

REVIEW

**By Prof. Nikolay Veselinov Kyurkchiev, PhD,
University of Plovdiv “Paisii Hilendarski”**

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 Newspaper of State, No 31 from 12.04.2019 and on the web site of the University
of Plovdiv “Paisii Hilendarski” 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
Hilendarski” 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 materials presented by Boyan Zlatanov in electronic format complies with the
Rules for the Development of the Academic Staff of Plovdiv University “Paisii Hilendarski”

The candidate Assoc. Prof. Boyan Zlatanov applied with 31 scientific publications, 1
monograph and 2 textbooks for university students.

The presented articles are published in: 12 journals with Impact Factor (with a total
summing IF=10.232 – according to Web of Science), 2 of them are ranked with - Q1, 5 of them
are ranked with – Q2 and 4 of them are ranked with – Q4 (according to Web of Science); 2 of
them are with SJR (without IF) and ranked with Q4 according to SJR.

The candidate applies with two textbooks – Mathematical Analysis 1 and 2, University
Publisher “Paisii Hilendarski” – Plovdiv 2018 and with one monograph: Developing Creative
Thinking in Geometry Classes - By using dynamic geometric software, LAP LAMBERT
Academic Publishing (2018-04-03).

All other scientific articles are published in renowned journals and works of prestigious
international and national conferences.

The presented publications are articles published after the acquisition of the academic
title “associate professor” by the applicant, corresponds to all 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”.

APPLICANT'S KEY SCIENTIFIC AND APPLIED RESEARCH RESULTS ARE:

The candidate has grouped the scientific papers presented in the competition in several thematic areas as follows:

- Some geometric properties of Banach spaces with unconditional basis;
- The fixed point theory and the best approximation points for cyclic maps;
- Using algebraic computer systems and in particular dynamic geometric software in mathematics education.

Articles from 1 to 7 are connected with the first listed above theme, articles from 8 to 22 are connected with the second listed above theme and articles from 24 to 31 are connected with the third listed above theme.

In my opinion, the applicant's main scientific and applied research results are the following:

1. A detailed study of the packing constant and the Kottman's constant in weighted Orlicz sequence spaces, where the weight sequence is of the class Λ (including the finding of a formula for computing the Reisz angle with the help of the packing constant for a wide class of Köthe sequence spaces, some of which are those for which the unit vector basis is unconditional and boundedly complete. This result allows a calculation of the Reisz angle for many of the classical sequence spaces, namely, l_p Orlicz, weighted Orlicz sequence spaces, Musielak-Orlicz, Nakano, Orlicz-Lorenz, Cesaro. In the case of weight weighted Orlicz sequence spaces, the Reisz angle is found, provided the space is endowed with Luxembourg's or Amemiya's norms)

2. Interesting relations are found between the Reisz angle and the moduli of convexity and smoothness in Köthe sequence spaces;

3. A sufficient condition for a Köthe sequence space to have a normal structure is obtained, when the space unit vector basis is boundedly complete and shrinking. If the generating Orlicz function fails the Δ_2 condition, sufficient conditions are found for the weight sequence so that the space to have good geometric properties;

4. The theory of best proximity points for cyclic maps, which is a subfield of the theory of fixed points, is a comparatively new. It starts to develop in 2006 and continues to be of interest. The candidate was the first to generalize the notion of best proximity points in Modular function spaces; to find error estimate for the best proximity points, when a sequence of successive iterations is used, provided that the modulus of convexity is of power type; to introduce a new kind of cyclic maps (named summing cyclic maps). 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;

5. The candidate generalizes the Ekeland's variational principle for cyclic maps that satisfy contraction type of conditions of different types. The applicant continues to develop the idea of using Ekeland's variation principle in the fixed-point theory in a recent article [B. Zlatanov. A Variational Principle and Coupled Fixed Points, *Journal of Fixed Point Theory Applications* (2019) 21: 69. <https://doi.org/10.1007/s11784-019-0706-y>, ISSN:1661-7738, (printed) ISSN:1661-7746 (online); (Web of Science, IF=0.971, Q2; SCOPUS, SJR=0.416, Q3)], where

he generalizes the Ekeland's variational principle in the case of maps that satisfy the mixed monotone property and the Ekeland's variational principle cannot be applied in this case.

