

MATEMATICKÉ MODELY SPRÁVANIA SA DOPRAVNÝCH PÁSOV

MATHEMATICAL MODELS OF CONVEYOR BELTS BEHAVIOR

Štefan BEREŽNÝ, Anna GRINČOVÁ

Abstract: Today, belt conveyors are inseparable part of goods and material transportation in civil and military aviation and in other industry and military actions. Concurrent, higher qualitative demands are put on this way of transportation – disruption resistance. Disruption resistance of belt conveyors is classified as ability of bend conveyor to absorb energy of material falling on the belt, i.e. to absorb disruption energy by deformation work of the belt conveyor absque hoc damaging it [2]. If the energy of disruption is higher than the ability of belt conveyor and its supports to absorb this energy, bend conveyor is damaged, namely its upper coating layer by cross and lengthwise scratches, stabs or disruptions, where framework of the belt conveyor is damaged [3]. In this article we discuss mathematical model construction, on the base of which the critical disruption values for each belt conveyor are possible to identify.

Keywords: Conveyor belt, belt rip, belt testing, optimization, approximation, modelling.

VYUŽITIE FMCW RÁDIOVÝŠKOMERA NA ZVÝŠENIE BEZPEČNOSTI LETOV

ANOTHER WAY OF USING FMCW RADIO ALTIMETER TO INCREASING FLIGHT SAFETY

František KMEC

Abstract: This article describes another opportunity of use current frequency modulated continuous wave (FMCW) radio altimeters for improvement flight safety. The use of additional circuit, connected to current FMCW radio altimeter, allows to signal possible collision of aircraft with terrain, and to increase flight safety at low altitudes, especially over hilly terrain and under bad weather conditions.

Keywords: FMCW radio altimeter, flight safety, collision of aircraft with terrain.

NOVÝ PRÍSTUP K VÝRAZNEJ REDUKCII METODICKEJ CHYBY SÚČASNÝCH FMCW RÁDIOVÝŠKOMEROV

NEW WAY TO SIGNIFICANT REDUCTION OF METHODOLOGICAL ERROR OF CURRENT FMCW RADIO ALTIMETERS

František KMEC

Abstract: The paper presents an absolutely new way of determining altitude through spectral analysis of the differential signal of the frequency modulated continuous wave (FMCW) radio altimeter, to enable significant reduction of methodical error in measuring low altitude. The starting point for the analysis was a hypothesis on the explicitness of dependence of the frequency spectrum of the FMCW radio altimeter differential signal on the altitude that enables making use of this dependence in achieving more exact altitude measurement. To prove the correctness of the initial hypothesis, a mathematical simulation has been chosen as a tool.

Keywords: FMCW radio altimeter, differential signal, spectral analysis, methodical error.

MERATEĽNOSŤ ÚROVNE FYZICKEJ OCHRANY PRVKOV KRITICKEJ INFRAŠTRUKTÚRY

MEASURABILITY OF THE PHYSICAL PROTECTION LEVEL OF THE CRITICAL INFRASTRUCTURE COMPONENTS

Tomáš LOVEČEK

Abstract: Property only on the basis of contractual requirements of the insurance companies or on the basis of general standards in the field of safety of life as well as of property. However, in practice there is not a tool or methodology, which would enable to assess the level of protection of these entities on the basis of scientific methods. Therefore it is a social requirement to create general mathematical models by means of which it would be possible to specify demonstrably efficiency and effectiveness of protection models.

Keywords: Critical infrastructure, physical protection system, effectiveness, efficiency, quantitative parameters.

ZVÝŠENIE PRESNOSTI MERANIA VÝŠKY LETECKÉHO RÁDIOVÝŠKOMERA ZNÍŽENÍM ÚROVNE JEHO METODICKEJ CHYBY

INCREASING THE ACCURACY OF ALTITUDE MEASUREMENT USING AIRBORNE RADIOALTIMETER BY REDUCTION LEVEL ITS METHODOLOGICAL ERROR

Miloš SOTÁK

Abstract: The paper describes the method of low altitude measurement using airborne radioaltimeters operating with frequency modulation. The current radioaltimeters evaluate altitude by way of direct measurement of the differential frequency. The method is substantially influenced by the methodical error introduced into measurement as a result of discrete processing of the differential signal. It is to mean that with the measured altitude changing continuously the altimeter data do not change continuously but discretely - in increments. The fundamental idea of evaluating the altitude by way of this new method consists in the evaluation of the differential signal period, which also carries information on the measured altitude, but continuously changing with altitude. To verify this new method, the RV-UM Radioaltimeter was subjected to an experiment. The results have proven the correctness of the new method whereby the accuracy of this radioaltimeter has increased substantially, from the original $\pm 4,4$ m stated by the manufacturer to $\pm 0,6$ m achieved through the new method.

