

HEMUS 2022

DEFENCE, ANTITERRORISM & SECURITY

ПРОГРАМА

ЕДИНАДЕСЕТА МЕЖДУНАРОДНА НАУЧНА КОНФЕРЕНЦИЯ

*НАУЧНИТЕ ИЗСЛЕДВАНИЯ,
ТЕХНОЛОГИИ И ИНОВАЦИИ –
ОСНОВА ЗА ИЗГРАЖДАНЕ НА
НОВИ ОТБРАНИТЕЛНИ
СПОСОБНОСТИ*

ХЕМУС – 2022

2-РИ – 3-ТИ ЮНИ 2022 Г.

**МЕЖДУНАРОДЕН
ПАНАИР ПЛОВДИВ**

PROGRAMME

ELEVENTH INTERNATIONAL CONFERENCE

*RESEARCH, TECHNOLOGY
AND INNOVATION – BASIS FOR
BUILDING NEW DEFENCE
CAPABILITIES*

HEMUS – 2022

2 – 3 JUNE 2022

**INTERNATIONAL
FAIR PLOVDIV**

Организатори / Organizers:



*Институт по отбрана
„Професор Цветан Лазаров”*



Фондация „Хемус-95”

FIRST DAY - 2 JUNE 2022

- 13.00 - 14.00** **REGISTRATION**
Pavilion 8, floor 1
- 14.00 - 14.05** **CONFERENCE OPENING**
Col. Assoc. Professor DSc Borislav GENOV
Defence Institute Director
- 14.05 - 14.15** **Welcoming address by Mr. Jordan BOZHILOV**
Deputy Minister of Defence
- 14.15 - 14.20** **Welcoming address by Major General Todor DOCHEV**
Commandant of Rakovski National Defence College
- 14.20 - 14.25** **Welcoming address by Professor DSc Ivan KRALOV**
Rector of the Technical University of Sofia
- 14.25 - 14.30** **Welcoming address by Professor DSc Irena PETEVA**
Rector of the University of Library Studies and Information Technologies
- 14.30 - 16.10** **PLENARY SESSION**
Bulgaria Hall (Pavilion 8, floor 2)
Moderator: *Col. Assoc. Prof. Dr. Nikolai STOIANOV – Deputy Director of Defence Institute*
- 14.30 - 14.50** *Plenary paper of Mr. Orhan MURATLI*
Director of Support to Operations – NSPA
- 14.50 - 15.10** *Plenary paper of Mr. Robert ELVISH*
NSPA Programme Manager for Air and Land Combat Systems
- 15.10 - 15.30** **COFFEE BREAK / POSTER SESSION**
- 15.30 - 15.50** *Plenary paper of Col. Assoc. Prof. DSc Borislav GENOV*
Defence Institute Director
- 15.50 - 16.10** *Plenary paper of Assoc. Prof. Dr. Velizar SHALAMANOV*
Deputy Director of Institute of Information and Communication Technologies – BAS
- 16.15 - 18.00** **WORK ON SCIENTIFIC SECTIONS**
- 19.00 - 21.00** **RECEPTION (VIENNA PAVILION)**

SECOND DAY - 3 JUNE 2022

- 09.30 - 10.30** **WORK ON SCIENTIFIC SECTIONS**
- 10:30 - 10:45** **COFFEE BREAK / POSTER SESSION**
- 10.45 - 13.00** **WORK ON SCIENTIFIC SECTIONS**
- 13.00 - 13.10** **CONFERENCE CLOSING**

