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SMUGGLING ON MARITIME AND RIVER WATERWAYS

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ABSTRACT

Ty a recent paper, Constantin Tanase appreciates that on maritime and river waterways, i.e. in shipping, smuggling has always found an environment conducive to its development and prosperity. Being a fraud connected to the activities of trade, it is easy to spot "the opportunities" offered to this phenomenon by the travel by sea or rivers from a port to another, from one country to another.

Keywords: *Maritime smuggling, war contraband.*

RULES REGARDING THE NAVIGATION ON THE TERRITORIAL SEA AND IN ROMANIAN PORTS

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ABSTRACT

The rules of navigation in the territorial sea and ports are set by the Romanian State in shipping, in accordance to national regulations and international agreements and conventions to which Romania is party. The supervision and control of navigation on roadsteads and Romanian sea ports are exercised by the Romanian Naval Authority by port captains. The access of maritime and inland waterway vessels, whatever flag they fly, in the Romanian ports and inland waterways is free and non-discriminatory [art. 17 of Ordinance no. 42 / 1997 (r)].

Keywords: *Navigation, the right to visit, vessels in danger.*

SAFETY IN PORT AND ON INLAND WATERWAYS

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ABSTRACT

The coordination, supervision and management of vessels in the traffic control area are carried out by the Port Control. Since their entry into the traffic control area, vessels are required to comply with Port Control directives. Port Control directives take precedence over any other provision and they are binding on all vessels in the traffic control area. The restriction or the prohibition of navigation in certain areas will be communicated in due time by notice to navigators. The maneuvers in seaports are performed only with the approval of harbor masters.

Keywords: *Port Control, arrival to and departure from ports, maritime vessels*

QUANTIFIED INVESTIGATION OF NAVIGATION OFFICERS' FATIGUE RELATED ERRORS ON SHIPS

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ABSTRACT

Maritime industry is still a human-centered industry in spite of latest technologies which has developed for reducing marine accidents. Human based errors cause marine accidents more than equipment based problems do. These accidents cause catastrophic consequences about human life and marine environment. Fatigue of navigation officers plays effective role on these human-based errors and marine accidents. There are several factors that effect navigation officers' fatigue. In this study, relationship between fatigue of navigation officers and marine accidents will be examined; factors which are affecting fatigue of navigation officers determined with SWOT (strength, weaknesses, opportunities and threats) analysis method and weighting of the factors determined by using AHP (Analytic Hierarchy Process) Method. With this analysis, strategic action plans were developed for minimizing fatigue related human errors on-board taking into account this SWOT factors and the weighting factors.

Keywords: *SWOT-AHP, Fatigue, Navigation Safety*

CONSIDERATIONS ON THE FINANCIAL RISKS IN THE SHIPPING INDUSTRY¹BATRINCA GHIORGHE, ²BURCA ANA-MARIA^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

In general, business-risk management is concerned with the possible decline in the value of a shipping company due to an event, or a change, in any of the factors that affect its value. Fundamentally, the value of a company depends on the expected net cash flows from its operations. Therefore, any factor that may have a negative impact on the expected net cash flows is identified as a risk. Due to the capital-intensive nature of shipping and the fact that most vessel acquisitions are financed through term loans priced on a floating-rate basis, unanticipated changes in interest rates may have an adverse impact on the assets and liabilities of a company and can lead to severe liquidity problems and cash-flow mismatch, especially given the business-cycle dynamics of shipping markets. Consequently, interest-rate risk measurement and mitigation is an indispensable aspect of shipping risk management.

Keywords: *risk management, hedging, forward-rate agreement, interest-rate futures, interest-rate swaps, interest-rate options*

EXPERIMENT AND THEORY REGARDING THE PIVOT POINT¹BUTUSINA PAUL, ²DINU DUMITRU^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

The purpose of this paper is to find, in open sea, where is the pivot point (as being well established in rigid body mechanics and in ship's manoeuvring theory). It is trying to find evolution of pivot point for a classical turning under current and swell influence. Main target of the work is to correct pivot point theory as it is presented in seafarers books.

Keywords: *Pivot Point, manoeuvring ship, current, swell.*

THE GROUNDING OF TWO CARGO SHIPS NEAR THE ROMANIAN BLACK SEA COAST. METEOROLOGICAL CONDITIONS ANALYSIS

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ABSTRACT

The aim of this study is to analyze the meteorological conditions at sea level and in the middle troposphere, during a violent storm in December 2009. The analysis is based on pressure and temperature maps, on the meteorological data recorded by the onshore and offshore weather stations and on the outputs of the Alaro simulation model. The grounding of a cargo vessel of 1725 dwt on the submerged beach south of Sulina channel the 16.12.2009 and of another cargo vessel of 3025 dwt, north of Sulina channel the 17.12.2009 occurred during this storm event. The events reconstruction, based on media reports and, partly, on the testimonials of a crew member, emphasizes other causes connected to human nature and the importance of taking measures in order to keep the ship safe during difficult meteorological conditions.

