

# OPINION

**From:** Dimitar Petkov Tsvetkov

St. Cyril and St. Methodius University of Veliko Tarnovo, Vasil Levski National Military University,  
Professor in professional field 4.5. Mathematics, scientific specialty  
"Mathematical Modeling and Application of Mathematics"

**Subject:** competition for the academic position "Associate Professor" in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.5. Mathematics, in the scientific specialty "Mathematical Analysis", promulgated in SG, issue 30 / 15.04.2022 for the needs of the Department of Mathematical Analysis, Faculty of Mathematics and Informatics, Sofia University "St. Kliment Ohridski".

This opinion is prepared on the basis of order RD-38-286 of 14.06.2022 of the Rector of the Sofia University "St. Kliment Ohridski" and a decision from the first meeting of the Scientific Jury, taken on June 20, 2022.

## **1. Information about the candidate**

The only candidate for participation in the announced competition has submitted documents – Nikolai Antonov Ivanov, PhD, chief assistant at Sofia University "St. Kliment Ohridski", Faculty of Mathematics and Informatics, Department of Mathematical Analysis. Presented by Nikolay Ivanov set of materials is in accordance with the Law on the Development of Academic Staff in the Republic of Bulgaria and the Regulations for its implementation, as well as with the Regulations on the terms and conditions for obtaining scientific degrees and holding academic positions at Sofia University "St. Kliment Ohridski".

Nikolai Antonov Ivanov was born on October 15, 1977 in the town of Gorna Oryahovitsa. In 1996 graduated from Vasil Drumev High School in Veliko Tarnovo. In 2001 graduated from the Faculty of Mathematics and Informatics of Sofia University "St. Kliment Ohridski" with ONS "Master". In 2007 received a PhD in Mathematical Analysis from Texas A&M University. The diploma was legitimized for the Republic of Bulgaria with decision №165/12.04.2010 of the Higher Attestation Commission.

From July to December 2007 was a Postdoc at the Fields Institute, and from January 2008 to June 2009 was in a Postdoc position at Queen's University.

Since September 2009 until September 2011 has worked as a part-time lecturer at the University of Veliko Tarnovo. From October 2011 until May 2015 he held the position of assistant in the Department of Algebra and Geometry at the FMI of VTU. Since June 2015 until July 2016 was a

chief assistant at the University of Veliko Tarnovo. From August 2016 so far he has been working as a chief assistant in the Department of Mathematical Analysis at the FMI of SU, thus forming at least seven years of experience in the position of "chief assistant".

The information about the study load of chief assistant, PhD, Nikolay Ivanov for the last five years shows that there is sufficient grounds for announcing a competition.

The theme of his dissertation work "On the structure of some free products of  $C^*$ -algebras" corresponds to the nature of the competition.

## 2. Scientometric indicators

Chief Assistant Professor Nikolay Ivanov, PhD has submitted for the purposes of the competition 7 publications, described in the following table

Number from the list	Indexing level	Points
1	Q1 – Web of Science	75
2	Q1 – Web of Science	75
3	zbMath	18
4	Q1 – Web of Science	75
5	MathSciNet	18
6	Q2 – Web of Science	60
7	potential for zbMath	

For indicator group **A**, the candidate has proposed one cited publication "Nikolay A. Ivanov, On the Structure of Some Reduced Amalgamated Free Product  $C^*$ -algebras, International Journal of Mathematics, 2011, vol. 22 (2)" with eight cited publications, all indexed (at least) in SCOPUS, which means a total of **64** points. This publication (Q4 = **36** points) accompanies the entry of the dissertation of Nikolay Ivanov in NACID, which requires 30 points.

The mentioned facts show that the minimum national requirements for the candidate for the academic position "Associate Professor" in the professional field 4.5 Mathematics have been met. With more details:

- 1) The candidate meets the requirements for ONS "doctor" with an available dissertation **50** points and publication in Q4 – **36** points, with sufficient 30.
- 2) He has held the teaching position of "chief assistant" for at least 7 years.
- 3) By group of indicators **A** – available **50** points, with sufficient 50.
- 4) By group of indicators **B** – (publications 1 + 3 + 5) available **111** points, with sufficient 100.
- 5) By group of indicators **Г** – (publications 2 + 4 + 6) available **210** points, with sufficient 200.
- 6) By group of indicators **A** – available **64** points, with sufficient 50.