FIRST DAY - 02.06.2022

**“RESEARCH, TECHNOLOGIES AND SYSTEMS IN DEFENCE AND SECURITY”
Session**

**TOPIC “WEAPONS,
COMBAT SYSTEMS AND TECHNOLOGIES”**

- 10.00 - 12.00** **Round table** (*Press Club Hall, Pavilion 8, floor 1*)
- Bulgaria Hall (Pavilion 8, 2nd floor)*
- Moderators:** *Prof. DSc Hristo* **HRISTOV**
Assoc. Prof. Dr. Petya **NEDYALKOVA**
- 16.15 - 16.30** **Design And Development Of Lightweight Stabilization Platform For Multicopters Armament**
Miloš Petrašinić, Danilo Petrašinić, Aleksandar Grbović, Mihailo Petrović, Veljko Petrović, Nikola Raičević
- 16.30 - 16.45** **Conceptual Design And Optimization Of Wing Bomb Using OpenVSP - Open-Source Program For Computer Modeling**
Nikola Raičević, Danilo Petrašinić, Aleksandar Grbović, Miloš Petrašinić, Mihailo Petrović
- 16.45 - 17.00** **Air surveillance and air defence advanced challenges and solutions**
Moshe Manor
- 17.00 - 17.15** **Mathematical model of a helicopter flight with external fire extinguishing device „BB4453“**
Nikolay Zagorski
- 17.15 - 17.30** **Solution to the forward problem of the internal ballistics through the bianchi method, with calculations of the start pressure and the powder gas consumption**
Antoniya Raydovska, Valentin Bachev
- 17.30 - 17.45** **Manufacturing approach of complex parts, produced with additive manufacturing from data obtained by reverse engineering and topology optimisation**
Aleksander Stefanov, Viktor Stoyanov, Violetka Dencheva
- 17.45 - 18.00** **Increasing the defence capabilities through the utilization of loitering munitions**
Konstantin Dimitrov

Topic “COMMUNICATION AND
INFORMATION SYSTEMS AND TECHNOLOGIES”

Plovdiv Hall (Pavilion 8, floor 2)

Moderators: *Col. Assoc. Prof. Dr. Mario ANGELOV,
Assoc. Prof. Dr. Aleksandar Kolev*

- 16.15 - 16.30** **History of AFSEA, Sofia section, 1993 – 2018**
Simeon Kralikov
- 16.30 - 16.45** **Securing Chemicals Supply Chain: The Odysseus Case**
Iraklis Paraskakis, Isaak Kavasidis, Dimitris Bibikas
- 16.45 - 17.00** **Current status and trends of passive radars development**
Sevdalin Spassov
- 17.00 - 17.15** **Military decision-making tools**
Orlin Nikolov, Kostadin Lazarov
- 17.15 - 17.30** **Machine learning in malware reverse engineering**
Stefan Tafkov, Zlatogor Minchev
- 17.30 - 17.45** **Detection and tracking of targets in distributed MIMO radar systems**
Kiril Alexiev, Nevena Slavcheva
- 17.45 - 18.00** **Mathematical analysis of spatial-multichannel systems with multiple antennas**
Mihail Mihaylov

**“INVESTMENT, INNOVATION AND MODERNIZATION
OF THE ARMED FORCES” Session**

**Topic “MILITARY- POLITICAL,
SOCIAL AND ECONOMIC ASPECTS OF DEFENCE”**

Press Club Hall (Pavilion 8, floor 1)

Moderators: *Prof. DSc Yantsislav V. YANAKIEV,
Prof. Dr. Valeri IVANOV*

- 16.15 - 16.30** **Money laundering and terrorism financing: a practical case from Bulgaria**
Gergana Yordanova
- 16.30 - 16.45** **Technologization and un/certainty in the XXI century**
Erol Buyukliev
- 16.45 - 17.00** **Convincing communication - nature and meaning**
Valya Simeonova
- 17.00 - 17.15** **Civil-military integration in the field of science and technology. Implementation in Bulgaria for improving the defence potential of the bulgarian army**
Aleksandra Shahova, Konstantin Dimitrov
- 17.15 - 17.30** **Operation of artillery and rocket systems in the Nagorni Karabakh war in 2020**
Nikolay Pavlovski
- 17.30 - 17.45** **The role and place of the intelligence cycle in today's security environment**
Yantsislav Yanakiev, Elisav Ivanov
- 17.45 - 18.00** **Actual problems in the use of tactical units in combat operations in the syrian civil war**
Nikolay Pavlovski

SECOND DAY - 03.06.2022

**“RESEARCH, TECHNOLOGIES AND SYSTEMS IN DEFENCE AND SECURITY”
Session**

**TOPIC “WEAPONS,
COMBAT SYSTEMS AND TECHNOLOGIES”**

Bulgaria Hall (Pavilion 8, 2nd floor)

