

CONTENTS

SECTION I – NAVIGATION AND MARITIME TRANSPORT

FROM THE BARGAIN/BARGAINING “AGREEMENT” TO THE SHIPPING

1. **AGREEMENT (I)**
¹ANECHITOAE CONSTANTIN, ²COJOC MARIANA, ³GRIGORUT CORNEL,
⁴GRIGORUT LAVINIA-MARIA, ^{1,2,3}University “Ovidius”, Constanta, ⁴National Institute of
Economic Research “Costin Kiritescu”, Bucharest, Romania..... 11

2. **AGREEMENT (II)**
¹ANECHITOAE CONSTANTIN, ²COJOC MARIANA, ³GRIGORUT CORNEL,
⁴GRIGORUT LAVINIA-MARIA, ^{1,2,3}University “Ovidius”, Romania, ⁴National Institute of
Economic Research “Costin Kiritescu”, Bucharest, Romania..... 17

3. **AGREEMENT (III)**
¹ANECHITOAE CONSTANTIN, ²GRIGORUT CORNEL, ³COJOC MARIANA,
⁴GRIGORUT LAVINIA-MARIA, ^{1,2,3}University “Ovidius”, Constanta, ⁴National Institute of
Economic Research “Costin Kiritescu”, Bucuresti, Romania..... 21

4. **STUDY OF THE DESTRUCTION INFLUENCE OF ELEMENTS FROM OFFSHORE
PLATFORM LEG ON STRESS AND VIBRATION MODES**
¹DOBROT OANA-MIRELA, ²MOCANU COSTEL-IULIAN, ^{1,2}University “Dunarea de Jos”
of Galati, Faculty of Naval Architecture, Romania..... 25

5. **EXECUTION OF MARITIME PILOTAGE**
¹GEORGESCU STEFAN, ²SIVRIU GEORGIANA, ^{1,2}Constanta Maritime University,
Romania..... 31

6. **PLANNING AND EXECUTION OF BLIND PILOTAGE AND ANCHORAGE**
¹SIVRIU GEORGIANA, ²GEORGESCU STEFAN, ^{1,2}, ARSENIE C. PAULICA, Constanta
Maritime University, Romania..... 35

SECTION II – MECHANICAL ENGINEERING AND ENVIRONMET

CORROSION MEASUREMENTS AND ULTIMATE STRENGTH OF A BULK

7. **CARRIER**
¹ANDREAS IOANNOU, ²MODIGA MIRCEA, ¹Member of Royal Institute of Naval
Architecture (R.I.N.A), ²“Dunarea de Jos” University of Galati, Romania..... 41

8. **AXIAL THRUST BEARING INFLUENCE ON THE DYNAMIC BEHAVIOUR OF AN
ELASTIC SHAFT**
¹BUZBUCHI NICOLAE, ²STAN LIVIU-CONSTANTIN, ^{1,2}Constanta Maritime University,
Romania..... 47

9. **ANALYSIS OF COMPLEXE VIBRATION OF THE HIGH POWER DIESWL ENGINE
SHAFTING SYSTEM**
¹BUZBUCHI NICOLAE, ²STAN LIVIU-CONSTANTIN, ^{1,2}Constanta Maritime University,
Romania..... 53

10. **NUMERICAL INVESTIGATION OF THE INFLUENCE OF INLET PRESSURE ON
THE CAVITATING CONDITIONS INTO CENTRIFUGAL PUMPS**
¹CALIMANESCU IOAN, ²GRIGORESCU LUCIAN, ¹Saipem SpA Italy, ² Constanta Maritime
University, Romania..... 59

11.	NUMERICAL INVESTIGATION OF SWIRL INJECTOR LOX/GH₂ RATIO INFLUENCE OVER COMBUSTION CONDITIONS INTO A LIQUID ROCKET ENGINE ¹ CALIMANESCU IOAN, ² GRIGORESCU LUCIAN, ¹ Saipem SpA Italy, ² Constanta Maritime University, Romania.....	67
12.	EXPLICIT DYNAMIC SIMULATION OF A SHIP COLLISION WITH A JETTY WALL ¹ CALIMANESCU IOAN, ² GRIGORESCU LUCIAN, ¹ Saipem SpA Italy, ² Constanta Maritime University, Romania.....	75
13.	STUDIES REGARDING THE EXPLOTATION CONDITIONS INFLUENCE UPON THE ACTIVE ZONE OF THE ROAD COMPLEX FOUNDATION GROUND ¹ COSTESCU CIPRIAN, ² CIOPEC ALEXANDRA, ³ VOICU CRISTINA, ⁴ MIREA MONICA ^{1,2,3,4} Politehnica” University of Timisoara, Civil Engineering Faculty, Department of Land Communication Ways, Foundations and Survey, Romania.....	81
14.	DETERMINATION OF THE INDUCED STRESSES AT THE LEVEL OF A FLOOR USING THE FINITE ELEMENT METHOD CRISTEA ANISOARA-GABRIELA, „Dunarea de Jos” University of Galati, Faculty of Naval Architecture, Romania.....	85
15.	GAMA RAY INTERACTION IN GERMANIUM WITH GEANT4 IONICA ROMEO, University “Politehnica” Bucharest, Romania.....	93
16.	NUMERICAL ANALYSIS OF THE AERODYNAMIC FORCES ACTING UPON A KITE USED AS AUXILIARY PROPULSION SYSTEM ¹ SCUPI ANDREI-ALEXANDRU, ² DINU DUMITRU, ^{1,2} Constanta Maritime University, Romania.....	97
17.	THE NUMBER OF LAYERS INFLUENCE FOR COMPOSITE MATERIALS SUBJECTED TO FATIGUE AT THE REQUEST OF FORCE BREAKING TO AXIAL LOAD ¹ TOCU FLORENTINA, ² MOCANU COSTEL-IULIAN, ³ LEFTER SILVIU-VIOREL, ^{1,2} University “Dunarea de Jos”, Faculty of Naval Architecture, Galati, ³ SC Metchim SA Galati, Romania.....	101
18.	CONSIDERATIONS REGARDING THE USE OF THE PENETRATION METHOD IN THE GEOTECHNICAL RESEARCH OF OVERLAND COMMUNICATING WAYS ¹ VOICU CRISTINA, ² MIREA MONICA, ³ CIOPEC ALEXANDRA, ⁴ COSTESCU CIPRIAN, ^{1,2,3,4} „Politehnica” University of Timisoara, Civil Engineering Faculty, Department of Land Communication Ways, Foundations and Survey, Romania.....	105
SECTION III – ELECTRICAL ENGINEERING AND COMPUTER SCIENCE		
19.	THE STABILITY AND THE OFFSET OF HALL MICROSENSORS ¹ CARUNTU GEORGE, ² DUMITRASCU ANA, ³ DRAGOMIRESCU OVIDIU, ^{1,2} Constanta Maritime University, ³ „Politehnica” University Bucharest, Romania.....	111
20.	THE SHOT NOISE OF HALL MICROSENSORS ¹ CARUNTU GEORGE, ² PANAIT CORNEL, ³ CARUNTU IRINA, ^{1,2,3} Constanta Maritime University, Romania.....	115
21.	THE MAIN NOISE CHARACTERISTICS FOR MOS MAGNETIC SENSORS ¹ CARUNTU GEORGE, ² TAM AS RAZVAN, ^{1,2} Constanta Maritime University, Romania.....	119
22.	HALL DEVICES REALISED IN THE MOS TECHNOLOGY CARUNTU GEORGE, Constanta Maritime University, Romania.....	125