Keywords: *storm, Black Sea, maritime accidents*

THE INFLUENCE OF THE BLOCK COEFFICIENT ON THE SHIP'S BEHAVIOR ON ITS MANEUVERS IN SHALLOW WATERS HAVING NAVIGATION RESTRICTIONS¹CUPSA OVIDIU SORIN, ARSENIE C. PAULICA¹*Constanța Maritime University***ABSTRACT**

The ships behave differently to maneuvers in shallow waters, but in general it is accepted that, in this situation, the ship's maneuverability and vitality is affected by the appearance of the bottom effect – the SQUAT effect.

There is an accumulation of factors which influence the behavior of the ship in the studied situation, and the combined influence of these factors usually determines the behavior when the SQUAT phenomenon appears.

The most important of these is the C_b coefficient (block coefficient), which is a constructive characteristic specific to each ship.

The object of the present article is to present the relationship between the value of the bottom coefficient and the way in which the trim of the ship modifies when the SQUAT phenomenon takes place.

Keywords: *block coefficient, squat, maneuvering, shallow water, trim, bow, aft*

DETERMINING THE SPEED OF THE LEVEL OF LIQUID FROM THE LOCK AT A LINEAR VARIATION OF THE FLOW FROM THE FILLING (DRAINAGE) PIPE

CUPSA OVIDIU SORIN

*Constanta Maritime University, Romania***ABSTRACT**

The lock allows the passage of the ships between the two pools, tail water and upland water, having two different levels. By using the lock chamber, the equalization of these levels is being done. In order to accomplish this, it needs to be filled (drained) with water.

Filling or draining the lock chamber with water is usually done gravitationally from or by the two pools. The watergates are fitted with filling (drainage) systems made up of pipes, gates, in-going-out-going water outlets, etc. The application of our mathematic undertaking will to establish precisely the necessary flow for a certain design requirement- the speed of the level of liquid from the lock chamber, making reference to the most common case – the filling sistem through free fall with the help of some detouring galleries of the gates.

Keywords: *lock, level of liquid, flow, variation*

IMPROVEMENT OF SERVICES IN PUBLIC ADMINISTRATION THROUGH QUALITY PLANNING

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*Constanța Maritime University, Romania***ABSTRACT**

Planning is one of the basic processes of Quality Management. Through this stage, the objectives and the path to be followed in order to achieve them is determined.

In Administration and Public Services, the aim of quality planning is to establish policies, procedures, actions and, ultimately, a system that satisfy citizens their needs and expectations. By necessity we mean the need that is evinced by an individual or collectivity, having the main purpose to satisfy it.

Keywords: *quality management, public services*

CHARACTERISTICS OF QUALITY IN SERVICES SECTOR

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Concerns in the quality of services field are more recent (20-30 years) than those of product quality (over 100 years). Service is unique in its own way. Ideal is that the service could be adapted for customers needs, depending on the level of adaptability of the provider in order to customize his services.

Services can not be stored and preserved for later consumption. Typically, services can be provided only by integrating external factor.

Compared to products, services have some features that Philip Kotler characterized by: „Although the basic service is immaterial, it can be accompanied by a material component”.

Keywords: *quality management, public services*

SOFTWARE TOOLS FOR QUAY CRANE EXPLOITATION AND TRAINING¹DRAGOMIR CRISTINA, ²BREAZU ALINA^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

One of the objectives of berth crane operations management in ports is productivity maximization of berth cranes, matched with the vessel requirement of minimizing waiting times. This paper presents several management software tools for berth crane operations in ports that are used for acquiring such an objective.

Keywords: *Quay crane, software, simulator, terminal*

**BLACK SEA SECURITY ENVIRONMENT AND ITS INFLUENCE OVER THE
ROMANIAN NAVAL FORCES PROJECTION**¹GEORGESCU STEFAN, ²ZIDARU MARIAN^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

From the ancient time Black Sea area was a transit zone for the economic, politic and strategic interests. To support this statement, there are the caravans and the antique sea lines of communications which created “the silk road,” as a linkage between the eastern and western civilizations and the numerous movements of the greatest strategists of the time with their troops from south to north and vice versa.

