REPORT

by Prof. Dr.Math.Sci. Peter Boyvalenkov

Competition for the academic position Associate Professor in the professional field 4 Natural Sciences, Mathematica and Informatics, professional direction 4.5 Mathematics, scientific specialty Algebra (commutative group rings and abelian groups),
announced in State Gazette No. 89/16.10.2021
by Institute of Mathematics and Informatics, BAS

1. Competition information. The competition is announced by IMI-BAS on 16.10.2020. Within the deadline, documents are submitted by one candidate – Peter Vasilev Danchev, chief assistant in IMI-BAS. The set of documents is complete. The Scientific Jury for the competition is appointed with order 217/14.12.2020 of the Director of IMI.

2. Candidate information. Peter Danchev has completed secondary education in 19898 in OMG Plovdiv and higher education (MS) in 1995 in FMI of Plovdiv University. He has defended PhD dissertation in professional area 4.5 (Mathematics) in scientific specialty Algebra and number theory in IMI-BAS in 2018 and Doctor of Sciences dissertation in the same specialty in IMI-BAS in 2020. Since 2018 he works in IMI-BAS consecutively as assistant and chief assistant, before this he has worked in TU Sofia, NUTI, 120 SOU, and others.

3. General description of the presented papers. The candidate presents 23 papers for the competition, divided into two groups – 17 main and 6 additional. The NACID reference for completing the minimum requirements for associate professor in IMI-BAS follows this list and it shows that 4 of these works have impact factors (1 in Q3 and 3 in Q4), 4 others have SJR, and the remaining are reviewed/indexed in MR and Zbl. As far as I know, these papers are not used in other procedures of the candidate. I accept for evaluation all presented 23 papers.

4. Scientific contributions. The scientific interests of Peter Danchev are in Algebra, more concretely in investigations of algebraic structures (properties of group rings and algebras, abelian groups and some kinds of rings). The papers, presented for the competition, can be divided into two subgroups – (1)

investigations on commutative group rings and algebras and (2) abelian groups. We will use the numbering from the publication list of the candidate.

The papers [1-2, 4, 6, 8-9, 12-16] are devoted to different questions for commutative group algebras and rings. Classification results for commutative group algebras of summable groups and similar groups are obtained. Main types of units (trivial, idempotent, normed) in commutative group rings are investigated and characterization results are obtained. In the papers [18-23] on group rings conditions (in most cases necessary and sufficient) are obtained under which group rings possess corresponding properties as nil-clean, invo-clean, feebly invo-clean and weakly invo-clean. This is a natural direction in the investigations of Danchev as he considers the mentioned classes of rings. Maybe it would be better to try to join and submit to a strong journal these papers.

In the papers [3,5,7,10-11,17] characteristic properties of large subgroups in different abelian groups are investigated as boundness results are also obtained. In these investigation the candidate uses not only algebraic but also set-theoretic techniques.

In conclusion of the section I have to say that the works of Danchev, included in his Doctor of Sciences dissertation, defended recently, already received high evaluation of the defense's Jury.

5. Approbation of the scientific contributions. It follows from the NACID reference that the papers, presented for the competition, are cited 28 times (self-citations excluded). A recent (February 2021) Scopus reference shows 108 citations and h-index 5 (self-citations excluded). MathSciNet shows 324 indexed papers and 627 citations (self-citations included). I would recommend the necessity of more active participation of Danchev by presentations in conferences (after the restart which will follow the pandemy). It is also important for a mathematician with so wide interests to look for students which could work on proposed problems.

6. Teaching and project participation. Teaching activities are not shown in the documents of the candidate. Danchev participates in two scientific projects – one with Bulgarian NSF via IMI and one with Shumen University.

My personal impressions from the work of Peter Danchev are excellent. He is strongly involved in his research and will be definitely very useful for IMI-BAS as a habilitated scientist.

7. Conclusion. My conclusions, based on the documents presented by the candidate, and presented above, as well as the fact that they fulfill the minimal

national requirements and these of BAS and IMI-BAS, **allow me to propose Peter Vasilev Danchev, to be elected for the academic position „Associate Professor" in scientific area 4. „Natural sciences, mathematics and informatics", professional area 4.5 „Mathematics", scientific specialty algebra (commutative group rings and abelian groups).**

Sofia, 23.02.2021   Signature:

                                                 Prof. DrSci Peter Boyvalenkov