### 3. Contributions

I accept without reservation the author's contributions, as set out in the reference for original scientific contributions of chief assistant Nikolai Ivanov, PhD. In addition, his contributions allow a summary description based on data about them from the zbMath and MathSciNet platforms. The high level of the editions where the works presented for the competition have been published is a convincing proof of their quality and of their contributions of a strictly scientific nature, while excluding any possibility of plagiarism.

Three publications **1)** Reduced Free Products of Finite Dimensional  $C^*$ -algebras (27 pages), **2)** The  $K$ -theory of Toeplitz  $C^*$ -algebras of right-angled Artin groups (25 pages) and **4)**  $C^*$ -simplicity of free products with amalgamation and radical classes of groups (30 pages) are in quartile **Q1** of Web of Science. The first two are standalone, and the third is co-authored with Tron Omand, with the first mentioned author being Nikolay Ivanov. Publication **6)** Reduced Free Products of Finite Dimensional  $C^*$ -algebras (47 pages, co-authored by Rasmus Sylvester Bryder and Tron Omand) is in quartile **Q2** of Web of Science. The stand-alone publication in *Serdica Math J.* **5)** Examples of Group Amalgamations with Nontrivial Quasi-kernels (30 pages) also falls into this semantic order. The series is supplemented by stand-alone publications **3)** Some Remarks on Noncommutative Instantons (16 pages) and **7)** Examples of HNN-extensions with Nontrivial Quasi-kernels (23 pages).

These publications are voluminous and technically complex.

The content review shows the contribution to the following mathematical areas (according to MSC2020): **1)** (22D25)  $C^*$ -algebras and  $W^*$ -algebras in relation to group representations (publications 4, 5, 6, 7); **2)** (46L05) General theory of  $C^*$ -algebras (publications 4, 5, 6, 7); **3)** (20E08) Groups acting on trees (publications 5, 6, 7); **4)** (20E06) Free products of groups, free products with amalgamation, Higman-Neumann-Neumann extensions, and generalizations (publications 5, 6, 7); **5)** (43A07) Means on groups, semigroups, etc.; amenable groups (publications 4, 5, 7); **6)** (46L-XX) Selfadjoint operator algebras ( $C^*$ -algebras, von Neumann ( $W^*$ -) algebras, etc.) (publications 1, 2, 3); **7)** (19K99)  $K$ -theory and operator algebras (publication 2); **8)** (20M11) Radical theory for semigroups (publication 4).

The listed areas highlight two main directions for the contributions of chief assistant, PhD, Nikolay Ivanov: (20-XX) Group theory and generalizations and (46-XX) Functional analysis, which fit perfectly into the professional field and the specialty of the competition.

### 4. Recommendations

The candidate Nikolay Ivanov is experienced enough to create original teaching materials. The absence of such for the time being is a missed opportunity.

## 5. Personal impressions from the candidate

Since 2009 until 2016 I have worked together with Nikolay Ivanov at the St. Cyril and St. Methodius University of Veliko Tarnovo. During this period, I consulted with him on problems in mathematical analysis and linear algebra. I have always been impressed by the speed and accuracy of his reactions, which gives me reason to distinguish Nikolai Ivanov as a particularly good mathematician.

The teaching style of Nikolay Ivanov is characterized by free mastery of the material and careful attitude towards students. If necessary, he does not hesitate to show strictness without going to extremes.

In communication, Nikolay Ivanov is distinguished by pleasant manners and impeccable academic ethics. Impressive is his strong personal presence, reinforced by well-deserved self-confidence combined with classic modesty.

## 6. Conclusion

The materials submitted by Nikolay Ivanov, meet the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria and the Regulations for its implementation, as well as with the Regulations on the terms and conditions for obtaining scientific degrees and holding academic positions at Sofia University "St. Kliment Ohridski".

Nikolay Ivanov presented scientific papers with very high scientometrics. Teaching activities are also at a high level. For these reasons, I give a confident **positive assessment** and recommend the esteemed scientific jury to prepare a proposal to the Faculty Council of the Faculty of Mathematics and Informatics, Sofia University "St. Climent Ohridski", **Chief Assistant, PhD, Nikolay Antonov Ivanov to be elected to the academic position "Associate Professor" in 4.5 Mathematics, scientific specialty "Mathematical analysis"**.

22 July, 2022

JURY MEMBER:.....

/Dimitar Petkov Tsvetkov/