	THEORETICAL CONSIDERATIONS ON SUPERCONDUCTORS	
23.	ELECTROMAGNETISM CARUNTU GEORGE, Constanta Maritime University, Romania.....	129
24.	CONTRIBUTIONS TO THE IMPLEMENTATION OF REDUNDANCY IN ELECTRONIC SYSTEMS ¹ CIUCUR VIOLETA, ² DRAGOMIRESCU OVIDIU, ³ DUMITRASCU ANA, ^{1,3} Constanta Maritime University, ² “Politehnica” University Bucharest, Romania.....	133
25.	IMPLEMENTING OF PROGRAMMING LOGICS USING DIGITAL SEQUENTIAL ELECTRONIC EQUIPMENTS BASED ON LOGICAL FEEDBACK FROM THE MICROPROCESSOR AND MICROCONTROLLER SYSTEMS COROESCU TIBERIU, Department of Automation, Applied Informatics and Computers, University of Petrosani, Romania.....	137
26.	DEVELOPMENT SYSTEM BASED ON PROGRAMMABLE LOGIC CONTROLLER PLC-OMRON TO SAFETY DOORS STATE CONTROL OF THE SHAFT-SINKING PROCESS COROESCU TIBERIU, Department of Automation, Applied Informatics and Computers, University of Petrosani, Romania.....	141
27.	APPLICATION OF PROGRAMMABLE LOGIC CONTROLLER PLC FOR AUTOMATED WEIGHING CONTROL SYSTEM COROESCU TIBERIU, Department of Automation, Applied Informatics and Computers, University of Petrosani, Romania.....	149
28.	PREDICTION ANALYSIS OF BANKRUPTCY RISK USING BAYESIAN NETWORKS ¹ CRACIUN MIHAELA-DACIANA, ² BUCERZAN DOMINIC, ³ RATIU CRINA, ^{1,2} “Aurel Vlaicu” University of Arad, ³ Daramec srl Arad, Romania.....	157
29.	HIERARCHICAL OPTIMIZATION-BASED APPROACH FOR DYNAMIC FLEET MANAGEMENT ¹ DINU SIMONA, ² BORDEA GHEORGHE, ^{1,2} Department of Electrics, Electronics and Informatics, Constanta Maritime University, Romania.....	163
30.	ACTIVE STEERING - ELECTRIC THRUSTERS ¹ DORDEA STEFAN, ² ZBURLEA ELENA, ^{1,2} Constanta Maritime University, Romania.....	167
31.	ELECTRIC DRIVES FOR AZIMUTH PROPULSORS ¹ DORDEA STEFAN, ² ZBURLEA ELENA, ^{1,2} Constanta Maritime University, Romania.....	177
32.	UWB IMPULSE RADIO RECEIVER ARCHITECTURES PERFORMANCES ON AWGN CHANNEL FOR SENSOR NETWORK APPLICATION ¹ DRAGOMIRESCU DANIELA, ² LECOINTRE AUBIN, ³ PLANA ROBERT, ⁴ DRAGOMIRESCU OVIDIU, ^{1,2,3} CNRS; LAAS Toulouse, France, ^{1,2,3} University of Toulouse, Toulouse, France, ⁴ Politehnic University of Bucharest, Electronics, Telecommunication and Information Technology Faculty , Romania.....	185
33.	UWB RADIO LAYER MODELING PLATFORM FOR WIRELESS SENSOR NETWORK ¹ DRAGOMIRESCU DANIELA, ² LECOINTRE AUBIN, ³ PLANA ROBERT, ⁴ DRAGOMIRESCU OVIDIU, ^{1,2,3} CNRS; LAAS Toulouse, France, ^{1,2,3} University of Toulouse, Toulouse, France, ⁴ Politehnic University of Bucharest, Electronics, Telecommunication and Information Technology Faculty , Romania.....	191
34.	THE INDIRECT MEASURING METHODS OF GALVANOMAGNETIC EFFECTS ¹ DUMITRASCU ANA, ² CIUCUR VIOLETA, ³ CARUNTU IRINA, ^{1,2,3} Constanta Maritime	

	University, Romania.....	195
35.	SPREADING CODE EFFECTS ON SYNCHRONOUS CONVENTIONAL AND MMSE MULTIUSER DETECTION ALGORITHMS ¹ HALUNGA SIMONA, ² FRATU OCTAVIAN, ³ VIZIREANU DRAGOS, ⁴ CARUNTU GEORGE, ^{1,2,3} University Politehnica of Bucharest, Telecommunications Department, ⁴ Constanta Maritime University, Romania.....	199
36.	SIGNAL PROCESSING TECHNIQUES FOR SYNCHRONIZATION OF WIRELESS SENSOR NETWORKS ¹ JAEHAN LEE, ² YIK-CHUNG WU, ³ QASIM CHAUDHARI, ⁴ KHALID QARAQE, ⁵ ERCHIN SERPEDIN, ^{14,5} Texas A&M University, Electrical and Computer Eng., College Station, TX 77843-3128, USA, ² EEE Dept., University of Hong Kong, Pokfulam Road, Hong Kong; ³ Iqra University, Islamabad, Pakistan.....	205
37.	THE MAIN CHARACTERISTICS FOR HALL SEMICONDUCTOR PLATES ¹ PANAIT CORNEL, ² CARUNTU GEORGE, ^{1,2} Constanta Maritime University, Romania.....	213
38.	MAGNETIC SENSITIVE MICROSTRUCTURES ¹ PANAIT CORNEL, ² CARUNTU GEORGE, ^{1,2} Constanta Maritime University, Romania.....	217
39.	THE VERTICAL BIPOLAR MAGNETORANSISTOR AND THE MOS HALL PLATES ¹ PANAIT CORNEL, ² CARUNTU GEORGE, ^{1,2} Constanta Maritime University, Romania.....	223
40.	POTENTIAL OF THE DISCRETE WAVELET TRANSFORM IN OCEANOGRAPHY SIGNAL PROCESSING ¹ PRICOP CODRUTA, ² PRICOP MIHAIL, ¹ Department of Naval Electrotechnics, Electronics and Computer Science, Constanța Maritime University, ² Department of Naval Architecture, Naval Academy Constanța, Romania.....	227
41.	APPLICATIONS OF WAVELET ANALYSIS IN COMPRESSION OF QUASIPERIODIC SIGNALS RADUCANU MIRCEA, University “Politehnica” Bucharest, Romania.....	233
42.	STATISTICAL MODEL OF THE PEOPLE CONFIDENCE IN e-BUSINESS SERVICES ¹ RATIU CRINA, ² CRACIUN MIHAELA-DACIANA, ³ BUCERZAN DOMINIC, ¹ Daramec srl Arad Romania, ^{2,3} “Aurel Vlaicu” University of Arad, Romania.....	237
SECTION IV – MATHEMATICAL SCINCES AND PHYSICS		
43.	BORDERS CONDITIONS INFLUENCE ON THE HID LAMPS TEMPERATURE PROFILE CRISTEA MIHAIL, “Politehnica” University of Bucharest, Faculty of Applied Science, Physics I Department, Romania.....	241
44.	NUMERICAL SOLUTIONS FOR SOME BOUNDARY VALUE PROBLEMS ENCOUNTERED IN BEAM THEORY DELEANU DUMITRU, Constanta Maritime University, Romania.....	245
45.	CONCERNING AN APPLICATION OF DIRECT INTEGRATION METHODS IN MECHANICS OF CONSTRUCTIONS DELEANU DUMITRU, Constanta Maritime University, Romania.....	249
46.	EXACT SOLUTIONS OF SEVERAL WAVE-LIKE EQUATIONS BY HOMOTOPY PERTURBATION METHOD DELEANU DUMITRU, Constanta Maritime University, Romania.....	253