Moderators: Prof. DSc Hristo I. HRISTOV

LTC Assoc. Prof. Dr. Hristo P. HRISTOV

- 09.30 - 09.45** **Innovative polymer bonded explosives: beyond the thermobaric compositions**
Stefan Kolev, Tsvetomir Tsonev
- 09.45 - 10.00** **Some aspects regarding the mechanisms of gun barrel wear**
Krasimir Kalev
- 10.00 - 10.15** **Forced spatial vibrations of a four-axle high-run-car vehicle caused by road**
Deyan Zhelev, Gancho Dushkov
- 10.15 - 10.30** **Preliminary aerodynamic design for an aerobatic aircraft used for pilot training**
Preslav Georgiev, Petar Todorov
- 10.30 - 10.45** **COFFEE BREAK / POSTER SESSION**
- 10.45 - 11.00** **Modern types of unmanned aerial vehicles and prospects for their development**
Svetlozar Asenov
- 11.00 - 11.15** **Studying the amount of heat accumulated in the ballistic engine for one thermodynamic cycle**
Antoniya Raydovska
- 11.15 - 11.30** **Research and application of renewable energy sources to achieve sustainability, autonomy and energy efficiency of remote security and defence infrastructure**
Petya Nedyalkova, Ilian Hutov, Nikolai Savov, Tsvetanka Hristova

- 11.30 - 11.45** **Modernization and improvement of the capabilities of the repair formations of the land forces**
Veselin Chilikov
- 11.45 - 12.00** **The applicability of quantum gyroscopes for navigation**
Anastas Madzharov
- 12.00 - 12.15** **Composite multilayer system for improved ballistic protection**
Hristo Hristov

Topic “**COMMUNICATION AND INFORMATION SYSTEMS AND TECHNOLOGIES**”

Plovdiv Hall (Pavilion 8, floor 2)

Moderators: *Col. Assoc. Prof. Dr. Mario **ANGELOV**,
Assoc. Prof. Dr. Aleksandar **Kolev***

- 09.30 - 09.45** **Creating A Bulgarian (Aerospace) Defence And Security Collaboration Platform/Accelerator (In Particular On C4ISR/Cyber&Space)**
Velizar Shalamanov, Borislav Bankov
- 09.45 - 10.00** **Innovative automated analysis tools for AAR and Decision Support using Artificial Intelligence**
Hans ten Bergen, Ariane Bitoun
- 10.00 - 10.15** **Medical information systems basis for improving the quality of medical services for the needs of the Armed Forces**
Ivanka Aleksieva, Alexander Alexandrov, Ivan Popivanov, Boryana Ralcheva-Zhekova
- 10.15 - 10.30** **Bulgarian military logistic system – March 2022**
Svetozar Botev, Valya Simeonova
- 10.30 - 10.45** **COFFEE BREAK / POSTER SESSION**

- 10.45 - 11.00** **Risks to the safety of a distance learning system**
Petko Dimov
- 11.00 - 11.15** **24 GHz antenna design, with improved parameters and application in the aviation industry**
Sophia Uzunova, Mihail Zhelyazov
- 11.15 - 11.30** **Factors complicating the electromagnetic environment**
Georgi Tachev
- 11.30 - 11.45** **Architectural analysis of anti-dron systems**
Andrey Garkov
- 11.45 - 12.00** **Artificial intelligence implementation approaches in decision making process in Lanf forces**
Miroslav Kochankov, Rosen Iliev
- 12.00 - 12.15** **Research of web content management systems in online training**
Daniela Mirtcheva-Ivanova, Rosen Iliev
- 12.15 - 12.30** **Communication and information support of a battalion battle group**
Mario Angelov, Pavlina Nikolova

Topic “**INNOVATION, INVESTMENT AND INDUSTRIAL COOPERATION FOR DEFENCE AND SECURITY**”

Press Club Hall (Pavilion 8, floor 1)

Moderators: *Prof. DSc Yantsislav V. YANAKIEV,*
Prof. Dr. Valeri IVANOV

- 09.30 - 09.45** **Scientific reserch end innovation activity Institute of Vasil Levski National Military University – motivator of scientific knowledge, innovative solution and enterpreurial spirit**
Sevdalina Dimitrova, Vanya Dimitrova, Daniel Berchev, Stefan Petkov, Vanya Dimitrova
- 09.45 - 10.00** **The law of armed conflict and the role of concomitant losses and damages**
Kalin Gradev

