



МИНИСТЕРСТВО НА ОТБРАНАТА
ИНСТИТУТ ПО ОТБРАНА „ПРОФЕСОР ЦВЕТАН ЛАЗАРОВ”
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ИНСТИТУТ ПО ОТБРАНА - РИКИ	
Вх. №	2-3803/25.10.2023 г.
от	9 листа

REVIEW

by Professor, D.Sc. VESELIN TSELKOV

**UNIVERSITY OF LIBRARY STUDIES AND INFORMATION
TECHNOLOGIES**

on the competition for the academic position

„ASSOCIATE PROFESSOR”

**Field of higher education 5. Technical Sciences, Professional field
5.3. Communication and computer engineering (Communication
networks and systems)**

Announced by “Professor Tsvetan Lazarov” Defence Institute
State Gazette, issue 61 of 18.07.2023

With candidate

Dr. Eng. GRIGOR RAYKOV VELEV

I. WHICH PAPERS SUBMITTED BY THE CANDIDATE ARE ACCEPTED FOR EVALUATION BY THE REVIEWER

In the announced competition, Dr. Eng. Grigor Velev participated by submitting nineteen scientific works for review. All of these works proposed for review are distinct from those submitted for the award of the scientific and educational degree of doctor. The reviewer accepted all the proposed monographs, publications, developments, and teaching aids for review, as they were deemed relevant to the competition's topic. The materials proposed for review can be categorized into the following groups:

- Monographs – 1 (Appendix 2, Section II.1.1);
- Book based on a doctoral thesis – 1 (Appendix 2, Section II.1.2);
- Publications – 17 (Appendix 2, Section II.2), classified by the reviewer as follows:
 - Conference reports in proceedings of international conferences – 9;
 - Conference reports in proceedings of national conferences, some of them with international participation – 1;
 - Articles in periodic scientific publications – 7.

The submitted works for review have been published in the following languages:

- Bulgarian – 14;
- English – 5.

Authorship

The authorship of the works submitted for review is as follows:

- The monograph and the book are independent works of the candidate;
- The authorship of the publications submitted for review (17 in total) is as follows:
 - 9 are independent works of the candidate;

- 2 are co-authored by two authors;
- 6 involve more than two authors.

Note: For all collaborative publications, the reviewer did not find attached the relevant division protocols and accepted equal and proportional participation.

Scientific Research Activity

Dr. Velev's scientific research activity encompasses projects, studies, descriptions, assignments, and guidance. The reviewer wishes to note the following, which were not specified for review:

- Scientific research projects - 12 in total (Appendix 2, Section II.3):
 - 7 international projects (as a member of the working team);
 - 5 national scientific projects (with leadership roles in three of them).
- Dr. Velev's involvement in research, descriptions, assignments, programs, methodologies, and others related to the development and improvement of command, communication, and control systems - 12 in total (Appendix 2, Section III).

II. GENERAL CHARACTERISTICS OF THE CANDIDATE'S SCIENTIFIC-RESEARCH, SCIENTIFIC-APPLIED, AND PEDAGOGICAL ACTIVITY

Dr. Grigor Velev is a certified engineer from the "V. Levski" Higher Military School in town of Veliko Tarnovo, with a specialization in "**Signal Corps - Radio and Radio Relay Communication Equipment**". He holds a master's degree from the "G. S. Rakovski" Military Academy in Sofia, specializing in "**C3, Operational Tactical, Signal Corps**". From 2014 to 2018, he pursued a doctoral program and defended his doctoral dissertation in 2018 in

the professional field **5.3 "Communication and Computer engineering"** in the doctoral program **"Radio Transmitter and Receiver Technology"**.

Dr. Velev has specialized in the field of radio systems and control systems in Russia, Italy, France and Bulgaria.

In 2011, he completed the postgraduate qualification course **"Strategic course. Leadership Positions in the National Security and Defence System"**, at the "G. S. Rakovski" Military Academy in Sofia.

Candidate Grigor Velev has been working in the military, scientific, and military-scientific fields since 1986 to the present, which includes various military units, research institutes, as well as specialized units for the development of communication systems and technologies for defence needs. He has held various positions in the "Communication Networks and Communication System Development" department - UCIS, head of the "C4I Systems Development and Information Security" department – Defence Institute, director of the "C4I Systems Development Directorate", leader of program teams related to system analysis and system design, subsystems in the field of construction and development of communication and information systems, and has led a team for the development and expansion of the Bulgarian Armed Force's C3 systems, among others.

The candidate's works can be classified into the following directions:

- Research related to communication systems and technologies;
- Research related to mobile ad hoc networks and routing models;
- Research related to acquiring sensor data to support decision-making;
- Automated management systems and communication and information systems for defence needs.