**FROM THE BARGAIN/BARGAINING “AGREEMENT” TO THE SHIPPING
AGREEMENT (I)**

¹COJOC MARIANA, ²CORNEL GRIGORUT, ³ANECHITOAE CONSTANTIN,
⁴LAVINIA-MARIA GRIGORUT

^{1,2,3}University “Ovidius”, Constanta, ⁴National Institute of Economic Research “Costin Kirişescu”, Bucuresti, Romania

ABSTRACT

The analysis of the legal components of the boarding agreement shows that this contract, in fact, is an individual employment contract concluded for a fixed period, with a particular suite of elements determined by very specific of the sailor profession.

The individual boarding agreement is an undefined legal concept, which incidentally regulates the meaning of "individual employment contract concluded for a fixed period" by employees who are part of the crew

Keywords: *Embarking, embarking, Collective Work, boarding personnel*

FROM THE BARGAIN/BARGAINING “AGREEMENT” TO THE SHIPPING AGREEMENT (II)

¹ANECHITOAE CONSTANTIN, ²COJOC MARIANA ³CORNEL GRIGORUT,
⁴LAVINIA-MARIA GRIGORUT

^{1,2,3}University “Ovidius”, Constanta, ⁴National Institute of Economic Research “Costin Kirişescu”, Bucuresti, Romania

ABSTRACT

The analysis of the legal components of the boarding agreement shows that this contract, in fact, is an individual employment contract concluded for a fixed period, with a particular suite of elements determined by very specific of the sailor profession.

The individual boarding agreement is an undefined legal concept, which incidentally regulates the meaning of "individual employment contract concluded for a fixed period" by employees who are part of the crew

Keywords: *Embarking, embarking, Collective Work, boarding personnel*

**FROM THE BARGAIN/BARGAINING “AGREEMENT” TO THE SHIPPING
AGREEMENT (III)**

¹GRIGORUT CORNEL, ²ANECHITOAE CONSTANTIN, ³COJOC MARIANA,
⁴GRIGORUT LAVINIA-MARIA

^{1,2,3}University “Ovidius”, Constanta, ⁴National Institute of Economic Research “Costin Kirişescu”, Bucuresti, Romania

ABSTRACT

The analysis of the legal components of the boarding agreement shows that this contract, in fact, is an individual employment contract concluded for a fixed period, with a particular suite of elements determined by very specific of the sailor profession.

The individual boarding agreement is an undefined legal concept, which incidentally regulates the meaning of "individual employment contract concluded for a fixed period" by employees who are part of the crew

Keywords: *Embarking, embarking, Collective Work, boarding personnel*

**STUDY OF THE DESTRUCTION INFLUENCE
OF ELEMENTS FROM OFFSHORE PLATFORM LEG
ON STRESS AND VIBRATION MODES**

¹DOBROT OANA-MIRELA, ²MOCANU COSTEL-IULIAN

^{1,2}*University "Dunarea de Jos" of Galati, Faculty of Naval Architecture, Romania*

ABSTRACT

In this paper, a model of platform leg has been modeled analytically using finite element program. The numerical results were compared with results from experimental test.

The scope was to obtain numerical results witch can lead to conclusions related to the behavior after destruction of some component elements of the foot. The study was also oriented on the influence of links destruction between composing elements of their own pulsations.

Keywords: offshore, stress, finite element method, experimental tests.

EXECUTION OF MARITIME PILOTAGE

GEORGESCU STEFAN, SIVRIU GEORGIANA, ACOMI NICOLETA

Constanta Maritime University, Romania

ABSTRACT

The essence of a good plan is knowing the limits within which the ship may be navigated in safety. The essential questions which the Navigating Officer must be able to answer at all times during a pilotage passage are:

Is the ship on track?

If not, where is the ship in relation to the track and what steps are being taken to regain it?

How close is the ship to danger?

How far is it to the next alteration of course?

Are the tidal streams and depths of water as predicted?

Keywords: *headmark, marks, buoys.*

PLANNING AND EXECUTION OF BLIND PILOTAGE AND ANCHORAGE¹SIVRIU GEORGIANA, ²GEORGESCU STEFAN, ARSENIE C. PAULICA^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

Blind pilotage means the navigation of the ship through restricted waters in low visibility with little or no recourse to the visual observation of objects outside the ship. The principal non-visual aid to navigation that enables this to be done is high-definition warning-surface radar, but all available nonvisual aids are employed. The organisation to achieve this is called the blind pilotage organisation, comprising a BP team, led by a BP Officer (BPO).

Keywords: *blind pilotage, blind anchorage.*

CORROSION MEASUREMENTS AND ULTIMATE STRENGTH OF A BULK CARRIER¹ANDREAS IOANNOU, ²MODIGA MIRCEA*Member of Royal Institute of Naval Architect (R.I.N.A) “Dunărea de Jos” University of Galati, Romania***ABSTRACT**

For steel construction and marine structure in particular, the corrosion can be one of the collapse causes, due to excessive diminution of strengths areas and implicit increasing of internal stresses. At present, corrosion rate is estimated on the basis of measurements on real ships, which permits to obtain the simplified empirical models. In the paper is presented some results of extensive thickness measurement that was made for a 25 year old bulk carrier and their use for determining of initial yielding, fully plastic (according Prandtl) and ultimate bending moment - in hogging and sagging conditions. The results where compare with those obtained for the newly built ship and for ship at different ages. There have also been determined the same moments for the ship having maximum corrosion according Common Structural Rules (CSR) for bulk-carriers.

