

OPINION

by Prof. Dr. Hristo Stefanov Kiskinov, PhD,
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regarding an application in a competition for the academic position of **"Professor"**
of Plovdiv University "Paisii Hilendarski"

by: Area of Higher Education 4. Natural Sciences, Mathematics and Informatics;
Professional Field 4.5. Mathematics (Differential Equations)

In the competition for "professor", announced in the State Gazette, no. 92 of 18.11.2022 and on the website of PU "Paisii Hilendarski" for the needs of the Department of "Mathematical Analysis" at the FMI at PU "Paisii Hilendarski", as the only candidate participated Assoc. Professor Dr. Atanaska Tencheva Georgieva, PhD, from the Department of "Mathematics analysis" at FMI at PU "Paisii Hilendarski".

1. General Presentation of the Procedure and the Candidate

By order PD-21-338 of February 15, 2023. of the Rector of the University of Plovdiv "Paisiy Hilendarski", I have been appointed as a member of the scientific jury of a competition for the academic position of "professor" in the PU in the Area of Higher Education 4. Natural Sciences, Mathematics and Informatics, Professional Field 4.5. Mathematics (Differential Equations), announced for the needs of the Department of Mathematical Analysis at FMI.

Only one candidate submitted documents for participation in the announced competition: Associated Professor Dr. Atanaska Tencheva Georgieva, PhD, from the Department of "Mathematical Analysis" at FMI at "Paisii Hilendarski" PU. The candidate was admitted to participate in the competition by a committee appointed by order RD-21-346/15.02.2023 of the Rector of the University of Plovdiv "Paisii Hilendarski", according to the protocol of the meeting of the committee held on 21.02.2023.

As a member of the scientific jury, I have received all the necessary documents attached to the application from Assoc. Prof. Dr. Atanaska Tencheva Georgieva to the Rector of "Paisii Hilendarski" PU for admission to participate in the competition. The documents are well designed and arranged.

For participation in the competition for the academic position of "professor", the candidate Assoc. Prof. Dr. Atanaska Tencheva Georgieva submitted 23 scientific publications and 2 textbooks. A complete list of all the candidate's scientific works, consisting of 69 scientific publications and 3 textbooks, is also attached. It shows that the submitted materials in the current competition are correctly selected and do not repeat those submitted for the acquisition of the educational and scientific degree "doctor" (PhD), as well as those for the occupation of the academic position "Associate Professor" and the corresponding entry in the national register of the academic staff. Also attached is a list of 32 noted citations, all made after the candidate's habilitation, i.e. obviously unused in previous procedures.

Concerning the minimum national requirements for the occupation the academic position of "Professor": Indicator A - the candidate has 50 points from the dissertation work for the PHD-degree with a minimum requirement of 50₁points (over-fulfillment is not possible here); Indicator B – the candidate has 150 points, obtained from presented 5 scientific publications

referenced in the world-known scientific databases (B4 - 150 points) with a minimum requirement of 100 points (i.e. over-fulfillment 150%); Indicator C – the candidate has 678 points obtained from presented 18 scientific publications referenced in the world-known databases (C7 - 679 points) with a minimum requirement of 200 points (i.e. over-fulfillment 340%); Indicator D - the candidate has 256 points, obtained from presented evidence for 32 citations in scientific publications referenced in the world-known databases (D11 - 256 points) with a minimum requirement of 100 points (i.e. over-fulfillment 256%); Indicator E – the candidate has 190 points, collected from the scientific supervision of 2 PhD-students with successfully defended PhD-Thesis (E13 - 100 points), participation in 1 national scientific project (E14 - 10 points) and 2 published university textbooks (E19 - 53 points) with a minimum requirement of 100 points (i.e. over-fulfillment 163%). This review shows that the candidate clearly fulfills and even exceeds the minimum national requirements for holding the academic position of "Professor" in professional field 4.5 Mathematics.

Concerning the additional requirements of the FMI at PU "Paisii Hilendarski" for occupying the academic position of "Professor" in professional field 4.5 Mathematics: 23 publications and 2 textbooks are presented with minimum requirements of at least 20 publications and 1 textbook; all 23 publications are in journals with a minimum requirement of at least 12 being in journals; 8 publications in journals with an impact factor, with minimum requirements of at least 8 being in journals with an impact factor; 32 known citations submitted with minimum requirements of at least 20 citations; scientific supervision of 2 PhD-students with successfully defended PhD-Thesis in FMI at PU with a minimum requirement of supervision of at least 1 such a PhD-student. This review shows that all the additional requirements of the FMI are met, and by no means the minimum.

The candidate Atanaska Georgieva completed the five-year course of study in the specialty "Mathematics" (specialization "Complex Analysis and Topology") at FMI at Sofia University "St. Kliment Ohridski" in 1991. In 2009, she defended her PhD-Thesis with title "Lp-equivalence between impulse differential equations" in front of High Attestation Commission (VAK) and acquires a PhD-degree. The candidate Atanaska Georgieva started working at the FMI at the PU as a chief assistant in 2010, and since 2012 she has held the academic position of "Associate Professor" in Mathematics 4.5. Appears in the national register of the academic staff as an associate professor with completed scientometric data.