Keywords: *Black Sea, security, naval forces*

**PROMOTING ROMANIAN MARITIME INTERESTS IN ACTUAL GEOPOLITICAL
CONTEXT**¹GEORGESCU STEFAN, ²SORESCU FLORIN^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

The subject of this presentation is to emphasize the intrinsic relationship between Romania and Black Sea, taking into consideration geopolitical issues. From this point of view it is presented Romanian interests regarding Black Sea and the extended region of Black Sea, taking into account the fact that it doesn't represent a conjunctural or a historical issue or a consequence of actual geopolitical evolutions. In order to sustain and promote these interests it is much and much stressed the idea that Romania has to become a regional maritime power. This represent a condition for promoting national interests in Black Sea region.

Romanian interests in Black Sea region can be compeled by risky economic, military-political and military factors. Promoting our interests in Black Sea region, Romania becomes a factor of stability in the region, contributing at the same time to a stability and security climat, both in Black Sea region and in the extended region of Black Sea.

Keywords: *Black Sea, security, naval forces*

THE ACCESS OF FOREIGN MILITARY VESSELS IN TERRITORIAL AND PORTUARY WATERS OR IN COMMERCIAL PORTS

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ABSTRACT

According to art. 19 of Law no. 17/1990 regarding the legal status of inland and marine waters, the territorial sea, the contiguous zone and the exclusive economic zone of Romania, in the territorial sea, the inland and marine waters and ports of Romania, the access of any vessel, which has nuclear, chemical weapons on board or other weapons of mass destruction or which carry such weapons or ammunition for them and any other goods or products prohibited by Romanian laws, of is banned. According to art. 20 of the same Law, the foreign nuclear-powered vessels can enter ports or roadsteads only with the prior approval of the competent Romanian authorities, which will be requested at least 30 days before their arrival.

Keywords: *Territorial waters, maritime and river ports, civil and military vessels.*

PORT PRACTICES

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ABSTRACT

Commercial practices are practices or rules applicable to contractual relations between the participants to international trade activities. Commercial practices require a determined objective element of a particular practice, attitude or behavior. They are characterized by: continuity, consistency and uniformity and require duration, repeatability and stability. Depending on how many partners apply them, practices differ from the habits established between certain contracting parties.

Keywords: *Port practices, conventional practices, normative practices.*

THE SYSTEMATIZATION OF MARITIME AND PORT LEGISLATION

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ABSTRACT

Professors I. Ceterechi și M. Luburici stated that, in general, a classification of law systems according to the criterion of law is a historic and fundamental classification and it represents the key to understanding the law in its historical evolution. A significant influence on the formation of the legal systems of Western countries had some of the oldest systems – the religious systems and "the canon law". Following Antony Brunetti's systematization, in terms of historical evolution and of the influence more or less exercised by the French Code of 1807, the maritime legislation is grouped into three categories.

Keywords: *The Anglo-American system, the Roman-Germanic system.*

**LOCAL HORIZON ENVIRONMENTAL KNOWLEDGE IN CONSTANTA CITY
BY PRACTICAL APPLICATIONS ON THE BLACK SEA SHORE**¹NECULA LILIANA, ²BOSTINA ALINA¹*“Traian” High School Constanta;* ²*Constanta Maritime University, Romania***ABSTRACT**

A special importance in the study of geography is on the local horizon environmental knowledge, the surrounding reality, as human and natural potential socio-economic offer important resources which support the teacher and students but by their direct observation and analysis, can be easily integrated and exemplified in the geography lesson. Nature is the medium closest to the student's familiarity with the geographical space..

Students are eager to know more about how develops the local environment and the near horizon environment.

In this paper we proposed to familiarize students with the geography of the near horizon, as well as capacity building, skills: orientation, observation, analysis.

Keywords: *local horizon, practical application, knowledge, landscape.*

**THE SOCIO-ECONOMIC IMPACT GENERATED BY THE IMPROVEMENT OF
NAVIGATION CONDITION ON THE ROMANIAN - BULGARIAN COMMON SECTOR
OF THE DANUBE**