Keywords: *corrosion, bulk carrier, ultimate longitudinal strength*

AXIAL THRUST BEARING INFLUENCE ON THE DYNAMIC BEHAVIOUR OF AN ELASTIC SHAFT¹BUZBUCHI NICOLAE, ²STAN LIVIU-CONSTANTIN^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

This paper presents the nonlinear dynamic behavior of a flexible shaft. The shaft is mounted in two journal bearings and the axial load is supported by a hydrodynamic thrust bearing. The coupling between the axial thrust bearing behavior and the bending vibrations of the shaft is studied in particular. The shaft is modeled with typical beam finite elements. The dynamic behaviors of the fluid supports are considered as nonlinear. The dynamic behavior is analyzed using an unsteady time integration procedure. The paper shows the coupling between the axial dynamic behavior and the bending vibrations of the shaft.

Keywords: *Thrust bearing, axial and bending vibration, flexible shafts*

**ANALYSIS OF COMPLEXE VIBRATION OF THE HIGH POWER DIESWL ENGINE
SHAFTING SYSTEM**¹BUZBUCHI NICOLAE, ²STAN LIVIU-CONSTANTIN^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

The development of new marine engine generation for minimum fuel consumption involving greater stroke/bore ratios, lower running speeds and higher combustion pressures, for lower installation and operating costs as well as for higher reliability and a very large spectrum of different shaft line arrangements largely influences the vibration analysis of a modern ship installation. The studies involved in the present paper started with the calculation for axial and torsional shaft line vibration, carried out independently from each other. In reality, these two forms of vibration are linked, since twisting the crankshaft will induce an axial deflection, phenomenon observed only with two-stroke engines. The coupling effect between torsional and axial vibration is thus subject of our research in order to be able to take it more into account in nowadays projects. An axial detuner will be then applied in order to control this coupling effect.

Keywords: *Marine engine, shaft line, coupled vibration analysis, experimental results*

NUMERICAL INVESTIGATION OF THE INFLUENCE OF INLET PRESSURE ON THE CAVITATING CONDITIONS INTO CENTRIFUGAL PUMPS

¹CALIMANESCU IOAN, ²GRIGORESCU LUCIAN

¹*Saipem SpA Italy*, ²*Constanta Maritime University, Romania*

ABSTRACT

Numerical and experimental results were presented in this study, concerning a test impeller of a centrifugal pump. From the experimental point of view, the cavitation was visualized at different Inlet Pressure values. Image processing and statistical treatment of the photographs taken at given impeller position allowed to quantify the attached and cloud cavitation extent.

A numerical model of 3D cavitating flows, based on the CFD code Fluent 6.1, has been developed to predict the cavitation behavior in our model which is considering the entire pump, the impeller and also the casing of the pump, with all its complex geometry and flow parameters. Non-cavitating and cavitating conditions were investigated. Calculations were found to be in good agreement with experimental measurements and visualisations. Experimental and numerical results concerning the pump parameters were investigated.

The overall conclusion is the obvious knowledge that the NPSH is indeed affecting the cavitation condition in the centrifugal pumps, having direct impact on the magnitude of static pressures in various locations inside the pump, but is not altering too much the velocities distributions of fluid. The results obtained show the ability of the model to simulate the main features of 3D cavitating flows in rotating machinery. The rich palette of results shown below is thoroughly investigating the flow parameters of the model.

Keywords: *FEA, CFD, Pump, Cavitation, Impeller.*

NUMERICAL INVESTIGATION OF SWIRL INJECTOR LOX/GH₂ RATIO INFLUENCE OVER COMBUSTION CONDITIONS INTO A LIQUID ROCKET ENGINE

¹CALIMANESCU IOAN, ²GRIGORESCU LUCIAN

¹*Saipem SpA Italy*, ²*Constanta Maritime University, Romania*

ABSTRACT

Swirl injectors are widely used in liquid rocket engines, gas turbine engines, diesel engines, industrial furnaces and so forth. Even though design procedure of a swirl injector is more difficult than that of an impinging jet injector, swirl injectors have many advantages, such as atomization quality, wide operation range with stability and uniform mixing efficiency. Spraying mechanism of a swirl injector is that liquid sheet is injected with the tangential velocity due to tangential entries, so liquid sheet is discharged with specific spray angle which corresponds to the ratio of axial and tangential velocity and the air core is formed. The mixture ratio of Liquid O₂ and Fuel (H₂) for such type of injectors may be throttled from 2:1, which is the upper limit for functioning for current Liquid Rocket Engines (LRE) impinging jet axial injectors, up to 10:1. This paperwork intend to numerically investigate the impact of swirl injector LOX/GH₂ ratio over combustion conditions into a LRE using state of the art numeric simulation technologies. The outcome of this work is to completely define the relation between LOX/GH₂ ratio and the combustion conditions inside the rocket engine.

Keywords: *Numeric, Swirl Injector, Ratio, Rocket, Engine, Combustion.*

EXPLICIT DYNAMIC SIMULATION OF A SHIP COLLISION WITH A JETTY WALL¹CALIMANESCU IOAN, ²GRIGORESCU LUCIAN¹*Saipem SpA Italy*, ²*Constanta Maritime University, Romania***ABSTRACT**

The International Maritime Organization (IMO) is responsible for regulating the design of oil tankers and other ships to provide for ship safety and environmental protection. Their ongoing transition to probabilistic performance-based standards requires the ability to predict the environmental performance and safety of specific ship designs. This is a difficult problem requiring the application of fundamental engineering principles and risk analysis. The serious consequence of ship collisions necessitates the development of regulations and requirements for the subdivision and structural design of ships so that damage and environmental pollution is reduced, and safety is improved. After a collision oil or other harmful substances may be spilled into the sea. It might even be possible for a ship to break apart and sink in a worst case scenario that includes failure of the structure of the ship. A numerical crash test was carried out in order to determine the aftermaths of a ship-jetty wall collision and to give hints to improve different ship structures. In combination with statistical data and determination of probabilities of the occurrence of different scenarios, safety assessment analysis can be carried out by certification agencies and administrative authorities. This paperwork develops a complete methodology for ship-to-jetty collision simulations using the explicit non-linear FE code ANSYS-LS-DYNA. The model was conceived in the explicit dynamics frame of work, the obtained results fully describing the complex phenomena associated with such catastrophic events.

