

## OPINION

for the competition for the academic position "Associate Professor"  
announced by the Institute of Mathematics and Informatics  
at the Bulgarian Academy of Sciences  
in Newspaper of State, No. 89 of 16.10.2020

Field of Higher Education: **4. Natural sciences, mathematics and informatics**

Professional Field: **4.5 Mathematics**

Scientific Specialty: **Algebra and Number Theory  
(Commutative Group Rings and Abelian Groups)**

Written by: **Dr. Jörg Koppitz, Associated Professor** at IMI-BAS

The only applicant: **Dr.Sci. Peter Vasilev Danchev, Chief Assistant Professor** at IMI-BAS.

The main topic of Peter Danchev's research work submitted for the evaluation concerns the study of group algebras (group rings). In the present papers, he characterizes all group rings with several certain properties. In order to realize this, he has introduced several new classes of group rings, for example he has introduced the class of invo-clear group rings. On the other hand, he considers other certain classes of rings, so for example the class of the weakly tripotent rings. I want to emphasize that his characterizations are mainly of the form "if and only if". Thus, he obtains very valuable results for the Group Ring Theory. Moreover, his results are also valuable for Group Theory and other algebraic branches. Peter Danchev could also provide remarkable results in Group Theory. Of particular interest is his paper together with B. Goldsmith, which is published 2012 by AMS. In this paper, the authors discuss totally invariant subgroups.

Analyzing the 23 submitted papers (it is only a small number among the extremely long list of papers by Peter Danchev) we can realize that they have almost a singleton author, i.e. Peter Danchev works mainly without coauthors. The only coauthor of the papers within the list of the 23 submitted papers is B. Goldsmith. Concerning the recognizable impact of Peter Danchev's scientific work, I wonder about this situation. I would recommend Peter Danchev for his future scientific to cooperate as much as possible with other specialists in Group Ring Theory in order to realize a still higher influence of his excellent research work. At the moment, it seems that Peter Danchev's research work is restricted to a topic which is mainly only investigated by himself. This should be not considered as a negative note rather conversely. In fact, he relates his research works and his interesting results to recent as well as to classical open problems in Group Theory and also to current research in other branches of Group Theory (as well as Algebra). This gives a broad field of cooperation with other mathematicians in Bulgaria as well as in all over the world.

Another important observation concerning the 23 submitted papers is that almost each of Peter Danchev's papers is mainly related to another previous paper of him but only in several cases to papers by other authors. In fact, a paper of Peter Danchev mainly generalizes or improves a previous paper by himself or in several cases by another authors. A representative example for the latter situation is, in particular, the paper "Commutative Nil-clean and pi-Regular Group Rings". In that way, Peter Danchev connected his research work with the scientific work by other algebraists and provides an essential contribution to the development of the Group Theory, (in particular, of the Theory of Group Algebras). On the other hand, in several of the listed papers, it appears the sentence "This extends the recent results of ours in..." I suggest that he should avoid such a sentence in the future since it could be appear an

uncomfortable impression of his scientific work. Moreover, I would suggest him additional not to organize almost all of his papers in the same matter (in particular, not using the same sentences). On the other hand, reading his 23 listed papers, it becomes immediately clear, that Peter Danchev is a specialist in Group Theory and his knowledge in the Theory of Group Rings is excellent.

Based on the high quality of the scientific work of Peter Danchev, I wonder that his 23 submitted papers (with few exceptions) are published in journals with not the highest impact. Since also (not in each case) the level of the publishing journal reflects the quality of the paper and finally of the author(s). I would recommend Peter Danchev to publish more in journals with a higher acceptance in the algebraic community. This would improve the impact of his extremely high leveled scientific work. The scientific level of almost all of his submitted papers would justify a publication in a higher level journals, in my opinion.

The scientific level of Peter Danchev's 23 submitted papers is more than enough for the qualification as Associate Professor at the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences. I recommend strongly the respectable Scientific Jury to suggest Chief Assistant Professor Dr.Sci. Peter Vasilev Danchev to take the academic position of "Associate Professor" in the Field of Higher Education 4. Natural Sciences, Mathematics and Informatics, Professional Field 4.5. Mathematics, Scientific Specialty: Algebra and Number Theory (Commutative Group Rings and Abelian Groups).

Sofia, January 18, 2021

Signature:

(Assoc. Prof. Dr. Jörg Koppitz)