informatics, Professional Direction 4.5. Mathematics, scientific specialty Differential equations, hamilton systems, declared for the needs of department of Differential Equations at FMI of SU. Associate Professor DN Ognian Borisov Hristov in State Gazette Issue no. 56 of 30.06.2023

As a member of the scientific jury, I have gained access to all documents such as,

- 1) application for participation;
- 2) CV;
- 3) a copy of diplomas for the doctor "Doctor" and "Doctor of the Nuki";
- 4) a certificate of the scientific title "Associate";
- 5) Reference to fulfill the minimum requirements of the ZRASRB and the SU St. Kliment Ohridski;
- 6) a list of scientific publications and reference for indicators;
- 7) summons of scientific publications in Bulgarian and English;
- 8) a reference to scientific contributions;
- 9) copies of scientific publications for participation in the competition;
- 10) a list of cited with relevant referral information;
- 11) reference to participation in scientific projects;
- 12) a reference to teaching and teaching activity;
- 13) Documents related to the implementation of the criteria according to point G.
- 14) a statement of credibility of information

The submitted documents are in accordance with the ZRASRB, the Rules for Implementation of the ZRASRB and the Rules of the Sofia University for participation in a competition for the occupation of an academic position "Professor" .I became acquainted with all the documents in detail and prepared an argumentated opinion.

### 2. Short biographical data on the applicant

Associate Professor Ognyan Borisov Hristov was born in 1959 in the town of Lom. He received his secondary education in Lom. In 1984 he graduated from a master's degree in mathematics in FMM at Sofia University. In 1994 he defended his dissertation, and in 2017 Doctor of Science at FMI at Sofia University. The job-Associate Professor since 2002 until now.

### 3. A common feature of the applicant's scientific works and achievements

The applicant's research activity is in line with the scientific specialty "Differential equations". The scientific interests and results of Associate Professor DN Ognian Borisov Hristov are in the field of differential equations and more specifically, Hamilton systems. He is the author of a total of 36 publications, 11 of which are impact factor and 7 with SJR on Scopus, its personal H-Index is 5 in Scopus and in Web of Science. In my opinion, the applicant's contributions to the works presented can be characterize as enriching existing knowledge combined using and introducing new hypotheses and methods. They show his ability to upgrade so far

theories and it They are characterized as already established in their field a scientist.

There is no plagiarism in the scientific works presented in the competition. Scientific publications, 36 in reputable in this field, such as: J. Math. Phys., Bull. Sci. Math., PHYS. Lett. A, Sitzungsberichte der Berliner Mathema Tische Gesellschaft, Phys. D, J. Math. Anal. Appl. , Z. Naturforsch., Celest. Mech. Dyn.astr., Nonlinear Analysis Tma, J. Nonl. Math. Phys., Chaos, Solitons and Fractals, Sigma, Nonlinear Analysis: Real World Applications, Advances in Mathematical Physics, Symmetry, Nonlinear Dynamics, European Physical Journal Plus, DCDS-B

#### **4.An analysis of the articles presented to a professor**

He has presented 6 publications for participation in the competition for Professor. The applicant's author's reference (No. 10 - Reference to Scientific Contributions ...) reflects Scientific contributions of the author. The scientific papers presented by the applicant do not repeat those from previous Procedures for the acquisition of a scientific title and academic position (not included in the dissertation for doctor of science

In the present competition for Professor dn Ognian Borisov Hristov has presented 6 publications in international journals and referent editions of International Conferences. Of these, 5 are impact factor, with apart web of science system As follows: one is in Q1, three in Q2 and one in Q3. Article is with SJR rank. The applicant participates in the competition with 11 cited publications referred to In Scopus and/or Web of Science

I will briefly comment on the applicant's main contributions in the individual directions In the article [23] he precisely counts the peaks of the singularly disturbed task of the type of Kolmogorov-writer. In an article (35), the author considers an equation of the species of Lattices as a Hamilton system in two different forms for which it demonstrates un-interruptibility and, accordingly, integrality. In an article (36), the author examines the Hamilton system of the type of clay-gordon grilles for a spelling borderline for which he demonstrates un-interruptibility. The following articles also address important questions about the integration of Hamilton Systems of Mechanics and Physics. In an article under number (37) with an impact factor 5.022, the author examines for the unintendedness of Hamilton normal form with 1.2.2 resonance. He gives algebraic evidence of un-gainability, which then illustrates with numerical experiments. In the article under number (38) with an impact factor 5.022, non-integrability of a three-dimensional generalized Henon-Helies system is proved. In the next article, (39), with an impact factor 1.2, the author proves the integration of the Hamilton system in resonance and shows how the results obtained are used to study resonance to the joke.

#### **5. Teaching work**

Applicant Associate Professor DN Ognian Borisov Hristov has a long -standing and rich teaching activity in the FNI of the Sofia University, reflected in the presented reference. -Execises on linear algebra differential and integral calculus, ordinary and private differential equations, numerical methods. -Lectures in differential and integral calculus, ordinary differential equations. Head of Department :Differential equations between April 2018 - March 2019

Lectures at foreign universities:  
Dynamical Systems, Module II, PhD Course, University of Tuzla, Bosnia and Herzegovina, May 17-24, 2011;  
12 defended masters and 1 doctoral student  
10 special courses in the years from 1997 to 2022  
3 textbooks (electronic),  
<https://www.fmi.uni-so.a.bg/bg/phaculty/ognyan-workov-hristov>  
<https://www.fmi.uni-so.a.bg/bg/phaculty/ognyan-workov-hristov>  
Guest Professor:  
University of Karlsruhe, Germany 1993-94, Warsaw University, Poland 1997, Humboldt University, Germany 2000, University of L'Aquila, Italy 2004, University of Kansas, USA 2012, University

## **6. Reflection of the candidate's works in the works of other scientists**

The list of citation contains 146 cited and H-Index 6.

The publications presented for the competition, 6 in number, all with one author- Ognyan Borisov Hristov.

## **7. Critical notes**

In the era of machine learning and the science of data, which essentially revolutionizes quantitative research, one of the decisive and still attractive questions that need to be answered, are about how important the traditional methods of classical analysis are. Yes, they are very important and Associate Professor dn Ognian Borisov Hristov is one of those scholars who give the right answer to this question.

What I allow myself to recommend working with co -authors. And more, greater performance, since, against the backdrop of mathematicians from BAS and universities who, at only 1 conference, publish 4-5 articles with the so-called SJR and easily become associate professors and professors without articles in magazines with impact factor, it will be difficult in the profession.

I have no critical remarks that question the applicant's contributions and influence my positive overall assessment.

## **8. Conclusion**

Presented materials in an unambiguous way prove the high professionalism of Associate Professor dn Ognyan Borisov Hristov, the importance of his scientific achievements and their high appreciation by the scientific community. My personal impressions confirm the above conclusions. Given all this, I suggest occupying an academic position "professor" in the field of higher education 4, "Natural Sciences, Mathematics and Informatics", Professional Direction 4.5, "Mathematics", specialty "Differential equations" for the needs of a department, "Differential equations", Faculty of Mathematics and Informatics, Associate Professor Ognyan Borisov Hristov, declared in State Gazette Issue no. 56 of 30.06.2023

19.09.2023

Member of the Scientific Jury: .....  
(Prof. Dr. Lyuben Valkov)