2. General Characteristic of the Activity of the Candidate

2.1. Assessment of the Educational and Pedagogical Activity

The teaching experience of Assoc. Prof. Dr. Atanaska Georgieva is 27 years. The lectures and exercises led by Assoc. Prof. Dr. Atanaska Georgieva are at a good scientific and methodical level. Her scientific research activity is a prerequisite for good results in the educational process. Associate Professor Dr. Atanaska Georgieva works actively with students, graduates and doctoral students and has joint publications with them. He regularly participates in committees for holding State exams and defenses of diploma theses at FMI.

Associate Professor Dr. Atanaska Georgieva is the author/co-author of 3 textbooks, one of which is single authored and intended for use by students studying at the FMI of PU "Paisiy Hilendarski".

2.2. Assessment of the Scientific and Applied-Scientific Activities

Of the 23 scientific publications presented by the candidate for participation in the competition:

- all 23 are in English, published in peer-reviewed journals, and each one of them is indexed in at least one of the leading world-known databases with specialized scientific information (Web of Science, Scopus, Zentralblatt Math, Mathematical Reviews);
- 8 are in journals with an impact factor (total IF=7.02), of which 1 is in Q1; 4 are in Q2; 1 is in Q3 and 2 are in Q4;
- 18 are indexed in Web of Science;
- 20 are indexed in SCOPUS;
- 21 have SJR (total SJR=6.138);
- 10 are referenced in Zentralblatt Math.
- 1 is single authored and 22 are with co-authors, of which 9 are with 1, 10 are with 2 and 3 are with 3 co-authors.

2.3. Scientific Contributions and Citations

I agree with the candidate's self-assessment that thematically the main scientific and scientific-applied contributions can be separated into three areas:

- **Approximated solutions of fuzzy integral equations.**

There are a total of 13 publications in this area. In the articles [B4.1] - [B4.5], on the basis of which the presented habilitation expanded reference was prepared, analytical solutions of two-dimensional fuzzy integral equations are found, and in the work [G7.18] an analytical solution of a fuzzy integro-differential equation of Volterra-Fredholm type. In the articles [G7.9]-[G7.11], [G7.13]-[G7.15] and [G7.17] the numerical solutions of two-dimensional fuzzy integral equations and fuzzy functional-integral equations of Hamerstein and Urison – Volterra type. Iterative methods of successive approximations are constructed using fuzzy cubic and quadrature formulas. Sufficient conditions for existence and the uniqueness of the solution of the studied equations and the convergence of the proposed methods are found.

- **Ordinary differential equations.**

There are a total of 7 publications in this area. The articles [G7.1], [G7.12] are dedicated to ordinary differential impulse equations, and the articles [G7.2], [G7.6] of a generalized dichotomy with weight, all in arbitrary Banach spaces. The other 3 articles study nonlinear equations with maxima [G7.3], neutral equations with distributed delay [G7.4] and finding exact polynomial solutions of the class linear equations on the group $SL(2, R)$ [G7.16], all in finite dimensional spaces.

- **Integral equations.**

There are a total of 3 publications in this area. In articles [G7.5] and [G7.7] are considered generalizations of linear and non-linear integral equations of Volterra of the first and second kind, when the independent variable belongs to arbitrarily non-compact metric space or to arbitrary Hausdorff space, and in articles [G7.8.8] a numerical method is proposed to find a numerical solution of a perturbed Volterra linear integral equation.

A wonderful certification for the scientific and applied-scientific contributions of Assoc. Prof. Dr. Atanaska Georgieva is the attached list of 32 selected for the competition articles, citing her publications, all in journals indexed in Web of Science and/or Scopus. A good impression is the fact that the citations are from various and mostly foreign authors.

2.4. Evaluation of the Personal Contribution of the Candidate

I am fully convinced of the authorship of the candidate for the publications and textbooks presented for the review. In joint publications, I accept the authors' participation as equivalent. I have not established the presence of plagiarism.

3. Critical Remarks and Recommendations

I have no significant remarks and recommendations to the candidate.

CONCLUSION

The documents and materials presented by Assoc. Prof. Dr. Atanaska Tencheva Georgieva meet all the requirements of the Academic Staff Development Act in the Republic of Bulgaria (ZRASRB), the Rules for the Implementation of the ZRASRB and the Rules for Development of the Academic Staff of the Plovdiv University "Paisii Hilendarski " for the occupation of the academic position" Professor ".

The candidate in the competition has submitted a sufficient number of scientific works that do not repeat the materials used in previous procedures. The applicant's work has original scientific and applied scientific contributions that have received international recognition.

The results achieved by the candidate Assoc. Prof. Dr. Atanaska Georgieva in the teaching and research activities, fully satisfy both the minimum national and the additional requirements of the Faculty of Mathematics and Informatics of the Paisii Hilendarski University of Plovdiv.

After acquaintance with the materials and scientific works presented in the competition, an analysis of their importance and the contained in them scientific and applied scientific contributions, I find it justified to give my **positive assessment** and to recommend the scientific jury to prepare a report-proposal to the Faculty Council of the Faculty of Mathematics and Informatics for the selection of **Assoc. Prof. Dr. Atanaska Tencheva Georgieva at the academic position "Professor" at the Paisii Hilendarski University of Plovdiv** by: area of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.5. Mathematics (Differential Equations).

10.04.2023

Plovdiv

This opinion is prepared by:

/Prof. Dr. Hristo Kiskinov, PhD/