

## REVIEW

**by Assoc.Prof.Milko Takev, PhD**

the Faculty of Mathematics and Informatics at Sofia University "St. Kliment Ohridski"  
On Research area 4. Natural Sciences, Mathematics and Informatics,  
Professional field 4.5. Mathematics (Mathematical Analysis),  
announced in Newspaper of State, No 40 from 14.05.2021 and on the web site of the  
University of Plovdiv "Paisii Hilendarski" for the needs of the Faculty of Physics and  
Technology,  
where **Stoil Ivanov Ivanov**, PhD, an Assistant Professor in the University of Plovdiv  
"Paisii Hilendarski" participates as a candidate.

By Order No P33-3130/12.07.2021 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 "Associate Professor" in the University of Plovdiv "Paisii Hilendarski", on Research area 4. Natural Sciences, Mathematics and Informatics, Professional field 4.5. Mathematics (Mathematical Analysis), for the needs of the Faculty of Physics and Technology.

I have no remarks on the submitted documents for participation in the competition.

The candidate Chief Assistant Stoil Ivanov participated in the competition with 10 scientific publications and 1 textbook for university students.

With 7 of the works the author collects a total Impact Factor  $IF:=11.156$ .

The textbook is a Guide for solving problems in linear algebra and analytical geometry, Paisii Hilendarski University Press - Plovdiv, 2017, ISBN 978-619-202-247-1.).

Two publications have been presented at international conferences.

All of the presented publications were published after the acquisition of the academic position of "Chief Assistant" by Stoil Ivanov, thus satisfying the requirements within the meaning of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations of PU "Paisii Hilendarski" for application of this law.

### **APPLICANT'S KEY SCIENTIFIC AND APPLIED RESEARCH RESULTS ARE:**

I will investigate some of the main scientific results of the candidate.

The articles submitted by the candidate for participation in the competition are strongly influenced by the general theory for convergence of iterative procedures of Picard's type in conical metric spaces and n-dimensional vector spaces developed by Prof. Petko Proinov.

The results obtained represent a contribution to the topic developed in recent years by the professor's school. dmn P. Proynov-general theory of convergence of Picard-type iterative processes in N-dimensional vector spaces.

In the article No1, local and semilocal similarity of the Halley method were obtained.

In articles With no 2 to 6, the methods of Chebishov, Schroeder, Newton and Halley were considered.

In articles with numbers from 7 to 9, questions related to local convergence and semilocal convergence for simultaneous search for zeros of polynomials using the Sakurai-toriya-Shugiura method were studied.

The article No. 10 (from the presented list of publications) proves a first-order local convergence theorem and a semi-local convergence theorem, which specify the field of application of a new family of the type - Gander. In particular, sufficient conditions have been obtained to guarantee a convergence order  $R = 5$  of this interesting family.

Modified schemes obtained using the known iterative functions of Halley and Chebyshev are also considered.

The applicant's works are original and are not mutually beneficial from other sources

### **CITATIONS OF THE PUBLICATIONS OF THE CANDIDATE DR. STOIL IVANOV:**

The candidate's scientific works are cited 72 times.

Total IF of citations is over 37 and is formed by 21 citations.

**Remark:** 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 5 from the presented list of publication for a participation in the procedure is cited also in the article:

*P.D. Proinov, M.D. Petkova, On the Convergence of a New Family of Multi-Point Ehrlich-Type Iterative Methods for Polynomial Zeros, Mathematics 9, 2021, Article No. 1640, doi:10.3390/math9141640 <https://www.mdpi.com/2227-7390/9/14/1640>; (IF 1.747)*

I have no remarks on the author's reference of the candidate and found that the required number of points in different areas for holding the academic position of "associate professor" has been exceeded.

Ch. Assistant Professor S. Ivanov has participated in 1 National Project and in 5 projects to the Research Fund at the University of Plovdiv. Participates with 9 reports at International Conferences and with 6 reports at National Conferences.

The candidate has 4 defenders.

### **CONCLUSION:**

Based on the presented scientific works, their significance, the scientific-applied contribution contained in them, as well as its overall scientific, teaching and applied activity, I believe that Ch. Associate Professor Dr. Stoil Ivanov Ivanov meets the requirements for associate professor and I find it reasonable to propose that he take the academic position of "Associate Professor" at the Faculty of Physics and Technology of Plovdiv University "Paisii Hilendarski" in higher education 4. Natural Sciences, Mathematics and Informatics, professional direction 4.5. Mathematics (Mathematical analysis).

All this gives me reason to give my **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 Assistant Professor Stoil Ivanov, PhD for the academic position “Associate Professor”** in the Physico-technological faculty at University of Plovdiv “Paisii Hilendarski” on Research area 4. Natural Sciences, Mathematics and Informatics, Professional field 4.5. Mathematics (Mathematical Analysis).

23.08.2021

Signature: .....

/ Assoc.Prof.Milko Takev, PhD /