- 10.00 - 10.15** **Civilian volunteer department to assist the population in the flood**
Tsvetelina Slavcheva
- 10.15 - 10.30** **Results of the foreign armed forces intervention in the syrian civil war**
Nikolay Pavlovski
- 10.30 - 10.45** **COFFEE BREAK / POSTER SESSION**
- 10.45 - 11.00** **Organization of first aid on the battlefield under TCCC (Tactical Combat Casualty Care)**
Boryana Ralcheva, Ivan Popivanov, Virsavia Vaseva, Maryana Ivanova
- 11.00 - 11.15** **Role of the armed forces in the fight against the Covid-19 pandemic**
Mariyana Ivanova, Ivan Popivanov, Dimo Dimov, Virsavia Vaseva
- 11.15 - 11.30** **Investment plan-program of the Ministry of Defence until 2032**
Maxim Alashki
- 11.30 - 11.45** **The Eurasian Economic union in the context of Russia`s intervention in Ukraine**
Michael Kozarski
- 11.45 - 12.00** **Opportunities for improving the national security system of the Republic of Bulgaria**
Valeri Ivanov, Anton Manchev
- 12.00 - 12.15** **How the leadership of the Ministry of Defence “Governs“ TEREM-HOLDING EAD?**
Maxim Alashki
- 12.15 - 12.30** **Civil-military cooperation in emergency situations**
Valeri Ivanov, Milen Kisyov

POSTER SESSION
Foyer, Bulgaria Hall (Pavilion 8, floor 2)

Analyses and investigation of 0-Day threats with Fireeye EDR
Martin Rakov, Veselka Stoyanova

An approach to detecting cyber attacks on the web
Pavlina Nikolova, Alexander Kolev

Exchange of information in military application with augmented reality
Lily Pavlova, Alexander Kolev

Algorithmic approach for overcoming obstacles in routing an autonomous combat platform
Aleksandar Ranov

The influence of quantitative and qualitative assessments in determining measurement objects condition
Nevena Radoeva, Rosen Iliev

Satellite methods and tools for environmental monitoring in the context of wars and armed conflicts
Georgi Baev

The role of AFCEA in IT security research and innovation
Konstantin Zografov, Simeon Kralikov

Determining the angle of arrival of a radio signal using a software-defined radio system
Ivan Ivanov

Possibilities for realization of multi-channel coherent radio system based on software-defined radio platform
Ivan Ivanov

Modern technological solutions for radar detection and classification of small unmanned aerial vehicles
Karmen Alexandrova

New solutions for civil and military drones

Svetlozar Asenov

Organization of repair and rehabilitation activities in NATO

Veselin Chilikov

Research on the pressure force of the gunpowder gas acting on the inner surface of the cartridge case

Antoniya Raydovska

Drilling of thin barriers from projectiles up to 15 mm in diameter - models and experimental data

Petko Bonchev

Next-generation, new-generation equipment tools and critical mission strategies for first responders (RESPOND-A)

Mario Angelov, Nikolai Stoianov, Pavlina Nikolova

Balanced system of performance indicators of the organizational unit

Mario Angelov, Pavlina Nikolova

Development of direction-finding radio receiver based on software-defined radio with integrated artificial intelligence in its software

Konstantin Dimitrov

Investigation of fluctuations of a physical pendant with a movable suspension point

Nikolay Zagorski

Investigation of the influence of the parameters of the external load the conditions for its balance in its flight

Nikolay Zagorski

Influence of cyberspace on the capabilities of the armed forces

Nikolai Stoianov

Hexadecimal pre-subtraction system, built with adders

Mihail Zhelyazov, Ilya Reznichenko, Sophia Uzunova

Evolution of spatial-temporary multichannel systems with multiple inputs and outputs

Mihail Mihaylov

Analysis of systems with many antennas for spatial-temporary signal processing

Mihail Mihaylov

Possible implementation of information technologies for detecting cyber attacks

Veselina Alexandrova Gagamova, Violeta Vasileva, Milena Ivanova

Challenges in the use of guided munitions by artillery support

Dilyan Markov

Development of a directional radio receiver based on a software-defined radio with integrated artificial intelligence in its software

Konstantin Dimitrov

Software methods for synthesizing a virtual spatial scene

Alexander Kolev

Research of the possibilities for accelerated simulated aging of means for individual ballistic protection

Petya Nedyalkova, Krasa Kostova, Tsvetanka Hristova

Requirements for the characteristics and protective properties of NATO field combat clothing

Krasa Kostova, Petya Nedyalkova, Tsvetanka Hristova

Analysis of antibacterial textile agents for military application

Desislava Angelova, Darina Zheleva

Artillery fire control information environment

Vanya Ivanova