REVIEW

By Asoc. Prof. Parvan Evtimov Parvanov, PhD,
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On the materials submitted for a participation in the competition
for an occupation of the academic position "Professor"
in the University of Plovdiv "Paisii Hilendarski"
On Research area: 4. Natural Sciences, Mathematics and Informatics,
Professional field 4.5 Mathematics (Mathematical Analysis),
announced in State Gazette, No 31 от 12.04. 2019 and on the web site of the University of Plovdiv "Paisii Hilendarsi" for the needs of the Department "Mathematical Analysis" within the Faculty of Mathematics and Informatics,
where **Boyan Georgiev Zlatanov**, PhD, an Assoc. Prof. in the University of Plovdiv "Paisii Hilendarski" participates as a candidate **– the only one candidate.**

By Order No P33-3779/12.07.2019 of the Rector of the University of Plovdiv "Paisii Hilandarski" I was appointed as a member of the Scientific Jury of the competition for the occupation of the academic position "Professor" in the University of Plovdiv "Paisii Hilendarski", On Research area: 4. Natural Sciences, Mathematics and Informatics, Professional field 4.5 Mathematics, Scientific specialty "Mathematical Analysis", for the needs of the Department "Mathematical Analysis" within the Faculty of Mathematics and Informatics.

The set of documents, which were presented by Boyan Zlatanov, complies with the Rules for the Development of the Academic Staff of University of Plovdiv "Paisii Hilendarski"

I would like to comment in brief that the candidate fulfills all the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, Rules for applying of the above mentioned law, Rules for the conditions and order for acquiring academic degrees and academic positions at University of Plovdiv "Paisii Hilendarski" and the additional requirements of the Faculty of Mathematics and Informatics at University of Plovdiv "Paisii Hilendarski", namely:

The candidate Assoc. Prof. Boyan Zlatanov has a PhD degree and is listed in the list of habilitated persons as an Associate Professor in NACID. He has presented a monograph and publications with total of 319 points for group B, publications with a total 606 points for group Г, citations with total 472 for group Д and 200 points for group E. All of the points exceed the minimum required point according to the Rules for applying of the Law on the Development of the Academic Staff in the Republic of Bulgaria. Indeed the candidate has miss to enlist (for group Г) citations 1,4,14, 24, 36, 41 from the list of all citations, which are indexed either in MathSciNet or Zentralblatt. Thus the total number of points in group Д is 496.

The candidate participates in the competition with total of 31 scientific publications (30 in journals and 1 in proceedings of a conference), where 12 are published in journals with an IF, thus he satisfies the additional requirements of the Faculty of Mathematics and Informatics at University of Plovdiv "Paisii Hilendarski" (20 publications, 12 of them to be in journals and 8 of

them to be published in journals with an IF); The candidate presents 100 citations thus he satisfies the additional requirements of the Faculty of Mathematics and Informatics at University of Plovdiv "Paisii Hilendarski", where 20 citations are needed. The candidate has a PhD student, who has finished successfully his degree in the Faculty of Mathematics and Informatics within the University of Plovdiv "Paisii Hilendarski". The candidate presents 2 textbooks, thus he satisfies the additional requirements of the Faculty of Mathematics and Informatics at University of Plovdiv "Paisii Hilendarski", where 1 textbook or 1 lecture note is needed.

Therefore Assoc. Prof. Boyan Zlatanov satisfies all the requirements for getting a Professor's position in the Faculty of Mathematics and Informatics within the University of Plovdiv "Paisii Hilendarski".

The candidate has prepared his self assessment of the results correctly.

The results can be grouped in two directions: results in mathematical analysis and results in education.

The results of the candidate in mathematical analysis are in two fields.