Keywords: Radioaltimeter, methodical error, period measurement, differential frequency.

PREDBEŽNÁ IDENTIFIKÁCIA ORGANICKÝCH ZLÚČENÍN FOSFORU

PROVISIONAL IDENTIFICATION OF ORGANIC COMPOUNDS OF PHOSPHOROUS

Štefan BOVA, Pavel PULIŠ, Szabolcs BALOGH

Abstract: Provisional and confirmed identification of chemical weapon agents, toxic industrial chemicals and mid spectrum agents in crisis situations can have positive influence for process of planning and realization of countermeasures, if there are results of identification in time available. In the present time organic compounds of phosphorous are highly important too, especially G-agents not only in term of their possible military usage, but also in term of misuse by terroristic and criminal groups. Our workplace has new modern mobile chemical laboratory that is to be used for this type of identification. Determination of detection limits for analyzed agents, but also recovery of authentic identity evidence about individual analyzed agents is important factor for operation in Deploy able CBRN Analytical Laboratory. This study deals with identification of most dangerous organophosphorous compounds in group G by gas chromatography with mass spectrometry. Results of measuring for selected agents type G in air and sand (representation of soil compound) samples were statistically evaluated. The direct method of air sampling with immediately GC/MS and the extraction method by heating nitrogen in Head Space with immediately GC/MS were used. This method allowed for rapid identification of G agents on the field.

Keywords: Provisional Identification, Confirmed Identification, Unambiguously Identification, Gas Chromatography, Mass Spectrometry, Electron Impact Ionization, Limit of Detection.

EURÓPSKA BEZPEČNOSTNÁ A OBRANNÁ POLITIKA VO SVETLE LISABONSKEJ ZMLUVY

EUROPEAN SECURITY AND DEFENSE POLICY IN THE LIGHT OF THE LISABON TREATY

Vojtech JURČÁK, Milan LABUZÍK

Abstract: The topic of this article is focused on the European Security and Defence Policy (ESDP). ESDP is a component of the Common Foreign and Security Policy (CFSP). The dynamics of the ESDP development influences activities of the global world, which are described in this article. The Lisbon Treaty is the milestone, which brings a new vision in the finding solutions of CFSP.

Keywords: European Union, Lisbon Treaty, Petersber tasks, European Security Strategy, Common Foreign Security Policy (CFSP), European Security and Defence Policy (ESDP), operation of the international crisis management, mission of the European Union, peacekeeping, peacemaking, organization structure of ESDP

SEKURITOLÓGIA V PROSTREDÍ LETECKEJ DOPRAVY PRE BEZPEČNOSŤ A OCHRANU OSÔB A MAJETKU

SECURITOLOGY IN THE ENVIRONMENT OF AIR TRANSPORT FOR SECURITY AND PERSONAL AND PROPERTY PROTECTION

Miroslav KELEMEN, Radovan SOUŠEK, Pavel NEČAS, Marián MESÁROŠ

Abstract: Historia magistra vitae, she bring us to the knowledge, that the aviation is as safe as our personnel is educated. Experience and knowledge are generally utilizable and they present the base of our security science and research into the security management, personal and property protection in the field such as transport too.

Keywords: Securitology, ergatic system, aim and object of safety management research in the transport.

INDIVIDUÁLNA BEZPEČNOSŤ AKO PSYCHOLOGICKÝ PROBLÉM

INDIVIDUAL SECURITY AS A PSYCHOLOGICAL PROBLEM

Miroslav KMOŠENA

Abstract: The article is focused on theoretical analysis of individual security in psychology. Author uses approaches of particular psychological theories representatives in individual security and looks for possibilities to transform it into the content security as a science. He represents individual security as a need of human, cognitive approach of individual security, individual security as a part of personality structure and connection of individual security with questions of safe strategies to manage endurance situations. Author mentions individual plane of security is in psychology as a science often illustrated based on interaction human and environment.