Summing up what has been said so far, the candidate has obtained results related to the geometry of Banach spaces; he used the knowledge of geometry of modular function spaces to sum up the notion of best proximity points in these spaces; using the knowledge of the modulus of convexity, the applicant develops a technique for finding error estimation of the best proximity points for cyclic maps with contractive conditions of different types; he broadens significantly the range of cyclic maps that have best proximity points;

6. Development of specialized dynamic geometric software (written in C# using the .NET Framework 4 environment) for the needs of mathematics education and especially on the subject of synthetic geometry.

I would like to point out that besides the two main modules - mutual intersection of polyhedra in axonometry and the dynamic geometry software module - the platform itself provides the opportunity to upgrade the environment with new procedures or functions, which is in line with one of the main goals of the developed software - integration of secondary and university education in geometry.

This is also one of the reasons to give high praise to the candidate's work on the conditional third research field.

These serious results are contained in articles in which Assoc. Prof. Boyan Zlatanov is the leading author.

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.

Citations, Impact Factor, Resonance from the Publications of Assoc. Prof. Boyan Zlatanov

Candidate's scientific papers have broad national and international recognition, which can be seen from the presented 100 citations, 59 of which are in the Web of Science and/or Scopus (see "List of citations to participate in the competition").

The total IF of the citations is: $IF = 30,826$ formed by 24 citations and a total $SJR = 4,424$, formed by 19 citations in journals - without IF but ranked in SJR.

Remark 1. During the preparation of my review, I have found that the list of citations is actually larger than the presented one. For example:

Publication No 18 from the presented list of publication for a participation in the procedure is cited also in the articles:

Hamid Faraji, Dragana Savić, Stojan Radenović, Fixed Point Theorems for Geraghty Contraction Type Mappings in b-Metric Spaces and Applications, Axioms 2019, 8(1), 34, (SCOPUS $SJR=0.23$, Q3, Web of Science);

H. Lqbal, M. Abbas, S. H. Khan p -Attractive Elements in Modular Function Spaces, Kragujevac Journal of Mathematics 45(1) (2021), 47–61. (SCOPUS, $SJR=0.313$, Q3, Web of Science);

Sima, A. L., He, F., Lu, N., Fixed Point Theorems for Several Cyclic-Contractive Mappings in Dislocated Quasi-b-metric Spaces, Acta Mathematica Sinica, Chinese Series, Volume 62, Issue 3, 1 May 2019, Pages 427-440 (SCOPUS, $SJR=0.189$, Q3, Web of Science, $IF=0.664$, Q3)

Publication No 12 from the presented list of publication for a participation in the procedure is cited also in the articles:

H. Lqbal, M. Abbas, S. H. Khan ρ -Attractive Elements in Modular Function Spaces, Kragujevac Journal of Mathematics 45(1) (2021), 47–61. (SCOPUS, SJR=0.313, Q3, Web of Science);

Müzeyyen Sangurlu Sezen Cyclic (α, β) -Admissible Mappings in Modular Spaces and Applications to Integral Equations, Universal Journal of Mathematics and Applications Year 2019, Volume 2, Issue 2, Pages 85 - 93

Publication No 16 from the presented list of publication for a participation in the procedure is cited also in the articles:

Quanita Kiran, Nayab Alamgir, Nabil Mlaiki, Hassen Aydi. Mathematics 2019, 7(5), 476; <https://doi.org/10.3390/math7050476> (SCOPUS, SJR=0.24, Q3, Web of Science, IF=1.105, Q1);