The first one are in the geometry of Banach spaces. The candidate has presented 7 articles in this field They a continuation of his PhD Thesis and of his results for getting the Associate Professor's position. He has obtained necessary and sufficient conditions in [1] for a weighted Orlicz sequence space to have a normal structure in the case that the generating Orlicz function has not the Δ_2 condition, he has done a complete characterization of the bounded relatively compact subsets of a Muscielak-Orlicz sequence space in [3], provided that its dual is stabilized asymptotic l_∞, it is proved that in this coase the space is saturated with l_1. and fails the fixed point property; The candidate has defined a new modulus, called a generalized modulus of smoothness and has investigate some of its properties in [5] and has obtained sufficient conditions for a space to have a normal structure, connected to the generalized moduli of convexity and smoothness. The candidate has presented two articles dealing with Riesz constant [6,7]. He has proven that Riesz angle and Kottman constant are equal for a wide class of Kothe sequence spaces. Thus a difficult open question for finding the exact value of Riesz angle for most of the classical sequence spaces is solve in [7]. It is well known that results in geometry of Banach spaces are difficult to obtain, therefore I evaluate these 7 article very high.

The second field of investigations are in fixed point theory and especially I would like to pay attention to his results in best proximity points (a field that has started its development very recently 2006 and continues to be of interest). The candidate was the first to generalize the notion of best proximity points in Modular function spaces in [12], by using known results and proving new ones from the geometry of modular function spaces, which are known to have very strange structure sometimes); The well known Banach contraction theorem together with its error estimate is a powerful tool in applied mathematics. Unfortunately, there were no error estimates for the best proximity points. The candidate was the first to find error estimate for the best proximity points in [15], when a sequences of successive iterations is used, provided that the modulus of convexity is of power type. There is a great number of generalizations of Banach contraction principle. It is interesting that when these generalizations are applied for cyclic maps, due to the symmetry conditions, results can be obtained only in the cases when the distances between the successive sets are equal. The candidate introduce a new kind of cyclic maps (named summing cyclic maps) in [9]. This kind of new maps increase significantly the class of cyclic maps, which have a best proximity points, as far as in contrast to the classical ones there is no need the distance between the consecutive sets to be equal.

The other candidate's results are generalizations and investigations in the above mentioned 3 directions of research in best proximity points or some new results in fixed point theory in partial metric spaces or in b-metric spaces.

The second direction of investigation is in the usage of Computer Algebra Systems in the education of students. The candidate together with his co-authors has developed a new Dynamic Geometry Software (DGS) named Sam. It has an entirely new feature for DGS, definition of infinite points and a special function "Swap finite & infinite points". This new function allows either a generalization of well known problems or presenting a new way of teaching of Synthetic Geometry by unifying the well known constructions. The candidate has simulated the possible use of the "Swap function" in DGS GeoGebra. The monograph consist of all the main results of the candidate in using the idea of swapping finite and infinite points. The monograph satisfies the conditions in the Rules for applying of the Law on the Development of the Academic Staff in the Republic of Bulgaria for a monograph – its more than 100 pages and has a scientific editor and two scientific reviewers.

The candidate has embedded in the two textbooks on Mathematical analysis the usage of Maple. Most of the techniques for solving of problems in Mathematical Analysis are accompanied by Maple commands. The author illustrates not only the built in commands that return the final answer to the problem, but also procedures, or functions, or sequence of commands that present a step by step solution of the problems.

I have **not found "plagiarism"** in the candidate's works within the meaning of the Law on the Development of the Academic Staff in the Republic of Bulgaria.

CONCLUSION

In my opinion the candidate Assoc. Prof. Boyan Zlatanov has obtained enough results both in quality and quantity. The presented documents meet the requirements, conditions and criteria of the Law on the Development of the Academic Staff in the Republic of Bulgaria, Rules for applying of the mentioned above law, Rules for the conditions and order for acquiring academic degrees and academic positions at University of Plovdiv "Paisii Hilendarski" and the additional requirements of the Faculty of Mathematics and Informatics at University of Plovdiv "Paisii Hilendarski" to occupy the academic position "Professor".

Therefore I give my **strictly positive assessment and I recommend to the Scientific Jury to prepare a report-proposal to the Honorable Scientific Faculty Council of the Faculty Mathematics and Informatics for the election of Assoc. Prof. Boyan Georgiev Zlatanov, PhD for the academic position "Professor"** in Plovdiv University "Paisii Hilendarski" on Research area: 4. Natural Sciences, Mathematics and Informatics, Professional field 4.5 Mathematics (Mathematical Analysis)

01.09.2019 Signature: .....

/ Assoc. Prof. Parvan Parvanov, PhD /