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ABSTRACT

The Danube River in Romania and Bulgaria is an important section of the Pan-European Transport Corridor number VII. The river connects the Black Sea with the hinterland from Romania and Bulgaria to Hungary, Austria, Germany, etc. However, in the periods of summer–autumn, the water flows are decreasing considerably on this river section, resulting in difficult navigation conditions. In the main branch of the Danube, the minimum depth for navigation is not met everywhere, resulting in dangerous navigational conditions and economic uncertainty about this transport route. The reasons for this very unfavourable situation for navigation are mainly related to morphological and hydrological phenomena. The project named "Technical Assistance for Improvement of Navigation Conditions on the Romanian – Bulgarian common sector of the Danube and accompanying studies" is part of the more global Danube navigability project in order to improve the Pan-European Corridor no. VII as it aims to improve the navigability of the Danube River in such a way that it will answer to the needs of the national transport policy of Romania as well as the countries' international commitments. The impact on the socio-economic environment will be analysed for the following section on the Danube River: Iron Gate II to Romanian/Bulgarian border at Calarasi – Silistra, where previous studies have identified a number of specific navigational constraints. After completing the investment works in the sites from critical sectors for navigation, the impact will be positively, both from economic and social point of view. Positive effects begin to occur during the construction period when the works are finalized in each site. Carrying out the proposed works contribute to fulfil the obligation from the Convention on navigation regime on the Danube, which provides the commitment of the Danube states to maintain their sectors on the Danube, under navigability conditions for inland ships, and to execute the works necessary to ensure and improve the navigation conditions.

Keywords: *Pan-European Transport Corridor no. VII, navigation improvement works, the impact on the socio-economic environment*

THE ROLE OF MOBBING IN GENERATING HUMAN ERRORS IN MARITIME INDUSTRY

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Bullying in the workplace is a serious problem for many workers, employers and totally for organizations. It prevails in both private and public organizations, and finds its victims among men and women as well as among managers and workers alike.

Keywords: *bullying, human error, psychological problems, working climate*

**THE OPERATIONAL SCIENTIFIC RESEARCH.
THE TESTING OF SPECIFIC PHYSICAL TRAINING OF THE NAVAL STUDENTS AND
THE STATISTICAL PROCESSING OF THE RECORDED RESULTS**

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ABSTRACT

The present work briefly shows, the results of a larger research we made on the naval students who followed an experimental methodological plan for their specific physical training, in order to increase the level of their efficiency and their performances according to the physical and psycho-motional requests aboard ships, during good weather as well as when bad, stormy weather over the seas. The results we obtained are presented here in their short form, because we do not have room enough, showed that the improving experimental intervention proved to be extremely positive, modifying all previous concepts expressed so far, in the methodology of the naval students physical and pshycho-motional training.

Keywords: *Specific physical training, specific training, applicative swimming, testing, professional-applicative performance, pulling the rope while swimming, rowing in a single person boat, statistical processing, etc.*

**SCIENTIFIC APPLIED RESEARCH.
A PATTERN OF A CORRELATIVE ANALYSIS OF THE PHYSICAL TRAINING
PARAMETERS TESTED ON NAVAL AND MARINE STUDENTS**

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ABSTRACT

The applied scientific activity in the field of the pedagogical experiments on naval and marine students were widely extended and very complex. In our paper we'll refer only to the final part of our scientific investigation action, mainly to the correlative analysis of the investigated data, as a result of our pedagogical intervention in order to complete the general education and training of the young navigators to be. So, we'll present here *the analysis of their longitudinal evolution and the statistical indicators of their correlation - analysed in different moments of their phases of the research - the correlative analysis between the statistical investigated indicators inside the final testing on experimental group, as well as the correlative analysis between the group of tests applied on the witness and experimental students' groups*. We consider these directions presented here are quite sufficient to show the complexity of our scientific action.

Keywords: *Statistical correlation, scientific investigation parameters, co-relation coefficient, longitudinal evolution, value uniformity, appreciation scale, co-relative matrix, statistical signification, etc.*

RISK ASSESSMENT

POPA LILIANA-VIORICA

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Employers are required to ensure the health and safety of workers and other persons so far as possible, by the application of certain principles, including the evaluation of unavoidable risks and the taking of action to reduce them. Employers must ensure that measures are taken to ensure an improvement in the safety and health of workers and other persons in respect of those risks identified by the assessment. Employers must review the assessment when there is reason to believe that it is no longer valid, and make any necessary changes. Workers must be informed of any significant findings of the assessment and measures for their protection, and of any subsequent revisions made. The Company is also required to ensure that anyone working on the ship, whether or not they are directly employed by the Company, is aware of the findings of the Company's risk assessment and of the measures taken for their protection.

Keywords: *Employers, risks, workers, company, measures, assessment*

FUTURE DEVELOPMENTS ON OIL AND GAS TRANSPORT IN THE BLACK SEA REGION

STANCA COSTEL

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ABSTRACT

The Black Sea region lies at the crossroads of major oil and gas export flows to the world energy markets. Wider Black Sea area is increasingly becoming very important in terms of energy production, transportation and distribution.

