Resume

MILITARY TECHNICAL POLICY

Pavlovskyi I. V., *Deputy Minister of Defence of Ukraine*
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KEY REFORMS OF THE SECURITY AND DEFENSE SECTOR AND THE RESULTS OF THEIR IMPLEMENTATION

The analysis of threats in the sphere of national security, the main tasks of increasing the level of the defense capability of the state and reforming the defense sphere was carried out. The aspects of management, decisive for ensuring national securityof Ukraine, which require further implementation, are identified.

Keywords: *national security, level of defense capability, military aggression, reform of defense forces, management tools.*

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Sverhunov O. O., *Ph.D of Engineering, Associate Professor*
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GLOBAL TRENDS IN BUILDING OF THE STATE POLICY AT IMPORTS OF ARMS IN CRISIS

Changes in the development of mechanisms for the implementation of the state policy for the import of arms have been analyzed in recent years as a result of global changes in the sphere of military-technical cooperation between states, as well as the existence of global economic, financial and political crises. A methodological approach is proposed to assess the effectiveness of state policy in the import of weapons, which is based on the method of expert assessments. The most important components of political, military-technical and economic mechanisms have been identified in the implementation of state policy for the import of arms in the sphere of military-technical cooperation between states.

ARMORED VEHICLES

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Shabitskiy V. R.
(615 military establishment Ministry of defense of Ukraine, Kyiv),
Slivinskiy O. A., *Ph.D. in Engineering Science, Associate Professor*
(Department of Welding KPI of I. Sikorsky, Kyiv)
Hanyukov V. A.
(military unit A2192, Gorodok)

NUMERICAL SIMULATIONS OF HOMOGENEOUS PENETRATION OBSTACLES PROJECTILES WITH DIFFERENT FORM OF NOSE

The article presents the results of numerical simulations of homogeneous penetration obstacles projectiles with different form of nose. Determined stability, convergence and error solution using numerical models compared with known experimental data.

ARTILLERY WEAPONS & SMALL ARMS

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RESEARCH BLAST MINES IN THE BARREL 120 MM MORTAR

The paper presents the results of numerical simulations blast mines in the barrel mortar and quality of experimental verification. The article is to study the impact and nature of mines blast mortar barrel with the use of numerical simulations and experimental testing them for use during the examination to determine the reasons for rupture of the barrel mortar. The study revealed the characteristics of destruction barrel mortars at undermining it one or two pounds. The observed fracture barrel mortar with numerical simulations and full-scale disruption in the area allows for destruction set the number of mines that exploded in the barrel that can be used during the examination to determine the reasons for rupture of the barrel mortar.

Keywords: *numerical simulations, 120 mm mortar, destruction barrel, blast mortar mines*

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Kolomiitsev O. V., *Ph.D. in Engineering Science, Senior Research Fellow,*
Herasymov S. V., *Doctor of Engineering Science, Senior Research Fellow,*
Chumak B. O., *Ph.D. in Engineering Science, Associate Professor*
(Ivan Kozhedub Kharkiv University of Air Force, *Kharkiv*)

METHOD OF ESTIMATION OF VALUE ERRORS COEFFICIENT OF FORCE OF HEAD-RESISTANCE OF PROJECTILE ON RESULTS OF EXTERNAL TRAJECTORY MEASURING

The method of estimation of error of calculation of values of coefficient of force of head-resistance of projectile, external trajectory measuring got with the use of results is worked out. Thus, speed and acceleration are calculated on the method of cube polynomials of the virtual systems of coordinates. The comparative analysis of estimations of sizes of instrumental errors that is got on results the external trajectory measuring of projectile the different stations is conducted.

Keywords: *instrumental errors, coefficient of force of head-resistance, station of the external trajectory measuring of projectile.*

RADIO-TECHNICAL FACILITIES

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ANALYSIS OF ESTIMATION METHODS FOR CONTROL AND DATA CHANNELS IN AIR DEFENSE SYSTEMS

The article analyzed the known methods of assessment of the control and data channels in air defense systems that operate in conditions of active electronic suppression. The advantages and disadvantages of the known methods are analyzed.

Keywords: *electronic environment, intentional interference, air defense, methods of analysis.*

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Honchar R. O., *Ph.D. in Military Sciences*
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MODELING OF THE PROCESS OF FORMATION OF AN ELECTROMAGNETIC FIELD BY SUPERCONDUCTING FRACTAL FREQUENCY-SELECTIVE GRATINGS IN THE COMPOSITION OF FLAT TWO-MIRROR ANTENNAS

The results of numeral researches are presented in the article of multifrequency, frequency-electoral, fractal superc surfaces, obtained by means of mathematical model of multi-layered electrodynamic structure of flat bi-periodic grates of elements in composition two-mirror aerials.