Keywords: *FEA, Explicit Dynamics, Simulation, Ship, Collision, Jetty.*

STUDIES REGARDING THE EXPLOTATION CONDITIONS INFLUENCE UPON THE ACTIVE ZONE OF THE ROAD COMPLEX FOUNDATION GROUND¹COSTESCU CIPRIAN, ²CIOPEC ALEXANDRA, ³VOICU CRISTINA, ⁴MIREA MONICA^{1,2,3,4}*Politehnica” University of Timisoara, Civil Engineering Faculty, Department of Land Communication Ways, Foundations and Survey, Romania***ABSTRACT**

Road structures, indifferently of their type and composition, are strongly influenced by the quality of the embankments on which they are realized. The practice confirmed that generally between the aggravation process of the defects and improper behaviour of the foundation ground exist a mutual potential relationship, each of the two processes influencing negative the other one. It is evident that there exist a series of defects and degradations of the roads whose causes cannot include the initial influence of the natural foundation ground influence or of the filling material from which it's made of. For this reason, the depth knowledge of the embankments active zone is extremely important and useful for preventing and avoiding undesired situations generated by the foundation ground in roads exploitation and also it offers the possibility of taking some measures for quality foundation ground improvement on a depth corresponding to the active zone. This paper presents results referring to the embankments active zone depth obtained on the basis of some studies based on the analytic calculus and numeric modelling of different road structures.

Keywords: *embankment, foundation ground, active zone, road complex.*

**DETERMINATION OF THE INDUCED STRESSES AT THE LEVEL OF A FLOOR
USING THE FINITE ELEMENT METHOD**

CRISTEA ANISOARA-GABRIELA

*„Dunarea de Jos” University of Galati, Faculty of Naval Architecture, Romania***ABSTRACT**

The purpose of this paper is to verify the induced stresses of a framework element from central area of the chemical tanker ship type.

This static calculation was performed by the finite element method with Femap software as modeler and NX Nastran as solver.

Keywords: *mechanical structural, stress calculation, hogging, sagging.*

GAMA RAY INTERACTION IN GERMANIUM WITH GEANT4

IONICA ROMEO

*University "Politehnica" Bucharest, Romania***ABSTRACT**

The aim of this work is as using AIDA implementation in Geant4 to analyze some characteristics of Compton interaction of gamma ray in germanium for incident energy of photons of 1-2MeV. So we verify starting points of algorithms for tracking reconstruction, both back-tracking and forward-tracking algorithms. We have generated a set constructed with interaction points and we found that this set scale with Hurst exponent 0.48.

Keywords: *Geant4, gamma tracking, Compton scattering.*

NUMERICAL ANALYSIS OF THE AERODYNAMIC FORCES ACTING UPON A KITE USED AS AUXILIARY PROPULSION SYSTEM

¹SCUPI ANDREI-ALEXANDRU, ²DINU DUMITRU

^{1,2}*Constanta Maritime University, Romania*

ABSTRACT

Air pollution caused by marine engines has increased during the last decades due to the rapid growth of shipping and to the improper operation of both ships and port equipment.

The unconventional naval propulsion system would solve some of the pollution problems posed by marine engines operation. This system also offers substantial fuel savings.

In the paper we simulate a kite used as auxiliary propulsion system. This simulation, performed with CFD (Computer Fluid Dynamics), was made for different working conditions by varying the incidence angle and the velocity at infinity. We also calculated total aerodynamic force, which projected on the water surface, gives us the force by which the ship is being towed (the component of the ship direction movement).

Kite simulation under different working parameters and calculation of forces acting upon the ship were achieved using a fluid flow computer modeling program (Ansys 12).

This unconventional propulsion system can be applied to commercial vessels and can also be used in various water sports such as kite-surfing.

Keywords: *kite, non-conventional propulsion.*

THE NUMBER OF LAYERS INFLUENCE FOR COMPOSITE MATERIALS SUBJECTED TO FATIGUE AT THE REQUEST OF FORCE BREAKING TO AXIAL LOAD

¹TOCU FLORENTINA, ²MOCANU COSTEL-IULIAN, ³LEFTER SILVIU-VIOREL

^{1,2} *University "Dunarea de Jos", Faculty of Naval Architecture, Galati, ³SC Metchim SA Galati, Romania*

ABSTRACT

Fiberglass reinforced polyester (GRP) is the most used composite material in ship building industry and required a careful study when we talk about the mechanical characteristics and their resistance to fatigue. The main objective of this work was to study the number of layers influence for composite materials subjected to fatigue at the request of force breaking to axial load. It was observed that the tests made to fatigue and then to traction have a real influence at the mechanical characteristics. The force break on traction is much larger of unsolicited specimens than those specimens tested to fatigue.

Keywords: *Composite Materials, Fatigue, Mechanical Characteristics, Fatigue - Variable Load*

CONSIDERATIONS REGARDING THE USE OF THE PENETRATION METHOD IN THE GEOTECHNICAL RESEARCH OF OVERLAND COMMUNICATING WAYS

¹VOICU CRISTINA, ²MIREA MONICA, ³CIOPEC ALEXANDRA, ⁴COSTESCU CIPRIAN

^{1,2,3,4} „Politehnica” University of Timisoara, Civil Engineering Faculty, Department of Land Communication Ways, Foundations and Survey, Romania

ABSTRACT

In the beginning, the authors synthetically present some particularities of the geotechnical research for overland communicating ways. Next, the article presents some geotechnical investigation works conducted on two major road objectives in the Banat area (the Nădlac-Arad-Timișoara highway and the Timișoara bypass road), for which the penetration method has been successfully applied. Also contained in the article is an example of use of the penetration method for a landslide on DN57. The use of this method helped establish the sliding surface. In its conclusion, the article presents the main technical and economical advantages of the use of the penetration method in the geotechnical research of overland communicating ways.

Keywords: *geotechnical investigations, penetration method, landslide analysis, foundation ground.*

THE STABILITY AND THE OFFSET OF HALL MICROSENSORS¹CARUNTU GEORGE, ²DUMITRASCU ANA, ³DRAGOMIRESCU OVIDIU^{1,2}Constanta Maritime University, ³“Politehnica” University Bucharest, Romania**ABSTRACT**

In this paperwork is analysed the structure, the operating conditions and the main features of some magnetic microsensors structures realised in the MOS integrated circuits technology. By assimilating the MOSFET channel of almost constant depth with a Hall plate, the results obtained for the conventional Hall plates have been extended to MOS-Hall plates. In the paper is defined the stability and the offset equivalent magnetic induction for the MOS Hall plates. By using numerical simulation, the values of the sensor stability and the offset magnetic induction for the analysed structures are compared and it is also emphasized the way in which choosing the geometry and the material features allows getting high-performance sensors.