Last global tendencies in energy field indicate that the Black Sea region plays an important role in formation of new energy map of the Eurasian continent, which in perspective will contain such aspects, as diversification of oil and gas supplies, new routes of transportation of energy sources to the European markets and ensuring security of these projects. The concept of wider Black Sea region implies along with Russian oil and gas resources an increasing role of the energy sources of the Caspian basin with participation of Trans-Caspian countries – Iran, Kazakhstan and Turkmenistan in regional energy projects. The Black Sea region is a strategically important region as well as for own fossil reserves.

Keywords: *Black Sea, energy, oil and gas transport, pipelines.*

**DEVELOPMENT OF RIVER INFORMATION SYSTEMS SERVICES
FOR LOGISTIC ACTORS THROUGH THE RISING PROJECT**

STANCA COSTEL

*Project Manager - Romanian Intermodal Association, Romania***ABSTRACT**

Started in February 2009 the FP7 project RISING has for objective the development and testing of new River Information Services for the European inland water transport (IWT) sector. In contrast to other RIS projects, RISING focuses exclusively on the current and future needs of the European transport and logistics sector. Through the RISING project the European transport sector is kept informed on RIS and awareness is being raised on the potentials of RIS(ING) services for transport and logistics operations.

IWT has become an integral part of co-modal transport and logistics chains. As such, the IWT sector has to comply with requirements of supply chain management (SCM). Effective transport infrastructure and high-performance intelligent Transport Systems (ITS) must be further developed which will play a key role in this process.

Keywords: *RISING, river information system, inland water transport*

THE ADVANTAGES OF MULTIMODAL INTRA-EUROPEAN TRANSPORT AS OPPOSED TO INLAND TRANSPORT

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ABSTRACT

Intra-European transport has severe economic and technological requirements. It needs ports, docking points, handling equipment adapted to the vessel used. It requires a high degree of loading, round trip if it is the case of liner voyage, due to high transport capacity. This requires a regular supply of goods, sufficient workforce to ensure loading, suggesting a national organization, and connections with terrestrial platforms. Transshipment must be quick. This paper discusses how launching a new navigation service is expensive and is often done by big ship owners who create their own supply chains. The conditions of Intra-European transport present some difficulties related to the geographical or social particularities that prevent and restrict competition. These problems such as traffic congestion, blockages of activity due to the possibility of strikes, and the rigid organization of labour duration will also be part of the analysis in this paper.

Keywords: *Multimodal Transport, Intra-European Transport, Inland Transportation.*

**INCREASING THE WEAR RESISTANCE USING THE ELECTRICAL DISCHARGE
IMPULSES**

BARHALESCU MIHAELA

*Constanta Maritime University, Romania***ABSTRACT**

The paper shows some theoretical and experimental aspects with respect to superficial hardening of the grey cast irons and carbon steels. The used process for the superficial hardening allows obtaining very high hardness (1100 HV) on the treatment surfaces, without the change of the bulk structure. The micro alloying and deposition with vibrator electrode give the superficial hardening.

Keywords: *deposition, layer, discharges, hardness, wear.*

**DYNAMIC BEHAVIOR OF THE SUPERCHARGER UNITS
WITH FREE ROTATION OF SUPERCHARGED
INTERNAL COMBUSTION ENGINES**

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ABSTRACT

The paper deals with the differential equation expressing the dynamic behavior of free rotation supercharger units used turbocharging internal combustion engines.

The mathematical model is based on knowledge of the operating characteristics of the supercharge unit to stationary regimes and their vicinity. Transfer functions are determined, functions that are used for achieving and adjusting automatic regulators which controls the operation of the system under consideration.

Keywords: *supercharged engine, transfer function, dynamic behavior, unsteady working conditions*

MATRIX TRANSFER METHOD IN STUDYING THE DYNAMIC BEHAVIOUR OF THE HIGH POWER ENGINE SHAFTING SYSTEMS¹BUZBUCHI NICOLAE, ²STAN LIVIU-CONSTANTIN^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

It is already known that the dynamic behaviour of the internal combustion engine shafting system is more complicated as usually, due to its complicated shape and to its important inertias. Several models have been developed in this purpose, but they more unrealistic as they normally consider the resonant engine rate only. The present method is an attempt to the engine behaviour at any speed, using the Matrix Transfer Method (MTM).