Keywords: Individual security, personality, need of security and assurance, security perception, coping.

SOCIÁLNE POZÍCIE A ROLY ŽIEN V OZBROJENÝCH KONFLIKTOCH A UDRŽIAVANÍ BEZPEČNOSTI A MIERU

SOCIAL POSITIONS AND ROLES WOMAN IN MILITARY CONFLICTS AND ACHIEVING SECURITY AND PEACE

Mária MARTINSKÁ

Abstract: Women find themselves in various positions during armed conflicts. They are either the victims, meaningless tools for committing violence, nurses or combatans. Social trends show, that they will play a more active role in achieving peace, in the future.

Keywords: Armed violence, conflicts, multiculturalizm, women, position of women during armed conflicts.

OZBROJENÉ SÍLY SLOVENSKEJ REPUBLIKY AKO TYP SOCIÁLNEJ ORGANIZÁCIE

SLOVAK ARMED FORCES AS A TYPE OF SOCIAL ORGANIZATION

Jozef MATIS

Abstract: The author in the article presented problem perception of the Slovak armed forces as a type of the social organization. Accent is lying on analysis the basic problem, that related with to solutions questions.

Keywords: Organization. Formal organization. Bureaucracy. Military reform. Professional armed forces. Manager. War. Contemporary war. Military organization structure.

THEORETICAL ASPECTS OF ANALYSES OF MOBILE PHONES ELECTROMAGNETIC RADIATION

TEORETICKÉ ASPEKTY ANALÝZY ELEKTROMAGNETICKÉHO VYŽAROVANIA MOBILNÝCH TELEFÓNOV

Zdeněk MATOUŠEK, Jozef JAKUB, Pavel BUČKA, Mikuláš ŠOSTRONEK

Abstract: In the article there is presented a basic mathematical apparatus for estimation of electromagnetic radiation of mobile phones in terms of actual European and Slovak standards. There are presented some results of analyses and recommendations for human health prevention when one uses a mobile phone which is an integral part of our everyday life.

Keywords: Mobile phone, electromagnetic radiation, human health, humane organism, Global System for Mobile Communications, Specific Absorption Rate, mobile straight effect.

STANOVENÍ PÁSEM OHROŽENÍ ÚNIKY NEBEZPEČNÝCH LÁTEK Z PŘEPRAVY NEBEZPEČNÝCH LÁTEK A JEJICH MODELOVÁNÍ

ASSESSMENT AND MODELLING OF EXPOSURE ZONES BY TRANSPORT OF DANGEROUS MATTERS

Jan NOVÁK, Radovan SOUŠEK, Miroslav KELEMEN

Abstract: In this article there are presented new procedures and methods applied to calculation of dangerous substance exposure solved in project BIOTRA.

Keywords: Ecological risks, dangerous substance, exposure, probit function, bandwidth.

DETERMINATION OF MUSTARDS IN AIR BY TRISTIMULUS COLORIMETRY

Vladimír PITSCHMANN, Emil HALÁMEK, Zbyněk KOBLIHA, Ivana TUŠAROVÁ

Abstract: The aim of the present study is to describe a method for determination of concentration of mustards in air, based on absorption of the toxic vapors in a suitable solution and application of a chromogenic reagent deposited on an indication support. As chromogenic reagent we made use of 4-(*p*-nitrobenzyl)pyridine. Gaseous sample of HD was absorbed in methanol whereas HN-3 was applied in the form of aqueous solution. The reaction was performed on an indication tape and the detected compounds generated a blue coloration that was evaluated by tristimulus colorimetry (CIE-L*a*b* system). The method can determine at least 1.6 mg.m⁻³ of HD on collecting a gaseous sample at a rate of 1 dm³.min⁻¹ for 10 minutes, determination of HN-3 is more sensitive.

Keywords: Air analysis, mustards, 4-(*p*-nitrobenzyl)pyridine, tristimulus colorimetry, CIE-L*a*b*.