Keywords: *supply-current-related sensitivity, magnetic sensor, surface charge density, sheet resistance, oxide layer, offset voltage, offset equivalent magnetic induction.*

THE SHOT NOISE OF HALL MICROSENSORS¹CARUNTU GEORGE, ²PANAIT CORNEL, ³CARUNTU IRINA^{1,2,3}*Constanta Maritime University, Romania***ABSTRACT**

In this paperwork is analysed the structure, the operating condition, and the main characteristics for the Hall microsensors realised in the MOS and bipolar integrated circuits technolog. By using the numerical simulation the values of the signal-to-noise ratio for different structure 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: *double – drain MOS device, shot noise, signal-to-noise ratio, lateral bipolar magnetotransistor, double-collector magnetotransistor*

THE MAIN NOISE CHARACTERISTICS FOR MOS MAGNETIC SENSORS

¹CARUNTU GEORGE, ²TAMAS RAZVAN

^{1,2}*Constanta Maritime University, Romania*

ABSTRACT

The paper presents the results of research work regarding the analysis and optimization of magnetic microsensors realized in MOS integrated circuits technology.

On the basis of adequate models these have been established the noise main characteristics for MOS-Hall plates and for double-drain MOSFET magnetotransistors.

By using the numerical simulation the values of the signal-to-noise ratio and the detection limits for the two analysed structured are compared and it is also emphasized the way in which choosing the geometry and the material features allows getting high-performance sensors.

Keywords: *signal-to-noise ratio, detection limit, the transverse Hall current, supply-current-related sensitivity, noise equivalent magnetic induction, shot noise, carriers Hall mobility,*

HALL DEVICES REALISED IN THE MOS TECHNOLOGY

CARUNTU GEORGE

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

This paperwork presents the structure, the operating conditions and the main features of some microsensors realised in 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: *Hall current, noise equivalent magnetic induction, signal-to- noise ratio, sensor response*

THEORETICAL CONSIDERATIONS ON SUPERCONDUCTORS ELECTROMAGNETISM

CARUNTU GEORGE

Constanta Maritime University, Romania

ABSTRACT

The paper contains theoretical considerations regarding the behaviour of superconductors in a magnetic field. In the first part, based on the superconducting, two-fluid model, an original method is presented, in order to establish the dispersion relation, which indicates the connection between the wave vector \vec{k} and the frequency ω in electromagnetic waves. At the same time, the paper contains some considerations on the contribution to conduction in the frequency function of normal and super fluid electrons.

In the second part of the paper, based on the Meissner effect, using elements of quantic physics, we establish the expression of the magnetic flux generated by the surface currents in a superconducting ring. We stress the fact that it can only assume such values as to quantify the total flux, which also depends on the contribution of external sources.

Keywords: *Meissner effect, coherence length, penetration depth, Cooper electronic pairs, potential magnetic vector, wave function, magnetic potential vector, dispersion relation, wave vector \vec{k} , second London equation, plasma frequency*

CONTRIBUTIONS TO THE IMPLEMENTATION OF REDUNDANCY IN ELECTRONIC SYSTEMS

¹CIUCUR VIOLETA, ²DRAGOMIRESCU OVIDIU, ³DUMITRASCU ANA

^{1,3}*Constanta Maritime University, ²“Politehnica” University Bucharest, Romania*

ABSTRACT

The paper presents a universal solution, simple and efficient to implement redundancy in electronic systems that process external signals.

Is presented the structural schematic diagram of a redundant system in which notification of any defect and correct interpretation of the break signal is carried by comparing the output signal from the base unit to the signal provided by a standard or control block, which in principle is identical to the base.

Keywords: *redundant stabilizer, redundant amplifier, basic unit/block, control block, backup block*

**IMPLEMENTING OF PROGRAMMING LOGICS USING DIGITAL SEQUENTIAL
ELECTRONIC EQUIPMENTS BASED ON LOGICAL FEEDBACK FROM THE
MICROPROCESSOR AND MICROCONTROLLER SYSTEMS**

COROESCU TIBERIU

Department of Automation, Applied Informatics and Computers, University of Petrosani, Romania

ABSTRACT

The paper presents the possibilities to realize and implement of programming logics based on logical feedback concept using digital sequential electronic equipments from the hardware structure of microprocessor and microcontroller systems. After the analysis of the realising principle used in logical feedback, were obtained the logical functions based on state transition, truth table and Y-maps for the flip-flop circuits. Then was realised the synthesis for an application of programmable logics in implementing the logical feedback. The application implements a driver for a matrix optical indicator from a computerized system with microprocessor.

Keywords: *Programming Logics, Sequential Equipments, Logical Feedback, Microprocessor and Microcontroller Hardware*

DEVELOPMENT SYSTEM BASED ON PROGRAMMABLE LOGIC CONTROLLER PLC-OMRON TO SAFETY DOORS STATE CONTROL OF THE SHAFT-SINKING PROCESS

COROESCU TIBERIU

Department of Automation, Applied Informatics and Computers, University of Petrosani, Romania

ABSTRACT

The paper analyses the real-time software structure of a development system based on OMRON Programmable Logic Controller PLC drawn to control the safety doors of the dynamic shaft-sinking process. The rock excavation and loading process into the front, directly depends on the good functionality of the shaft platform safety doors. A digital equipment for shaft platform doors position control allows automatic and safe control in real-time of the hoist for the shaft-sinking process. The very difficult tasks of real-time control can be achieved only with a computerised automatic equipment based on microprocessors and microcontrollers. This new equipment was conceived by logical identification and synthesis of command functions using KARNAUGH diagram method. The materialisation of logical functions is realised in programmable logic through a development system based on OMRON-PLC, type CPM2A, equipped with the adapter type MAD 11. Using the programming tool CX-Programmer of Omron Company, destined for the creation, testing and maintenance of software for PLCs, were created the real-time ladder programs for the safety doors state control. This software was tested in laboratory conditions and will be implemented on a pilot installation.

Keywords: *Programmable Logic Controller PLC, Development System, State Control, Shaft-Sinking Dynamic Process*

APPLICATION OF PROGRAMMABLE LOGIC CONTROLLER PLC FOR AUTOMATED WEIGHING CONTROL SYSTEM

COROESCU TIBERIU

Department of Automation, Applied Informatics and Computers, University of Petrosani, Romania

ABSTRACT

The paper analyses the large application possibilities offered by Programmable Logic Controller PLC for control dynamic systems in mining industry. In general, a Control System is a collection of electronic devices and equipment which are computerized controlled in place to ensure the stability, accuracy and smooth transition of a process or a manufacturing activity. It takes any form and varies in scale of implementation, from a power plant to a semi-conductor machine. In underground mining, the electromechanical mining systems are quite nonlinear and dynamic being often too complicated and too fast to be accurately controlled by an usual control system. As a result of rapid advancement of technology, complicated control tasks can be accomplished with a highly automated control system, which may be in the computerized form of Programmable Logic Controller PLC. As a special and concrete application of the programmable logic implemented in the form of ladder program is for the automatic weighing control for a coal mining hoisting installation with two skips.