Keywords: *Marine engine, torsional vibration, matrix transfer method.*

A SIMPLIFIED APPROACH OF THE COUPLED VIBRATIONS OF THE TWO-STROKE MARINE ENGINE SHAFTINGS

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ABSTRACT

Due to the complicated shape of the marine Diesel engine crankshaft, its deformations also have a complex nature causing coupling phenomena among its individual vibration types: torsional, bending and axial. Up to now, the vibrations of shafting systems driven by marine Diesel engines were in general calculated by considering only the torsion and axial coupling, or by much simplifying the real formula of the crank. The present study proposes a more flexible and realistic model (based on the finite element method (FEM) for the calculation of the excitations on coupled vibrations of marine Diesel engines. The model assumes a spatial beam structure with a uniformly distributed mass and concentrated masses in specific nodes. The entire set of exciting forces (including engine and propeller excitations) has been taken into account. This model has been verified through experimental investigations. It has been concluded that the torsion vibrations are dominant relatively to the propeller thrust fluctuations in exciting axial vibrations. The method reveals that the axial vibrations reach annoying levels and occasionally indicates the necessity of axial dampers mounting.

Keywords: *Two-stroke marine Diesel, Diesel engine shafting system, coupled vibrations*

NEW APPLICATIONS OF FAST LYAPUNOV INDICATOR FOR DISCRETE-TIME DYNAMICAL SYSTEMS

DELEANU DUMITRU

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In this work our intension was to apply the Fast Lyapunov Indicator (FLI) for distinguishing between ordered and chaotic motion in some discrete-time dynamical systems. The behavior of certain discrete maps, like Gaussian map, delayed logistic map and 2-D, respectively 4-D symplectic map studied by Froeschele has been studied and conclusions regarded FLI for ordered/chaotic orbits has been considered. The simplicity of the idea and the correlation between the conclusions obtained by FLI and other tools, like phase-plane or Lyapunov exponents, show that FLI is a very consistent indicator in identifying ordered/chaotic orbits in discrete-time dynamical systems.

Keywords: *Indicator of chaos, Fast Lyapunov Indicator, maps.*

GAS TURBINES FOR MARINE APPLICATIONS. EXERGY ANALYSIS FOR AN IMPROVED GAS TURBINE

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ABSTRACT

In marine applications, the gas turbine is usually driving the propellers of ships or ferry. The major advantage of gas turbines over conventional steam turbines or marine diesel main engines is their excellent power to weight ratio. However, the increasing price of fuel determined a lot of ship companies to return to old marine diesel engines. Fuel cells power systems have attracted attention due to their potential for high efficiencies, low emissions, flexible use of fuels and quiet operation. These benefits recommend fuel cells for the marine use. This paper deals with the exergy analysis applied to gas turbines in order to assess exergy losses in processes developed in the combustion chamber and in a fuel cell replacing it, in order to measure thermodynamic efficiency. It is found that exergy losses in the improved gas turbine are lower compared to the traditional one. This means that the gas turbine having a fuel cell instead of a combustion chamber presents a lower energy demand and works environmentally sensitive.

Keywords: *gas turbines, fuel cells, marine, exergy losses.*

THE MICROHARDNESS OF CYLINDER LINERS FROM DIESEL ENGINES SUBJECTS CAVITATION PROCESS

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ABSTRACT

Destruction by cavitation of cylinder liners and of cylinder block on the Diesel engine cooling water washed surface, occurs as a result of the simultaneous action of a combination of mechanical, chemical, thermal and electrochemical processes. The main cause of damages of cavitation is the variable pressure caused by vibration cylinder liners. These conclusions were based on the direct dependency between the cavitation phenomena and the processes carried out in the engine cylinder, and also on the identity of the character and appearance sulphides (craters) on the external surface of the cylinder liners ([,1] [3]).

The cavitation damages of the cylinder liners and of the cylinder blocks of the Diesel engines, on the surfaces cooled by water, was determined, in principle, by the cylinder liner vibration. In this way, we can affirm that the cavitation resistance of the cylinder liners is dependent the vibration characteristics of cylinder liners and on the mechanical characteristics of the material alloys. This paper presents the microhardness variation of superficial layer with time testing and for some thickness of the cylinder liner. They are observed, after 100 hours time testing on stand, that the maximum reduction of microhardness value it is produced in the action plan of the excitation force, and specially for the small thickness of the cylinder liner. This problem, associated with the speciality literature data, lead to significant reduction of the cavitation resistance in the mentioned zones (the weight losses by cavitation wear increase by microhardness reduction of the cast iron

Keywords: *cavitation damages, wear, vibration, diesel engine, cylinder liner.*

MICROBIOLOGICAL DANUBE WATER QUALITY ASSESSMENT IN CERNAVODA CITY AREA

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²*National Institute of Marine Geology and Geo-Ecology, Bucharest, Romania*

ABSTRACT

During summer of 2009, water samples were collected from 6 Danube River sites around Cernavoda Nuclear Power Plant and the contents of total coliforms, faecal coliforms, intestinal enterococci, and heterotrophic plate count bacteria were analyzed. Data were used for water quality assessment and estimation of the trends of parameters.

