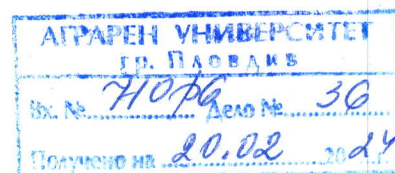# OPINION

Regarding an application in a competition for the academic position of Associate Professor,
Area of Higher Education 4. Natural Sciences, Mathematics and Informatics;
Professional Field 4.5. Mathematics,
Scientific Specialty: Geometry and Topology,
Announced in the State Gazette no. 97 on 21 November 2023,
with only candidate participated
Chief Assistant Dimitar Rumenov Razpopov, PhD,
Department of Mathematics and Informatics, Faculty of Economics,
Agricultural University Plovdiv,

by Associate Professor Marta Kostadinova Teofilova, PhD,
Faculty of Mathematics and Informatics,
University of Plovdiv Paisii Hilendarski,
**appointed as a member of the Scientific Jury,
according to Order RD-16-43 of 19 January 2024
issued by the Rector of the Agricultural University Plovdiv**

1. General Presentation of the Candidate.

Chief Assistant Dimitar Rumenov Razpopov, PhD, is the only candidate in the competition for the academic position Associate Professor, announced for the needs of the Agricultural University Plovdiv, in the Field of higher education: 4. *Natural sciences, mathematics and informatics,* Professional direction: 4.5 . *Mathematics,* Scientific specialty *Geometry and topology.*

Chief Assistant Dimitar Razpopov, PhD, was born in 1973 in Plovdiv. He completed his higher education in 1999 at the Faculty of Mathematics and Informatics (FMI), University of Plovdiv Paisii Hilendarski (MSc degree in Mathematics and Informatics). In the period between 2015 and 2019, he studied in the doctoral program Geometry and Topology at the department of Algebra and Geometry, FMI, University of Plovdiv. On January 24, 2019, he obtained a PhD on the scientific specialty *Geometry and Topology* by defending successfully a dissertation titled *"On the geometry of a Riemannian manifold with two circulant structures".* During the period 2000–2004, he worked in the field of secondary education as a teacher of informatics and IT. From October 1, 2004 he is employed at the Agricultural University Plovdiv, currently holding the position of a Chief Assistant at the Department of Mathematics and Informatics, Faculty of Economics. Since 2019, he is also working as a Chief Assistant at the University of Food Technologies Plovdiv (Department of Mathematics, Physics and IT, Faculty of Economics).

2. General description of the scientific production.

In the competition for the academic position Associate Professor, the candidate Chief Assistant Dimitar Razpopov, PhD participates with a total output of 12 scientific works: 11 are publications in periodical journals or in volumes of scientific conferences and a book published on the basis of a defended dissertation thesis for PhD. The candidate has also submitted a general list of his scientific production with 19 works in total: 6 papers related to his doctoral dissertation, which are not subject to consideration,

12 scientific works with which he participates in the competition, and 1 more publication, which is also not submitted for consideration in the competition.

The publications with which Chief Assistant Razpopov, PhD participates in the current competition (11 in total), are distributed as follows:

- **5 publications are with Impact Factor, total IF = 3.6** (distribution by quartiles: 1 publication is with Q2, 1 is with Q3 and 3 are with Q4);
- **3 publications are with Scimago Impact Rank, total SJR = 0.74;**
- **1 publication is referenced and indexed in SCOPUS;**
- **1 publication is referenced and indexed in Zentralblatt MATH;**
- **1 publication is printed in a conference volume with reviewers.**

Of these 11 publications, **9 are printed in peer-reviewed journals and 2 are in peer-reviewed conference volumes.** The presented scientific publications are co-authored, and in 5 of them the candidate is the leading author.

The submitted book titled "On the geometry of a Riemannian manifold with two circulant structures" has been reviewed by two reviewers.

Dr. Razpopov's research activity is complemented by 8 oral presentations at international and 3 at national scientific conferences.

The candidate has also presented **2 manuals** developed for the needs of students from bachelor, master and doctoral programs at Agricultural University Plovdiv.

3. Teaching Activity.

Academic Employment of the Candidate.