Keywords: *Programmable Logic Controller PLC, Automated Weighing, Control System, Ladder Program.*

PREDICTION ANALYSIS OF BANKRUPTCY RISK USING BAYESIAN NETWORKS¹CRACIUN MIHAELA-DACIANA, ²BUCERZAN DOMINIC, ³RATIU CRINA^{1,2}*“Aurel Vlaicu” University of Arad, ³Daramec srl Arad, Romania***ABSTRACT**

The Bayesian probability, is widely misunderstood by the general public, as well as some economists. On the other hand, bankruptcy risk can be estimated in the static and dynamic analysis of the financial balance that outlines the former performance of the enterprise. A global evaluation of the enterprises future becomes interesting for the management of the enterprise and especially for its business partners: banks, clients, capital investors. Therefore, in this paper we mould the Anghel Prediction Model for bankruptcy risk using the Bayesian probability. To this purpose, we use Bayesian Networks (BN) and the AgenaRisk Tool. The result of this mould is a solution of bankruptcy risk prediction using BN.

Keywords: *Bayesian probability, Bayesian Network (BN), bankruptcy risk prediction, AgenaRisk Tool, Anghel Prediction Model*

HIERARCHICAL OPTIMIZATION-BASED APPROACH FOR DYNAMIC FLEET MANAGEMENT

¹DINU SIMONA, ²BORDEA GHEORGHE

^{1,2}*Department of Electrics, Electronics and Informatics, Constanta Maritime University, Romania*

ABSTRACT

A mathematical programming model suitable for addressing decision-making process within the supply chain of an organization is the multi-level (hierarchical) model. This is a useful approach for problems with conflicting objectives within a hierarchical structure. These problems occur in a variety of circumstances which involve vehicle fleet management.

This study deals with a challenging issue of vehicle fleet management, the allocation of vehicles, by taking into consideration the dynamic aspect of the problem and proposes an approach based on the hierarchical optimization.

Keywords: *Vehicle Fleet, Supply Chain Management, Multi-level programming, Dynamic Vehicle Allocation*

ACTIVE STEERING-ELECTRIC THRUSTERS¹DORDEA STEFAN, 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 DRIVES FOR AZIMUTH PROPULSORS¹DORDEA STEFAN, ²ZBURLEA ELENA^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

Azimuth thrusters allow ships to be more maneuverable and enable them to travel backward nearly as efficiently as they can travel forward. Now days cruisers are equipped with twin azimuthal systems. The operator controls the principal regime parameters (frequencies, magnitudes and sequences of voltages) and also the angular position of the propulsor.

Keywords: *Azimuth thrusters, steerable pod, Propulsor, Pulse Width Modulation (PWM), pod's propeller*

UWB IMPULSE RADIO RECEIVER ARCHITECTURES PERFORMANCES ON AWGN CHANNEL FOR SENSOR NETWORK APPLICATIONS

¹DRAGOMIRESCU DANIELA, ²LECOINTRE AUBIN, ³PLANA ROBERT, ⁴DRAGOMIRESCU
OVIDIU,

^{1,2,3}CNRS; LAAS Toulouse, France, ^{1,2,3}University of Toulouse ;Toulouse, France

⁴Politehnic University of Bucharest, Electronics, Telecommunication and Information Technology Faculty , Romania

ABSTRACT

This paper presents two major UWB impulse radio architectures and compare their performances in the case of AWGN channel propagation for sensors networks applications. We study the TH-PPM and the TH-OOK receiver architecture in order to establish their best performances. Our study shows that TH-PPM receiver can achieve very good performances when the emitted pulse is used as correlation template. We'll also show that the IR-UWB TH-PPM receiver on an AWGN channel has better performances in term of BER than classical narrow band techniques such as PSK, QAM, or FSK. TH-OOK is an interesting receiver technique because of its simplicity (no need of synchronization mechanism), low cost, and low power. The comparison between the two architectures TH-PPM and TH-OOK shows, however, that the TH-PPM is better with respect to BER criteria.

Keywords: *UWB impulse radio architecture, TH-PPM, TH-OOK*

UWB RADIO LAYER MODELING PLATFORM FOR WIRELESS SENSOR NETWORK

¹DRAGOMIRESCU DANIELA, ²LECOINTRE AUBIN, ³PLANA ROBERT, ⁴DRAGOMIRESCU OVIDIU

^{1,2,3}CNRS ; LAAS Toulouse, France, ^{1,2,3}University of Toulouse, Toulouse, France, ⁴Politehnic University of Bucharest,
Electronics, Telecommunication and Information Technology Faculty, Romania

ABSTRACT

This paper deals with the Mobile Ad-hoc NETWORK MANET problematic for using a viable and new wireless technique considerations in this particular context MANET. Our study exposes the weak points of actual solutions, especially, the weakness of new IR-UWB radio layer and channel modeling in classical network simulator. A full-parametric Matlab platform is proposed fill this lack. Our model deals with MAC and PHY layer based on reconfigurable IR-UWB radio. Capabilities, limitations and evolutions of our model are introduced here.

Index Terms – Channel, IR-UWB, MANET, modeling, co-simulator system and hardware level, transceiver, hardware in the loop.

THE INDIRECT MEASURING METHODS OF GALVANOMAGNETIC EFFECTS¹DUMITRASCU ANA, ²CIUCUR VIOLETA, ³CARUNTU IRINA^{1,2,3}*Constanta Maritime University, Romania***ABSTRACT**

On the basis of physical models of field-substance interaction it can be quantitative described the dependence between material characteristics and certain physical measures like temperature, electric field intensity, magnetic induction, etc.

It is possible this way to use solid body transducers for experimental determining of these measures. The paper presents computing examples for errors in the case of indirect measuring methods.

Keywords: *logarithmic differential method, Hall constant, Hall field, Hall coefficient, average Hall mobility, galvanomagnetic measurements, sheet resistance, physical magnetoresistance*

SPREADING CODE EFFECTS ON SYNCHRONOUS CONVENTIONAL AND MMSE MULTIUSER DETECTION ALGORITHMS

¹HALUNGA SIMONA, ²FRATU OCTAVIAN, ³VIZIREANU DRAGOS, ⁴CARUNTU GEORGE

^{1,2,3}*University Politehnica of Bucharest, Telecommunications Department, ⁴Constanta Maritime University, Romania*

ABSTRACT

Multiuser detection technique implies joint demodulation of different overlapping data streams sent by different users, improving their individual performances based on the knowledge of some key parameters of all users. Each user is identified by its own signature code, which should be, in the ideal case, orthogonal on all the others. This paper analyzes the performances synchronous of conventional and MMSE multiuser detectors algorithms when different type of spreading codes is used, namely. The results are compared in terms of Bit Error Rate (BER) as function of Signal to Noise Ratio (SNR) as well as in terms of the overall signal power spectra density characteristics. The results obtained lead to several interesting conclusions that are highlighted in the last section.