Keywords: *water quality, nuclear power plant, Danube River, heterotrophic plate count bacteria, total coliforms, faecal coliforms, intestinal enterococci.*

COMPUTER MODELS IN ACTUAL ENVIRONMENTAL ENGINEERING EDUCATION

SUNDRI MIRELA-IULIANA

*Constanta Maritime University, Romania***ABSTRACT**

Environmental engineering is a continuous expansive profession due to the globalization of environmental problems and the internationalization of engineering education. A global scale curriculum seems to be necessary for the actual environmental engineers, but there is no common university program to apply this idea. Alternatively, a pragmatic approach is proposed based on the idea to include a basic set of environmental computer modelling tools in the education program of environmental engineer. A group of computer simulating models is presented as scientific and mathematic tool for modern environmental engineers. Some environmental models were introduced in the education programs of students in Environmental Engineering Department of Constanta Maritime University to improve their computational and simulating skills for studying the complex processes in the environment.

Keywords: *Lithosphere, hydrosphere, atmosphere, biosphere, anthroposphere, environmental engineering education, computer models.*

SCADA SECURITY IN THE CONTEXT OF CORPORATE NETWORK INTEGRATION

BOLDEA CIPRIAN

*“Politehnica” University Bucharest, Romania***ABSTRACT**

The paper presents some considerations regarding security management of Supervisory Control and Data Acquisition (SCADA) networks.

Control systems are potential targets of attack from hackers, cyber terrorists, others who want to disrupt the critical infrastructure, disgruntled or former employees and various collaborators which have worked within the organization. SCADA networks are usually seen as industrial equipment, not affected by cyber threats. Starting from the design of such a network the focus is on functionality, seldom the security not even being taken into consideration.

Since the SCADA networks tends to became more and more integrated with enterprise business networks the risks are more and more similar and this paper empathies the idea to have a unified perspective over the security. There is presented a software solution for security monitoring and management integration.

Keywords: *SCADA, control systems, cyber security, cyber threats, critical infrastructure protection, security management, Alien Vault.*

NOTES REGARDING THE REDUCTION OF PETRI NETS TRANSITIONS WITH TIMED TRANSITIONS¹BORDEA GHEORGHE, ²DINU SIMONA^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

In this paper, considering T-timed (i.e. with timed transitions) Petri Nets, one establishes rules for determination of nodes timings generated by the net reduction. As an application, a practical example of a T-timed Petri Net reduction by using these rules, is given at the end.

Keywords: *Discret Event System, Modelling, Petri Nets*

**OPTIMIZATION OF MICROSENSOR STRUCTURES
THROUGH HALL – EFFECT MODELLING**¹CARUNTU GEORGE, ²PANAIT CORNEL^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

In this paperwork, based on the model of dual Hall devices, it is analysed the operation, and are established the main characteristics for two magnetotransistors structures, realised in the MOS and the bipolar integrated circuits technology.

Using numerical simulation it is emphasized the way in which the choise of its geometry and material features, allow the obtaining of high performance magnetic sensors.

There are also presented and described the original electrical diagrams of the transducers which contain such sensors, proposing possible applications in naval installation.

Keywords: *double-collector magnetotransistors, offset equivalent magnetic induction, noise equivalent magnetic induction, signal-to noise ratio, detection limit.*

**THE DETERMINATION OF THE SEMICONDUCTOR MATERIALS
CHARACTERISTICS**

CARUNTU GEORGE

*Constanta Maritime University, Romania***ABSTRACT**

The HALL devices may be used as magnetic sensors, or as tools for exploring the properties of the applied materials.

In this paperwork are presented specific methods and adequate experimental devices that on the basis of the Hall effect allow the determination of the relevant semiconductors material characteristics, at the same time to avoid errors due to parasitic effects.

It is also emphasised the influence of the constructive imperfection of the measuring devices on the accuracy of the results.

Keywords: *Hall devices, semiconductor materials.*

ACTIVE STEERING BY 4 ELECTRIC THRUSTERS¹DORDEA ȘTEFAN, ²ZBURLEA ELENA^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

The PWM electric drives permit a smooth adjustment of the thrusters operational parameters: voltage amplitude, voltage frequencies, sequences of three generated AC voltages. All these electric parameters can be independently controlled for each electro-thruster, in order to increase the ship's maneuverability.

Keywords: *electro-thruster, E-motor, PWM electric drives*

ELECTRIC PROPULSION WITH TURBO GENERATORS¹DORDEA STEFAN, ²ZBURLEA ELENA^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

The main source of electric energy on board of a light high speed vessel is the turbo generator (gas turbine) ensuring the consumption of the electric propulsors.