AIRCRAFT ARMAMENT & FACILITIES

Voitenko S. D., *Ph.D. in Engineering Science, Senior Research Fellow,*
Zholobov O. V., *Ph.D. in Engineering Science*
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SUBSTANTIATION OF FUNCTIONAL DESIGN OF THE PROMISING SUSPENSION CONTAINERS WITH OPTICAL-ELECTRONIC INTELLIGENCE

The following article is about experience of use of suspension containers with optical-electronic intelligence in military aircrafts of leading countries. The relevance of development and procurement of containers for military forces of Ukraine have been determined. Functional scheme for long-term container for needs of military forces of Ukraine has been built.

UAV

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(National Aviation University),
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Kostyna O. M., *Ph.D,* associate professor
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MOVEMENT OF THE MULTI AGENT SYSTEM IN POTENTIAL FIELD

The article deals with the movement of a multi-agent system consisting of a limited number of UAVs. The multi-agent system includes a lead agent and several agents-members of the group. The motion of this system occurs along a trajectory, which is determined by the initial conditions, its mathematical model and obstacles on the route. Only the leader of the group knows the ultimate goal of the movement. The motion of this structure is considered in the potential field, which is determined by the forces of attraction and repulsion and is created by control signals by measuring the distances to the nearest neighbors. This allows the UAV group to consider an aggregate that has some size and to describe its motion the system of differential equations of second-order. In this paper, the stability conditions of such motion are investigated, and the proposed approach is modeled.

Keywords: *group control, potential field, UAV, control law*

COMMUNICATIONS MEANS

Shefer O. V., *Ph.D. in Engineering Science,* associate professor
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THE PROSPECTS AND PECULIARITIES OF PLASMA WITH HOLLOW CATHODE USING FOR SATELLITE TELECOMMUNICATIONS NOISE STABILITY INCREASE

In this article the main advantages and the peculiarities of artificially created plasma environment using are shown with the purpose of compensation of the external plasma membrane for the increase of satellite telecommunications noise stability. The overall pattern of effect is set in the plasma hollow cathode for the creation of noise stability environment, which depends on the conditions of energy's fast electrons creation during their oscillatory motion, positive ions, fast neutral particles, metastable atoms and photons.

NAVY ARMAMENT & EQUIPMENT

Leiko O. H., *Doctor of Engineering Science*
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Derepa A. V., *Ph.D. in Engineering Science,*
Kocharian O. O., *Researcher*
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ACOUSTIC PROPERTIES OF INFORMATION HYDROACOUSTIC SYSTEM «MARINE ENVIRONMENT-SURFACE VESSEL-HYDROACOUSTIC STATION» AND WAYS TO INFLUENCE THEM

The paper presents the results of studies of acoustic features of arrangement of hydroacoustic information on underwater situation in the marine environment, acoustic features of a surface vessel as a carrier of facilities for obtaining hydroacoustic information on underwater situation, acoustic features of sonar armament as the primary source of obtaining hydroacoustic information in the underwater surveillance system, the possibility of influencing them with the aim to improve the efficiency of the considered information hydroacoustic system has been analyzed.

Rozhonayev S. N., *PhD in Engineering Science, Senior Research Fellow,*
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INCREASING INFORMATIVITY AND INVARIANCE OF CLASSIFICATION EVIDENCES OF RADAR SIGNALS THAT WERE REFLECTED FROM SHIP

Research was performed in order to increase the effectiveness of classification and main target isolation by radar sensors taking into account the ship aspect ratio while exposure by radar signals.

Keywords: *effective echoing ratio, ship, invariance, amplitude, pulse duration.*

PRODUCTION, MODERNIZATION, MAINTENANCE

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METHODOLOGY OF THE SUBSTANTIATION OF THE TACTICAL AND TECHNICAL REQUIREMENTS TO TECHNICAL RECOVERY MEANS

The article proposes a methodical approach to the development of the tactical and technical requirements for technical means of weapons and military equipment recovery, which allows substantiating the development tendencies and designing principles of mobile means of maintenance and repair of weapons and military equipment.

UNCONVENTIONAL WEAPONS

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FEATURES OF CONSTRUCTION OF DEVICE FOR FORMING THE SEQUENCE OF POWERFUL ELECTROMAGNETIC RADIATIONS IN SYSTEMS OF LIMITED VOLUME

The concept of construction, formation and stages of triggering the element of the device which forms the sequence of impulse actions considering its disposition in the limited volume systems is studied and displayed in the article.

Keywords: *powerful electromagnetic radiation, explosive magnetic generator, electrically exploding conductor, secondary breakdown of detonation products, fast electrical explosion of conductors, commutator, impulse sequence generation device.*