STATEMENT

By Prof. D.Sci. Ognyan Kounchev, IMI-BAS

On the competition for an academic position of Assoc. Professor

In professional direction 4.5 Mathematics,

For the needs of Institute of Mathematics and Informatics, BAS,

Faculty of mathematics and informatics (FMI),

Announced in the State newspaper, number 108 от 22.12.2020,

and online on the website of IMI-BAS

The present Statement has been prepared by Prof. DSci Ognyan Kounchev, IMI-BAS, as a member of a scientific jury, in the professional direction 4.5 Mathematics, scientific area Probability and Statistics (Stochastic models in finance), by a competition according to an Order number № 28/19.02.2021 by the Director of IMI-BAS.

For participation in the competition, the only candidate who has submitted documents is Assist. Tsvetelin Stefanov Zaevski, PhD, Institute of Mathematics and Informatics, Bulgarian Academy of Sciences.

I. General description of the materials presented

1. Data about the application

The documents submitted by the competition by the candidate comply with the requirements of ZRASRB, PPZRASRB, the Regulations on the terms and conditions for acquiring scientific degrees and for holding academic positions in the Bulgarian Academy of Sciences (PURPNSZAD-BAS) and the Regulations on the terms and conditions for acquisition scientific degrees and for holding academic positions at the Institute of Mathematics and Informatics at BAS (PURPNSZAD-IMI-BAS).

For participation in the competition, the candidate Dr. Tsvetelin Stefanov Zaevski has submitted a list of a total of ten (10) titles, representing publications in Bulgarian and foreign scientific journals and scientific forums. Three (3) other documents (in the form of official notes and certificates from the employer) supporting the achievements of the candidate are also presented.

The documents are regular and correctly reflect both the scientific and teaching activities of the candidate and his employment in national and international research projects.

2. Data about the applicant

PhD Tsvetelin Stefanov Zaevski graduated with a degree in Applied Mathematics from FMI-Sofia University in 1999 with honors. In the period 2003-2013 he was a doctoral student at the Faculty of Mathematics and Informatics at Sofia University “St. Kliment Ohridski ”, where under the

supervision of Prof. Racho Denchev he defended his dissertation on“ Combined processes of Ito and Levi ”. Since 2014, the candidate has been an assistant at IMI-BAS. During the period 2004-2009, Tsvetelin Zaevski was a part-time assistant at FMI, Sofia University “St. Kliment Ohridski ”, and since 2019 he has been a part-time lecturer.

3. General characteristics of the scientific publications and achievements of the candidate

Tsvetelin Zaevski works actively in the field of financial mathematics, and he has some additional results in probability theory. He has published thirteen (13) articles in his scientific career, nine of which have an impact factor according to the Web of Science. Generally speaking, Tsvetelin Zaevski's contributions can be grouped in the following areas - spectral methods for graph clustering (identification of related elements in a set), evaluation of derivatives in stochastic volatility and jumping behavior, evaluation of derivatives with the right to early exercise, Laplace transforms related to the first moment of reaching the Brownian motion to a level.

Tsvetelin Zaevski presented for the competition 9 publications with impact factor, as according to the grouping in Q categories, they are 5 in Q1, 1 in Q3, and 3 in Q4. An article is also presented, which is referenced in MathSciNet. Publications can be grouped in the following areas (numbering is according to the list provided):

1. Study of jumping behavior in models with stochastic volatility, by use of Levy processes. [1]

2. Spectral methods for graph clustering (Identification of related elements in a given set). [2]

3. Study of financial default derivatives that are weakly dependent on the path. [3,4]

4. Study of financial derivatives of American type (put and call) with the right to early exercise. [5-9]

5. Laplace transforms related to the moment of reaching a certain level of Brownian motion. [10]

In accordance with the criteria, I positively evaluate the scientific work of Tsvetelin Zaevski: The presented articles exceed the minimum national scientometric requirements (under Art. 2b, para. 2 and 3 of ZRASRB) and respectively the additional requirements of IMI-BAS for occupying the academic position "Associate Professor" in the scientific field and professional direction of the competition.

Scientific publications do not repeat those of previous procedures for obtaining a scientific title and academic position, and are not used for registration with NACID. I have no doubts about plagiarism in the scientific papers presented at the competition.

Tsvetelin Zaevski presented 15 citations, which are reflected in the databases Web of Science and MathSciNet, which brings 84 points with a required minimum number of 70 points. The candidate also fulfills all other formal requirements in the above-mentioned documents.

4. Characteristics and evaluation of the teaching activity of the candidate

According to the presented reports, Tsvetelin Zaevski has given numerous lectures and exercises in financial mathematics at FMI, Sofia University “St. Kliment Ohridski ”.

5. Content analysis of the scientific and scientific-applied achievements of the candidate, contained in the materials for participation in the competition

The main contribution of the candidate in the above areas 1.-4. is to obtain new, original results in the field of Financial Mathematics, as well as in the methods for spectral clustering on graphs.

Particular attention should be paid to the candidate's articles in the field of Financial Mathematics, which have been published in high-impact journals. The publication in the journal International Review of Financial Analysis, [1] is co-authored with one of the world's most famous names in financial mathematics, Frank Fabozzi. This work is devoted to the development of a stochastic volatility model for option valuation, where the jumping behavior is modeled by a Levy process, and a general formula for the price of a European call option is derived.

On the other hand, the candidate has several articles in the highly-impact journal Chaos, Solitons and Fractals, in which he develops his original approach to modeling default derivatives, where jumping behavior is modeled through Levy processes. Some of these works are joint, but the candidate has a leading role. It should be noted that nowadays the modeling of jumping behavior for financial derivatives is a modern field. The candidate demonstrates mastery of the technique of stochastic processes and professionalism in their application to Financial Mathematics.

The candidate also has an original contribution to the study of the so-called Israeli (gaming) options, reflected in the publications [8], [9].

Last but not least, we should mention the work [2] in the field of Spectral methods for clustering on graphs, which shows the candidate's skills to conduct research in modern areas related to Artificial Intelligence.

6. Critical remarks and recommendations

I have no significant critical remarks or recommendations.

7. Personal impressions about the candidate

I have known Tsvetelin Zaevski since 2014, when he joined the IMI-BAS as an associate. In my opinion, he is one of the most active and successful Bulgarian mathematicians in the field of Application of Stochastic Processes in the field of Financial Mathematics.

8. Conclusion on the application

After getting acquainted with the materials and scientific works presented in the competition and based on the analysis of their significance and the scientific and scientific-applied contributions contained in them, I confirm that the scientific achievements meet the requirements of ZRASRB, the Regulations for its application. , and the respective Regulations of BAS and IMI-BAS for holding by the candidate the academic position "Associate Professor" in the scientific field and professional field of the competition. In particular, the candidate satisfies the minimum national requirements in the professional field and no plagiarism has been established in the scientific papers submitted at the competition.

I give my positive assessment of the candidacy.

II. GENERAL CONCLUSION

Based on the above, I recommend the scientific jury to propose to the competent body for the selection of the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences to choose Dr. Tsvetelin Zaevski to take the academic position of "assistant professor" in a professional field 4.5 Mathematics.

17.4.2021. г. Prepared by: Prof. D.Sci. Ognyan Kounchev.

Забележка:

Становището се изготвя задължително на български и на английски език и е в препоръчителен обем 3 – 4 стандартни печатни страници.

Становището се предава в законоустановения срок на административния секретар по конкурса в електронен вид и в три подписани екземпляра на хартиен носител, запечатани в плик.