A PWM electric drives permit a smooth ajustment of the propulsors operational parameters: voltage amplitude, voltage frequencies, sequences of three generated AC voltages. All these electric parameters can be independndly controlled for each electro-propulsor, in order to increase the ship's maneuverability.

Keywords: *electro-propulsor, E-motor, PWM electric drives*

NEW MAGNETIC MICROSENSOR STRUCTURES¹PANAIT CORNEL, ²CARUNTU GEORGE^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

This paperwork presents the structure, the operating conditions and the main features of some microsensors realised in the bipolar and the MOS integrated circuits technology. By using numerical simulation, the values of the sensor response for the two analysed devices are compared and it is also emphasized the way in which choosing the geometry and the material features allows getting high-performance sensors.

Keywords: *the transverse Hall current, supply-current-related sensitivity, noise equivalent magnetic i magnetic sensors, double-drain magnetotransistor, signal-to-noise ratio, Hall effect, double-collector magnetotransistor induction, carriers Hall mobility*

THE OFFSET-EQUIVALENT MAGNETIC INDUCTION¹PANAIT CORNEL, ²CARUNTU GEORGE^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

An essential parameter in the setting up of the performance of the measurement systems that uses Hall microsensors is the magnetic offset of such devices.

This paperwork presents the structure, the operating conditions, and the main characteristic for some microsensors realised in the MOS integrated circuits technology.

By using numerical simulation, the values of the offset-equivalent magnetic induction for two analysed devices are compared and it is also emphasised the way in which choosing the geometry and the material features allows getting high-performance sensors.

Keywords: *Hall current, lateral bipolar magnetotransistor double-drain magnetotransistor, offset collector current, offset equivalent magnetic induction, noise equivalent magnetic induction*

A TIME-DOMAIN MEASURING TECHNIQUE FOR ELECTRICALLY LARGE ULTRA-WIDE BAND ANTENNAS

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ABSTRACT

The single-antenna method consists of a virtual transmission between the antenna under test and its image in a conducting reflector. In a previous work we proposed a differential, time-domain single-antenna approach that was found suitable for measuring the impulse response of an ultra-wide band antenna. The approach provides accurate results within the far-field distance range. However, when measuring large ultra-wide band (UWB) antennas operating in the lower UWB frequency band for military applications, i.e., from 0.1 to 1 GHz the distance between the antenna and its image usually falls close to the lower limit of the Fraunhofer region. This paper presents an intermediate-field approach of the time-domain differential single antenna method, based on defining a normalized received signal that can be averaged over a set of distances. The proposed technique is established theoretically and validated experimentally on a cylindrical UWB monopole antenna.

Keywords: *Ultra-wide band antennas, time-domain measuring, single-antenna method.*

A COOPERATIVE METHOD FOR LOCALIZATION OF TELECOMMUNICATION INTERVENTION TEAMS IN CELLULAR NETWORKS

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ABSTRACT

In this paper we have studied a method for locate mobile telecommunication teams using hybrid time difference of arrival (TDoA) and received signal strength (RSS) measurements. To improve the positioning accuracy a cellular network cooperates with an ad-hoc network. This paper applies data fusion to combine the information of RSS and TDoA measurements to calculate a superior location estimate.

Keywords: *TDOA, RSS, cooperative positioning, data fusion.*

COMMUNITY EDUCATION PROGRAMS

CIUCUR VIOLETA-VALI

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The challenges of a modern society have important consequences on the educational system. During the last decade, the European Union has attempted to harmonize and improve educational policies, in order to give all European citizens the chance to study abroad and to learn and train on a continuous basis. This paper aims at a closer analysis of European educational programmes, such as ERASMUS, Leonardo and other lifelong learning programmes.

Keywords: *education, EU policies, mobility, ERASMUS, Leonardo, lifelong learning.*

SPREAD OF THE COMMUNICABLE DISEASES, MODELED AS DYNAMICAL SYSTEM

DRAGOESCU (CAZACU) NINA

*Industrial School of Railroad Construction, Bucharest, Romania***ABSTRACT**

This paper contains a particular point of view about the solution of an optimal control problem. The subject is the evolution of the infectious diseases modelled as a dynamical systems, when a disturbing external factor is present.

Keywords: *disease, optimal, solution.*

MINIMIZATION OF THE LINEAR FUNCTIONAL

RAPEANU ELEONORA

*Constanta Maritime University, Romania***ABSTRACT**

In this paper we presented some numerical methods for minimization problems as Variational Inequalities of Elliptic (IVE). We treated the numerical analysis, which are obtained based on abstract algorithms and concrete numerical algorithms, described by software (in Pascal).