III. ASSESSMENT OF THE CANDIDATE'S SPECIALIZED TRAINING AND ACTIVITY

Dr. Eng. Grigor Velez is an established and respected leader at the Defence Institute under the Ministry of Defence. He possesses solid scientific training and diverse work experience in various structures related to the implementation and operation of Automated Control Systems (communication and information systems) within the Ministry of Defence and the Bulgarian Army. He demonstrates creativity and communication skills as a researcher and executor in scientific research, implementation, and operational activities. At present, he holds the position of Director of a department at the Defence Institute.

IV. ASSESSMENT OF THE CANDIDATE'S MAIN SCIENTIFIC RESULTS AND CONTRIBUTIONS

The candidate's contributions can be attributed to the scientific field of "Information Technologies" and the directions mentioned above and can be summarized (according to the reviewer) in the following areas:

- Telecommunication technologies, standards, and principles of digital communication systems.
- Mobile self-organizing networks – architectures, modeling methods and techniques, security, and routing protocols (developed in the doctoral dissertation).
- Cloud technologies and services in communications.

The published results can generally be categorized into scientific, scientific-applied, and applied.

Scientific contributions

The candidate's scientific contributions can be reviewed and evaluated in the following areas:

- Enrichment of existing knowledge;

- Application of scientific achievements in practice and realization of economic benefits.

The reviewer highlights the most important ones as follows:

- Formal models and algorithms for routing in mobile ad hoc networks have been developed;
- An assessment of the impact of technological innovations on the development of defense strategy has been conducted;
- Research on the use of cloud technologies in the field of communications and the provision of electronic information exchange services in collaborative work, training, business processes, and more in systems related to security and defence.

Scientific and applied contributions

Scientific-applied contributions are in the field of information and communication systems and technologies, mobile ad hoc networks, and next-generation telecommunication networks, with the most important ones being:

- Research, comparative analysis, and classification of routing protocols for mobile distributed networks.
- Development of cluster routing algorithms for mobile ad hoc networks.
- Research and evaluation of various options for building next-generation telecommunication networks using IP, MPLS, and ATM protocols.
- Research related to acquiring sensor data to support decision-making.

Applied Contributions

Applied contributions are in the field of development, design, development, and implementation of communication networks in which a number of innovative approaches and solutions for communication and information systems have been applied, adopted, and deployed in the Bulgarian Army. Notable contributions include:

- Formalization of the process of designing corporate communication networks.
- Development and improvement of the stationary communication system of the Bulgarian Army.
- Research and assessment of the potential application of mobile distributed networks for defence purposes.
- Analysis of the role of machine learning in 5G networks for building an adaptive and productive next-generation mobile network.

V. SIGNIFICANCE OF CONTRIBUTIONS TO SCIENCE AND PRACTICE

The significance of the contributions can be assessed by their applicability in various implemented projects (both international and national) in which Dr. Grigor Velev has participated as a member and leader, as well as in guiding research teams and scientific staff. It's worth noting the research developments (projects, tasks, complexes, and systems) that have been implemented in practice.

VI. ASSESSMENT OF AUTHORSHIP CONTRIBUTIONS

The personal contribution of the candidate in obtaining the results in the submitted works for review is indisputable. His authorship is beyond doubt. A careful analysis of the candidate's overall scientific output allows us to conclude that the listed scientific contributions are entirely his own work. **No plagiarism has been identified, and I accept that the works and contributions therein are the candidate's own work.**

VII. CRITICAL NOTES AND RECOMMENDATIONS

The reviewer does not find substantial scientific errors in the presented developments and publications but suggest several critical notes and recommendations, primarily aimed at improving future research and publications:

- It's not always clear where the author's contributions are shown:
 - The known scientific results used;
 - Separation records or references to authorship;
- To strengthen activity in guiding research teams and establishing lasting specific knowledge and approaches in the subject area of scientific research.

VIII. PERSONAL IMPRESSIONS

I have known Dr. Grigor Velev since our joint work in the Defence Institute in 2016. I have been involved in the preparation and defence of his doctoral dissertation. I have been observing his scientific and career development up to now. My personal impressions are that Dr. Velev demonstrates himself as a fair, disciplined, and organized leader. He possesses high morals and self-esteem. In his scientific work, he appears as a consistent scientific worker capable of defining and defending ideas and scientific hypotheses. He has a broad general culture, deep and lasting scientific interests in the field of communication and information systems in defence and security. These personal impressions enable me to evaluate the candidate as a leader, researcher, and expert in the specific scientific field.

IX. CONCLUSION

I express my absolute conviction that Dr. Eng. Grigor Velev is an educated and fair scientist and leader. His overall assessment, as well as the specific assessment of his scientific and practical results and contributions, provide me with a basis to express my positive opinion and propose to the members of the esteemed jury to vote positively for the awarding of the academic position **"ASSOCIATE PROFESSOR"**, in the field of higher education **5. Technical Sciences**, professional field **5.3 Communication and Computer engineering (Communication networks and systems)** to Dr. Eng. Grigor Rajkov Velev.

24.10.2023 г.

Sofia

Member of Jury: /S/

/Professor D.Sc. Veselin Tselkov/