

STATEMENT REPORT

Of the competition for the academic position “Associate Professor”

In the Scientific field: 4. Natural Sciences, Mathematics and Informatics

Professional field: 4.5. Mathematics

Scientific specialty: Probability and Statistics

For the needs of the Sofia University “St. Kliment Ohridski”, Faculty of Mathematics and Informatics (FMI-SU),

Competition announced in State Gazette no 5 / 17.01.2025 and on the websites of FMI and Sofia University

This statement report has been prepared by assoc. prof. Vessela Kirilova Stoimenova, PhD, Sofia University „St. Kliment Ohridski“, FMI, Probability and statistics, as a member of the scientific jury of the competition according to Order No. ПД - 38 - 156 / 17.03.2025 of the Rector of the Sofia University “St. Kliment Ohridski”.

The documents of **the candidate:** assistant prof. Denitsa Parashkevova Grigorova, PhD, Sofia University “St. Kliment Ohridski”, FMI were submitted in time for participation in the announced competition.

I. General description of the submitted documents

1. Details of the application

To participate in the competition, the candidate Denitsa Grigorova has submitted a list of a total of 9 publications, 7 of which are in journals with impact factor, and one software development. One of the publications is in Q1 in the field of Probability and Statistics. Numerous other documents were also presented, such as official notes and certificates from the employer, a CV in Bulgarian and English, diplomas for higher education and for the acquired PhD degree, awards for scientific activity, a list of all publications and publications for participation in the competition along with their full text, author's reference, reference for citations, reference for compliance with national minimum requirements, and others.

The submitted documents are correctly prepared and presented. The authorship statement accurately reflects the candidate's contributions.

The documents submitted by the candidate Denitsa Grigorova in accordance with the competition comply with the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADASRB), the Rules for Implementation of the ADAS in the Republic of Bulgaria (RIADAS in the RB) and the Rules on the Terms and Requirements for Acquisition of Scientific Degrees and Occupation of Academic Positions at Sofia University.

2. Short CV of the applicant

Assistant Professor Grigorova graduated from the Sofia High School of Mathematics in 2003, with a bachelor's degree in Applied Mathematics and a master's degree in Probability and Statistics at the Faculty of Mathematics and Informatics, Sofia University, in 2009, after which she enrolled in doctoral studies. She was an Erasmus student at the University of Sheffield in 2011. She obtained her PhD in 2014. From 2018 to 2020, she was a postdoctoral fellow at Bocconi University, Milan, Italy. She has been employed by Sofia University since 2012, and from 2020 to 2023, she was a researcher (R2) at the Big Data for Smart Society Institute (GATE).

3. General characteristics of the applicant's scientific work and achievements

The scientific interests of Assistant Professor Grigorova are in the field of statistical analysis with applications in medicine (biostatistics). 9 articles were submitted for the competition, 8 of which are co-authored, and one is a software development. The total impact factor of the seven articles with such an impact factor is 20.29, with one of the articles being in Q1 of the Probability and Statistics field, and the remaining quartiles being in scientific fields of medicine. Asst. Prof. Grigorova has presented data for 22 citations of her articles.

To my opinion, the scientific works meet the minimum national requirements (under Art. 2b, para. 2 and 3 of ADASRB) and respectively the additional requirements of Sofia University 'St. Kliment Ohridski' for holding the academic position of "Associate Professor" in the scientific field and professional field of the competition. The scientific papers submitted by the candidate do not repeat those of previous procedures for acquiring a scientific title and academic position. There is no legally proven plagiarism in the scientific papers submitted at the competition.

4. Characteristics and evaluation of the candidate's teaching experience

Assistant Professor Grigorova has many years of experience as a lecturer and an assistant, in the field of probability and mathematical statistics. She has taught the courses Introduction to Biostatistics for Masters, Biostatistics for Masters, Statistics and Empirical Methods for Bachelors, Mathematical Statistics for Bachelors, Programming with R for Masters, Linear Models with R for Bachelors, Introduction to Statistics for Bachelors, Statistics in English for Masters, Probability Theory for Bachelors. She participated in the training course for teachers on Statistical Data Analysis and Computer Visualization, held at the Spring Conferences of the Union of Bulgarian Mathematicians. She has developed teaching materials for many of the courses. She is the supervisor of one graduate student who successfully defended his master's thesis.

5. Detailed analysis of the scientific and applied achievements of the candidate contained in the materials submitted for participation in the competition

I would divide the candidate's scientific and applied scientific contributions into three areas, namely:

- Development of EM algorithms for finding maximum likelihood estimates of the parameters of correlated probit models for data from long-term studies, when the main variables are of the type ordered categorical and continuous or two categorical with level ordering. Development of a Monte Carlo bootstrap method for approximating the covariance matrix of estimates. Following the numbering of the articles in the reference list, these are articles [2] and [3].
- Development of R software package EmcorrProbit.
- Scientific and applied contributions in the field of medicine and public health, which include the application of statistical analyses such as: linear and logistic regression, hierarchical cluster analysis, principal components analysis, statistical tests such as chi-square tests and tests of proportions, and subsequent interpretation of the results. The interdisciplinary nature of the work on current medical problems can be considered, on the one hand, as a positive quality of the presented works, and on the other - as evidence of the candidate's skills to work successfully in a team.

6. Critical notes and recommendations

I have no critical remarks in substance. I recommend that the candidate expands her theoretical work in the scientific direction of articles [2] and [3].

7. Personal impression of the applicant

I have known Denitsa Grigorova since her student years. I have had the opportunity to follow her development as a teacher and scientist. Ambitious and with high demands on herself and her colleagues, if she takes on a teaching, administrative or scientific commitment, she fulfills it responsibly and correctly.

8. Conclusion on the application

Having become acquainted with the documents and scientific papers presented in the competition and on the basis of the analysis of their importance and the scientific and applied contributions contained therein, I **confirm** that the scientific achievements meet the requirements of the ADAS in the Republic of Bulgaria, the Rules for its Implementation and the corresponding Rules of the Sofia University "St. Kliment Ohridski" (FMI-SU) for the occupation by the candidate of the academic position "Associate Professor" in the scientific field and professional field of the competition. In particular, the applicant meets the minimal national requirements in the professional field and no plagiarism has been detected in the scientific papers submitted for the competition. I **give my positive** opinion to the application.

II. GENERAL CONCLUSION

On the basis of the above said, I **recommend** to the Scientific Jury of the competition to propose to the competent body of choice of the Faculty of Mathematics and Informatics at Sofia University “St. Kliment Ohridski” to select Denitsa Parashkevova Grigorova, for the academic position “Associate Professor” in the Professional field: 4.5. Mathematics, Scientific specialty: Probability and Statistics.

15.05.2025

Signature:

/assoc. prof. Vessela Stoimenova, PhD/