STATEMENT

from Vasil Georgiev Angelov, D.Sc., Ph.D.,
Professor at the University of Mining and Geology "St. Ivan Rilski"

of the materials submitted for participation in the competition
for the academic position of **"associate professor"**
at Plovdiv University "Paisii Hilendarski"

by: field of higher education 4. Natural Sciences, Mathematics and Informatics,
professional field 4.5 Mathematics;
(Approximation models and applications)

In the competition for "Associate Professor", announced in the State Gazette, issue 96 of 17.11.2023 for the needs of the Faculty of Mathematics and Informatics, as the only candidate is Ch. Assistant Maria Tonkova Vasileva-Chilibinova, Ph.D., from Plovdiv University "Paisii Hilendarski".

1.   General presentation of the received materials

By order № RD-21-389 of February 16, 2024 of the Rector of Plovdiv University "Paisii Hilendarski" (PU) I was appointed a member of the scientific jury of the competition for the academic position "Associate Professor" in PU in the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.5 Mathematics (Approximation models and applications), announced for the needs of the Faculty of Mathematics and Informatics (FMI). The only candidate for participation in the announced competition has submitted documents: Ch. Assistant Maria Tonkova Vasileva-Chilibinova, Ph.D., from the University of Plovdiv.

At its first meeting, the Scientific Jury familiarized itself with the Reference Table presented by the candidate for compliance with the minimum national requirements by groups of indicators for the relevant scientific fields and professional fields, defined in the PPZRASRB for occupying the academic position of "Associate Professor", and established the following:

Reference table for compliance with the minimum national and additional faculty requirements by the candidate Ch. Assistant Professor Maria Tonkova Vasileva-Chilibinova, Ph.D., in: Higher Education Area 4. Natural Sciences, Mathematics and Informatics, Professional Direction 4.5. Mathematics, Specialization - Approximation models and applications		
Group of metrics	Candidate points	Minimum required points according to PPZARASRB
Group of metrics A	**50**	**50**
Group of metrics B	**100**	**100**
Group of metrics G	**480**	**200**
Group of metrics D	**256**	**50**

Based on this reference table, the Scientific Jury decided: confirms the eligibility of the candidate Ch. Assistant Professor Maria Tonkova Vasileva-Chilibinova, PhD, for participation in the announced competition for associate professor.

To participate in the competition, the candidate submitted 12 articles, one monograph and one textbook. Three of the articles are independent, four with two authors, four with four authors and one with five authors. The monograph is independent, and the textbook is co-authored. The articles have been published in authoritative international journals.

Thematically presented articles for the competition can be divided into two groups, which I will comment on below.

2. General characteristics of the candidate's activity

I have no personal impressions of the candidate's teaching activities, and I cannot give an assessment of her academic work. Her co-authorship (N. Kyurkchiev) in the textbook "Insurance Mathematics" shows an active attitude to the educational process.

The insurance mathematics textbook is devoted to the study and assessment of risk through the use of mathematical means. This is a new and current area of mathematics. Issues such as uncertainty modeling in life insurance, health insurance, property insurance and pension insurance are addressed here. The main required results are presented in the textbook.

The monograph (in English) "Approximation models and applications" - Plovdiv University Press, 2023 is dedicated to the study of some theoretical and applied aspects of approximation models. Its content is divided into seven chapters. The used literature consists of 188 articles and monographs. It includes the results of Maria Vasileva, which makes it an original scientific work.

Maria Vasileva has a total of 36 articles, 5 of which are independent; 2 monographs, one of which is independent; one textbook and one manual, which are co-authored. She participated in the competition for associate professor with 12 articles, one monograph and one textbook.

Scientific and scientific-applied contributions and citations

I accept the author's contributions, which can be formulated as follows:

Iterative methods with a high order of convergence for simultaneous approximation of the roots of polynomials are investigated, applying the general theory of convergence of Picard-type iterative processes in metric, conic metric spaces and n-dimensional vector spaces. Theorems for local and semi-local convergence are proved, which give an exact estimate of regions of convergence, as well as a priori and a posteriori estimates of the error right from the first iteration. Semilocal convergence theorems have computer-verifiable initial conditions. Appropriate numerical examples are considered to illustrate the applicability of the obtained results. A new family of iterative methods for simultaneous approximation of the zeros of a polynomial is constructed by combining the classical Ehrlich method with an arbitrary iteration function.

To approximate classes of sigmoidal (cumulative) functions about the Hausdorff metric, the sigmoidal (cumulative) function is replaced by a step function, which requires an approximation estimate between them. The resulting characteristic can be a criterion for choosing a suitable model when approximating specific data from different branches of science.

In the publications for participation in the competition, the characteristic "saturation" in the Hausdorff sense was investigated. Precise estimates for the value of the Hausdorff distance have been demonstrated, which can be used as an additional criterion in practice.

The applicability of the models has been tested through simulation studies implemented in CAS Wolfram Mathematica.

Citations noted were 96 in WoS/Scopus indexed journals and 53 in other journals. Individual articles have been cited 7 times in WoS/Scopus journals and 7 times in other journals. The articles with which he participated in the competition were cited 29 times in WoS/Scopus journals and 15 times in other journals. Individual articles have been cited 6 times in WoS/Scopus journals and 6 times in other journals.

The achievements of Ch. Assistant Professor Maria Tonkova Vasileva - Chilibinova results in scientific and academic work correspond to the requirements of the Faculty of Mathematics and Informatics, adopted in the Regulations of the PU for the application of ZRASRB.

There is a unity in the results presented, which does not give rise to a search for plagiarism.

3.   Critical notes and recommendations

I will not comment on critical notes, as they do not affect the impression of the results achieved.

CONCLUSION

After familiarizing myself with the submitted materials for the competition and the scientific works of the candidate, given the contributions received, I give a positive assessment of Maria Tonkovq Vasile-Chilibinova and recommend to the Scientific Jury to prepare a Report-proposal to the Faculty Council of the Faculty of Mathematics and Informatics for the selection of Ch. Assistant Professor Maria Tonkova Vasileva-Chilibinova, PhD, in the academic position of "Associate Professor" at PU "Paisiy Hilendarski" in the Department of Higher Education: 4. Natural Sciences, Mathematics and Informatics; Professional direction: 4.5 Mathematics (Approximation models and applications).

18.03.2024   Prepared the statement:

/prof. **D.Sc., PhD Vasil G. Angelov**/