

# OPINION

by assoc. prof. Ivan Minchev,  
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on a competition for the academic position associate professor in the area of higher education 4. Natural sciences, Mathematics and informatics; professional direction 4.5. Mathematics; scientific specialty Geometry and topology (Convex geometry on topological vector spaces),  
published in the Bulgarian state newspaper no. 69/11.08.2023 r.,

This opinion was prepared by assoc. prof. Ivan Minchev from the Department of mathematics and informatics, Sofia University “St. Kliment Ohridski”, as a member of the scientific Jury for the competition in professional direction 4.5. Mathematics, scientific specialty Geometry and topology (Convex geometry on topological vector spaces) in accordance with the Order № 467/10.10.2022 of the Director of IMI-BAS.

The only candidate to apply for the position is **Stoyu Barov, PhD**.

## General description of the submitted materials

The documents submitted by the candidate satisfy the requirements imposed by the Bulgarian Law and also the Regiment of the Bulgarian Academy of Sciences concerning the procedures for promotions and assumption of Academic position at the Academy.

The candidate Stoyu Barov, PhD, submitted for this competition a list of 15 titles, as follows: 7 papers are published in journals with impact factor, of which 1

is with quartile Q1, 1 is with a quartile Q2, 4 are with quartile Q3, and 1 is with quartile Q4. The remaining 8 papers are published in journals without impact factor, of which one is in a journal with SJR, and 7 are in indexed journals. The scientific works presented by the candidate do not repeat those submitted for previous competitions or promotions. There are no indications for any existence plagiarism in the scientific papers submitted for the competition. All the documents are presented in accordance with the law and show without any doubt that the candidate fulfils all the requirements of the law for acquiring the academic position associate professor.

The submitted documents describe in detail the candidate's research and teaching activities. These documents represent a strong evidence that Stoyu Barov has developed rich and ample scientific and teaching activities, and has obtained significant mathematical results satisfy the requirements imposed by the Bulgarian Law, and respectively by the additional requirements of the Bulgarian Academy of Sciences, for assumption of the academic position of associate professor.

### **Candidate's Bio**

The candidate Stoyo Barov, PhD, obtained his Master's degree in Mathematics at Sofia University "St. Kliment Ohridski" in 1992 under the supervision of prof. George Dimov. The title of his thesis was "Some properties of  $gF$ -topological spaces, spaces of the classes of  $K$  and  $K'$ , and hyperspaces endowed with the Tychonoff topology". Between 1998 and 2001 he was a PhD student at the University of Alabama, Tuscaloosa, with advisor Jan J. Dijkstra. He received his PhD in 2001. The title of his dissertation theses is "On sets with convex shadows". Between 2001 and 2004 he is an assistant professor at Ball State University. Since 2004 the candidate is a researcher at the Bulgarian Academy of Sciences – Institute of Mathematics.

The research interests of Stoyu Barov, PhD, are in the area of General Topology, Selection Theory, Convex Geometry in TVS and Geometric Tomography, an area where he is a recognized specialist.

## Outline of the Candidate's scientific results and achievements

The candidate has conditionally grouped the scientific publications presented in the competition into several thematic areas, as follows:

- General Topology;
- Selection Theory;
- Convex Geometry in TVS and Geometric Tomography.

Publications [1], [2], [3], [4] and [8] are devoted on the first thematic area; [6] and [11] – on the second, and [9], [10] and [12]-[17]– on the third.

Most of the results in the first thematic area are obtained in the period when the candidate was working on his PhD theses (1998-2001) and in way they are close to its topic. It seems that the third thematic area has been the most productive for the candidate. Here we have 6 papers published in impact factor journals. The result obtained in [10] is an extension of a previous result of Dijkstra, Goodsell and Wright. It shows that the projections of a closed nonconvex set  $C \subset R^n$  are convex and proper for projection directions from some nonempty open subset of the Grassmann manifold, then  $C$  contains a closed copy of an  $(n - k - 1)$ -manifold.

There are also some more recent interesting result of S. Barov published in [15] and [17]. If  $B$  is a closed and convex subset then a result in [15] gives a sufficient condition for the set of all points exposed by  $P$  to be dense in the set of extremal points of  $B$  with respect to  $P$ .

The quality and the quantity of the scientific research of S. Barov are in accordance to the requirements imposed by the Bulgarian Law, and respectively by the additional requirements of the Bulgarian Academy of Sciences, for assumption of the academic position of associate professor.

## **Critique and Recommendations**

I do not like the way chosen in which the candidate has labeled his scientific publications. He is using for the labeling of his 15 papers the numbers from 1 to 17, with two unexpected omissions, which I find confusing and misleading.

## **Conclusion about the Candidate**

Having read the documents submitted by PhD Stoyu Barov for the competition, and based on the analysis of their importance and the research advancements of the candidate, I confirm that the scientific achievements of scientific satisfy the requirements of the Bulgarian Law, as well as the Regiments of the Bulgarian Academy of Sciences, for promotion to the academic position of a Professor in the Scientific Area of Natural Sciences, Mathematics and Informatics, and Professional Direction of the competition, 4.5. Mathematics, scientific specialty Geometry and topology (Convex geometry on topological vector spaces).

I recommend approving the application of Stoyu Barov, PhD, for the position.

Date: 17.11.2023

Member of SC:

(Ivan Minchev)