Chief Assistant Dimitar Razpopov, PhD has a long teaching experience at the Agricultural University Plovdiv of more than 19 years and 3 months. In the last 5 years, he has conducted lecture courses for undergraduate students in the following disciplines: Applied Mathematics, Linear Algebra and Analytical Geometry, Higher Mathematics, Statistics, Biostatistics, Financial Mathematics, Econometrics, Game Theory and Mathematical Analysis. He conducted seminars in these and other disciplines for bachelors, as well as in Applied Mathematics and Economic Statistics for graduate students, and in Statistical data processing for PhD students. He has a total of 2801.05 hours of classroom and extra-curricular activities from 2018 to 2023. The teaching activity of the candidate is complemented by the supervision of 4 successfully defended theses for bachelor and master degrees.

Published Educational Materials for Students.

1. Manual of Higher Mathematics (co-authored with G. Dzhelepov, M. Vasileva and N. Keranova), Academic Publishing House of the Agrarian University Plovdiv, 2010, ISBN 978-954-517-066-5.

2. Manual on statistical data processing for doctoral students of the Plovdiv Agricultural University (co-authored with V. Kuneva), 2023.

During the period 2018–2023, the candidate has developed educational materials (lectures and exercises) on an electronic medium for 7 academic disciplines. He has also developed 6 lecture courses.

4. Scientific Research Activities.

Areas of Publication.

The scientific research of Chief Assistant Dimitar Razpopov, PhD are in two main thematic directions:

- Differential geometry of smooth Riemannian manifolds endowed with a circulant or a skew-circulant structure – 9 publications and 1 book;
- Application of statistical methods for quantitative and qualitative assessment of yields from agricultural crops – 2 publications.

In his works, Dr. Razpopov studies curvature properties of 3-dimensional and 4-dimensional Riemannian manifolds equipped with an additional tensor structure - circulant or skew-circulant structure, compatible with the Riemannian metric, so that an isometry is induced in the tangent space. Special subclasses of such manifolds are defined and studied. These classes are determined by properties of the curvature tensor or the Ricci tensor, as well as a subclass for which the additional tensor field is parallel with respect to the Levi-Civita connection of the metric. An associated indefinite metric of the Riemannian metric is defined. The covariant derivative of this metric is studied. It is shown that to every 4-dimensional Riemannian manifold with a skew-circulant structure a Hermitian manifold is associated. The complex structure of such a manifold is determined by the second degree of the skew-circulant structure. Examples of the considered manifolds are constructed on Lie groups. Questions related to applications in physics are investigated, such as the calculation of the work of a vector force field on a curve defined by the associate indefinite metric in tangent planes of 3-dimensional and 4-dimensional Riemannian manifolds with a circulant structure.

I accept the declaration of originality of the results in the publications presented by the candidate. The candidate's results enrich the geometry of smooth manifolds with circulant and skew-circulant structures.

Citation and Referencing of the Scientific Production.

Dr. Razpopov has submitted a list of 19 citations of his works, 8 of which are in journal publications with IF/SJR. The citing publications are from the last few years, which demonstrates the relevance of the candidate's researched scientific topic and the place of his output in it.

Participation in Scientific Projects.

Dr. Razpopov has submitted a list for participation in 4 scientific research projects. Three of them are on university level, at the University of Plovdiv and 1 of them is a national project financed by the Ministry of Education and Culture with the Agricultural University Plovdiv being the leading partner.

5. Remarks and Suggestions.

I have no remarks or suggestion to the candidate.

6. Conclusion.

Based on the analysis of the teaching, scientific and scientific-applied activities of the candidate, I consider that Chief Assistant Dimitar Rumenov Razpopov, PhD fully meets the requirements of the Law on the Development of the Academic Staff in Republic Bulgaria, the Regulations for its implementation and the Regulations for its application in the Agricultural University Plovdiv.

His active scientific research and teaching activities prove that Chief Assistant Professor Dimitar Razpopov, PhD is an accomplished scientist and university professor.

All of the above gives me a reason to **POSITIVELY** evaluate his overall activity.

I take the liberty of proposing to the honorable Scientific Jury to also vote positively, and to the Faculty Council of the Faculty of Economics of the Agricultural University Plovdiv **to elect Chief Assistant Dimitar Rumenov Razpopov, PhD as an Associate Professor** *in the scientific specialty* **Geometry and topology.**

February 5th, 2024
Plovdiv

THE OPINION
IS PREPARED BY: ....
(Associate Prof. Marta Teofilova, PhD)

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