Hamid Faraji, Dragana Savić, Stojan Radenović, Fixed Point Theorems for Geraghty Contraction Type Mappings in b-Metric Spaces and Applications, Axioms 2019, 8(1), 34, (SCOPUS SJR=0.23, Q3, Web of Science)

Publication No 17 from the presented list of publication for a participation in the procedure is cited also in the articles:

Quanita Kiran, Nayab Alamgir, Nabil Mlaiki, Hassen Aydi. Mathematics 2019, 7(5), 476; <https://doi.org/10.3390/math7050476> (SCOPUS, SJR=0.24, Q3, Web of Science, IF=1.105, Q1);

Hamid Faraji, Dragana Savić, Stojan Radenović, Fixed Point Theorems for Geraghty Contraction Type Mappings in b-Metric Spaces and Applications, Axioms 2019, 8(1), 34, (SCOPUS SJR=0.23, Q3, Web of Science)

Publication No 7 from the presented list of publication for a participation in the procedure is cited also in the articles:

Maryam Bajelan, Daryoush Bemardi. Schur Property of Generalized Orlicz-Lorentz Sequence Spaces, International Journal of Applied Mathematics, 23(6) (2010), 1047-1051 (MR2809818, Zbl 1237.46003)

Thus the real IF of the citations is relatively high: IF=33.700 and SJR = 5.740. All that has been said so far shows that the minimum requirements have been significantly exceeded on this criterion. In general, the minimal national requirements for required points by groups of indicators for the academic position of "Professor" have been satisfied.

Remark 2. In the process of drafting my review, I have found that articles No 1 - 2 of the submitted list of works, but not included in this procedure were cited in 2019 (for example in Soft Computing with IF = 2.784).

The candidate prepared his author's "Self assessment of the contributions" in Bulgarian and English languages in perfect form and, after analyzing all documents, I found that the required number of points by groups of indicators for occupying the academic position "professor" according to Rules for applying of the Law on the Development of the Academic Staff in the Republic of Bulgaria, additional requirements of the Faculty of Mathematics and Informatics at University of Plovdiv "Paisii Hilendarski" were covered.

Twenty-five of the articles to participate in the competition are in the field of "Mathematical Analysis".

Twenty-one of the articles to participate in the competition are indexed in the world-renowned databases (WoS and/or SCOPUS) with scientific information.

All this proves conclusively that scientific results in the field of Mathematical Analysis obtained by Assoc. Prof. Boyan Zlatanov, PhD have become known to the scientific community abroad.

As an immediate scientific task for the candidate, it should be the presentation of a work for a “Doctor of Sciences”.

Assoc. Prof. B. Zlatanov participated in 7 National Research Projects in the period 1994-2019. He has participated with 12 reports on international and scientific forums. He is a member 2 editorial boards of scientific journals.

The applicant has referred to the development of 18 lecture courses for the needs of the Faculty of Mathematics and Informatics at the University of Plovdiv “Paisii Hilendarski”. He has presented a list for his participation as a reviewer or referent of 18 journals.

The candidate has a PhD student, who has finished his study and has obtained his degree at the Faculty of Mathematics and Informatics– Atanas Vasilev Ilchev (2019).

There are nine other publications, I have known, that have not been used in previous procedures and are not included in this procedure (two of them are in journals with Q1 ranking according to Web of Science).

Thus the candidate satisfies and the additional requirements for a “professor” position of the Faculty of Mathematics and Informatics at University of Plovdiv “Paisii Hilendarski”.

CONCLUSION

From all that has been said so far for the candidate’s presented documents in the competition it is clear that he have obtained enough in quantity and quality scientific contributions. Taking into account the long-standing and very good teaching and lecturing activity, I am fully convinced that Assoc. Prof. Boyan Zlatanov meets 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”.

All this gives me reason to give my **strictly positive assessment and to 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:

/ Prof. Nikolay Kyurkchiev, PhD /