O P I N I O N

by Prof. Dr. Vejdi Ismailov Hasanov,
Konstantin Preslavsky University of Shumen

on the materials submitted for a participation in the competition for an occupation of the academic position "Professor"

Professional field 4.5. Mathematics (*Differential equations, Hamiltonian systems*)

In the competition for a professor, announced in the State Gazette, issue 56 of June 30, 2023 for the needs of the Faculty of Mathematics and Informatics (FMI) of the Sofia University "St. Kliment Ohridski" (SU), as the only candidate involved Assoc. Prof. DSc. Ognyan Borisov Hristov from SU.

The following materials were presented to me during the procedure:

- application for participation in the competition; autobiography;
- documents proving the fulfillment of the requirements under Art. 115, para. 1, (certificate under item 2, declaration under item 5) of the Regulations for the terms and conditions for acquiring scientific degrees and holding academic positions at SU "St. Kliment Ohridski";
- copies of diplomas for: higher education, PhD, science degree "Doctor of Sciences", and academic position "Associate professor";
- report on the fulfillment of the minimum national requirements by group of indicators for occupying the academic position "Professor" by professional direction 4.5. Mathematics;
- official note for leadership or participation in scientific projects and references for scientific contributions and for the educational and teaching activities carried out;
- summaries of the publications in Bulgarian and English;
- lists of publications and citations, and copies of the competition publications themselves.

1. Brief biographical data

Ognyan Hristov was born on July 27, 1959 in Lom. He graduated from higher education, specialty "Mathematics" in 1984 at SU. In 1994, he obtained the PhD, and in 2017, after defending a dissertation on the topic "Algebraic, analytical and geometric studies on some finite- and infinite-dimensional Hamiltonian systems," he obtained the Doctor of Science degree.

During the period from 1986 to 1989, Assoc. Prof. Hristov worked as an assistant at the University of Rousse "Angel Kanchev", and from 1991 he worked at the University of Sofia, where he successively held the academic positions: "Assistant", "Senior Assistant", "Chief Assistant" and "Associate Professor" since 2001.

2. General description of the submitted materials

Assoc. Prof. DSc Ognyan Hristov has submitted 6 publications for participation in the competition, of which: 5 are in journals with an impact factor and one in a conference proceedings, printed in the LNCS series of Springer and refereed and indexed in Scopus.

According to the presented report, the implementation of the minimum national requirements, requirements by group of indicators is as follows:

- group „А“ – a copy of the diploma for acquired PhD is presented – 50 points;
- group „В“ – 2 publications in journals with an impact factor were presented in Q2 and Q3 respectively – 105 points (with a minimum of 100 points);
- group „Г“ – 4 publications are presented – 3 in journals (1 in Q1 and 2 in Q2) and 1 in conference proceedings, refereed and indexed in Scopus – 225 points. (with a minimum of 200 points);
- group „Д“ – 25 citations are presented in refereed and indexed editions in Scopus and/or Web of Science - 200 points (with a minimum of 100 points);
- group „Е“ – a copy of the diploma for the obtained Science degree “Doctor of Science” is presented – 75 points, management of 3 national scientific projects and participation in one – 70 points and joint supervision of a PhD student – 25 points. Total 170 points (with a minimum of 100 points).

It is clear from the presentation that Assoc. Prof. Ognyan Hristov satisfies all the minimum national requirements for the academic position "professor" in professional field 4.5. Mathematics.

3. Reflection of the candidate's scientific publications in the literature (citations)

As noted above, according to the provided reference, the publications with the participation of the candidate have been cited at least 25 times in publications that are refereed and indexed in the Scopus and/or Web of Science databases. When checking the Scopus database, Assoc. Prof. Hristov has at least twice as many citations. All this is a sign that the candidate's research has found recognition and resonates well with the mathematical community.

4. General characteristics of the candidate's activity

4.1. Educational and pedagogical activity

Assoc. Prof. Ognyan Hristov joined Sofia University in 1991. In recent years, he has lectured on the following disciplines: Differential and Integral Calculus; Ordinary and Partial differential equations; Hamiltonian systems; Dynamic systems; Algebraic groups and differential theory of Galois, and others. There are developed lecture courses (electronic notes) on: Hamiltonian systems, Ordinary differential equations and Dynamical systems. In addition, Prof. Hristov has been a visiting professor in a number of European universities. Under the scientific guidance of the candidate, 13 theses of SU students were defended, of which 11 were after receiving the academic position "Associate professor".

4.2. Scientific and scientifically applied activity. Contributions

The scientific interests and research of Assoc. Prof. Ognyan Hristov are mainly on the issue of integrability of Hamiltonian systems.

Publications [35] and [36] are devoted to the Klein-Gordon lattice described by the following Hamiltonian:

$$H = \sum_{j\in\mathbb{Z}} \left[\frac{p_j^2}{2} + \frac{c}{2}\left(q_{j+1} - q_j\right)^2 + V(q_j) \right], \qquad p_j = \dot{q}_j. \tag{1}$$

One of the main results is with $C = 1$, assumption of periodic boundary conditions and $V(x) = \frac{a}{2}x^2 + \frac{\beta}{2}x^4$, $j \in \mathbb{Z}/N\mathbb{Z}$ in (1), namely: the periodic Klein-Gordon lattice is integrable only when $\beta = 0$. The other results in [36] are about integrability of the order 4 normal form of the periodic Klein-Gordon lattice in the case of $a = 1$ in the above function $V(x)$.

The more significant results and contributions of the candidate, in the publications of the competition, are presented in the author reference, with which I agree. Cases are presented in which the considered systems with the corresponding Hamiltonian are integrable and those in which they are not.

I evaluate the candidate's contributions as scientific and scientific-applied.

5. Assessment of the personal contribution of the candidate

All submitted publications under the candidate's current competition are independent. I have no reason to doubt that the research and results obtained in the publications are the author's own.

I have not found any plagiarism in the candidate's submitted publications.

6. Critical remarks and recommendations

I have no critical remarks.

Conclusion:

The documents and materials provided by Assoc. Prof. DSc Ognyan Borisov Hristov satisfy all the requirements of the Law for development of the academic staff in the Republic of Bulgaria, the Regulations for its implementation and the Regulations for the terms and conditions for acquiring scientific degrees and holding academic positions at SU for holding the academic position "professor" in professional field 4.5 Mathematics.

Given the above, **I express a positive opinion and propose** Assoc. Prof. ScD Ognyan Borisov Hristov **to be elected** to the position "professor" by professional field 4.5. Mathematics (*Differential Equations, Hamiltonian Systems*)

October 24, 2023 Member of the jury:

/Prof. Dr. Vejdi Hasanov /