Keywords: *MMSE detector; conventional detector; Walsh codes; PN codes; Gold codes; Bit Error Rate.*

SIGNAL PROCESSING TECHNIQUES FOR SYNCHRONIZATION OF WIRELESS SENSOR NETWORKS

¹JAEHAN LEE, ²YIK-CHUNG WU, ³QASIM CHAUDHARI, ⁴KHALID QARAQE, ⁵ERCHIN SERPEDIN

^{1,5}Texas A&M University, Electrical and Computer Eng., College Station, TX 77843-3128, USA, ²EEE Dept., University of Hong Kong, Pokfulam Road, Hong Kong; ³Iqra University, Islamabad, Pakistan

ABSTRACT

Clock synchronization is a critical component in wireless sensor networks, as it provides a common time frame to different nodes. It supports functions such as fusing voice and video data from different sensor nodes, time-based channel sharing, and sleep wake-up scheduling, etc. Early studies on clock synchronization for wireless sensor networks mainly focus on protocol design. However, clock synchronization problem is inherently related to parameter estimation, and recently, studies of clock synchronization from signal processing point-of-view begin to emerge. In this article, a survey of latest advances on clock synchronization is provided by adopting a signal processing viewpoint. We demonstrate that many existing and intuitive clock synchronization protocols can be interpreted by common statistical signal processing methods. Furthermore, the use of advanced signal processing techniques for deriving optimal clock synchronization algorithms under challenging scenarios will be illustrated.

Keywords: *Clock Synchronization, Wireless Sensor Networks*

THE MAIN CHARACTERISTICS FOR HALL SEMICONDUCTOR PLATES¹PANAIT CORNEL, ²CARUNTU GEORGE^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

In this paperwork is analysed the structure, the operating condition, and the main characteristics for the Hall semiconductor plates realised in the bipolar integrated circuits technolog. By using the numerical simulation the values of the signal-to-noise ratio and the detection limits of noise equivalent magnetic induction and the noise-equivalent magnetic induction spectral density for different structure devices are compared and it is als o emphasized the way in which choosing the geometry and the material features allows getting high-performance sensors.

Keywords: *signal-to-noise ratio, detection limit, the transverse Hall current, supply-current-related sensitivity, noise equivalent magnetic induction, shot noise, carriers Hall mobility, the offset-equivalent magnetic induction*

MAGNETIC SENSITIVE MICROSTRUCTURES¹PANAIT CORNEL, ²TAMAS RAZVAN, ³CARUNTU GEORGE^{1,2,3}*Constanta Maritime University, Romania***ABSTRACT**

The optimal processing of sensors – provided signal, imposes their integration on the same chip with the amplifier circuit. In this paperwork is analysed the structure, the operating conditions and the main features of some microsensors realised in the MOS and bipolar integrated circuits technology. A convenient way of describing the noise properties of a sensors is in terms of detection limit, defined as the value of the measure and corresponding to a signal-to-noise ratio of one. By using numerical simulation the values of the detection limit for the 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: *signal-to-noise ratio, detection limit, noise-equivalent magnetic induction spectral density offset equivalent magnetic induction,*

THE VERTICAL BIPOLAR MAGNETORANSISTOR AND THE MOS HALL PLATES¹PANAIT CORNEL, ²CARUNTU GEORGE^{1,2}*Constanta Maritime University, Romania***ABSTRACT**

In this paperwork, based on the model of dual Hall devices, it is analysed the operating conditions, and are established the main characteristics for microsensor structures realised in the bipolar and MOS circuits technology. In the same time it is emphasized the way in which the adequate choise of its geometry and material features, allow the obtaining of high performance devices. There are also presented and described the electrical diagrams of the transducers which contain such sensors.

Keywords: *equivalent magnetic induction, signal-to- noise ratio, sensor response, the offset collector current, the offset equivalent magnetic induction*

POTENTIAL OF THE DISCRETE WAVELET TRANSFORM IN OCEANOGRAPHY SIGNAL PROCESSING

¹PRICOP CODRUȚA, ²PRICOP MIHAIL

¹*Department of Naval Electrotechnics, Electronics and Computer Science, Constanța Maritime University,*

²*Department of Naval Architecture, Naval Academy Constanța, Romania*

ABSTRACT

In this paper we present a time-frequency signal processing techniques used to extract the salient features of underwater signal. The Discrete Wavelet Transform (DWT) is a transformation that can be used to analyze the temporal and spectral properties of non-stationary signals like underwater signal. In this paper we describe some applications of the DWT to the problem of extracting information from underwater signals. We analyze the potential of the Discrete Wavelet Transform (DWT) in oceanography signal processing. We use for these purposes real signals, recorded with a Bruel&Kjaer measurement system from Black Sea environment.

Keywords: *underwater signal, signal processing, discrete wavelet decomposition, approximations and details signal components.*

APPLICATIONS OF WAVELET ANALYSIS IN COMPRESSION OF QUASIPERIODIC SIGNALS

RADUCANU MIRCEA

University "Politehnica" Bucharest, Romania

ABSTRACT

In this paper we present an algorithm for quasi-periodic signal compression using wavelet analysis and linear prediction. We use this algorithm for ECG compression. The algorithm begins with the segmentation of quasi-periodic signal and then we perform a period and amplitude normalization of each period. In the case of ECG we detect the R wave for the signal segmentation. For these vectors we apply the wavelet analysis and we obtain the first level of compression by eliminating the lowest coefficients of the wavelet transform. The second level of compression is achieved by applying for the rest of the coefficients the linear prediction to reduce the number of bits for each coefficient. We have implemented the algorithm in Matlab and we tried to choose a wavelet family to obtain a better ratio of compression than those reported.

Keywords: *Data compression, wavelet analysis, linear prediction.*

STATISTICAL MODEL OF THE PEOPLE CONFIDENCE IN e-BUSINESS SERVICES¹RATIU CRINA, ²CRACIUN MIHAELA-DACIANA, ³BUCERZAN DOMINIC¹*Daramec srl Arad Romania*, ^{2,3}*“Aurel Vlaicu” University of Arad, Romania***ABSTRACT**

The e-Banking system is a new service in Romania for some banks; up to present the specialists reveal some flows concerning its security. In the near future it is expected to become to be as used as the credit card. The new terms of competition and the explosion of personal computers on the Romanian market brought new compartments at the bank level that support automated information processing service. Based on these considerations we have developed a statistical model to see the level of confidence granted by people to e-Banking services.

Keywords: *e-Business, e-Banking, statistical study, SPSS.*

**BORDERS CONDITIONS INFLUENCE ON THE HID LAMPS
TEMPERATURE PROFILE**

CRISTEA MIHAIL

*„Politehnica” University of Bucharest, Faculty of Applied Science, Physics I Department, Romania***ABSTRACT**

Type the abstract here using the Times New Roman font with point size 10. Leave a space of 10 points before and 10 points after it. The abstract should be brief, concise and have a maximum length of 10 lines. It should be informative giving the scope and emphasize the main conclusions, results and the significance of the work described.

Keywords: *HID lamps, positive column plasma, temperature profile index.*

**NUMERICAL SOLUTIONS FOR SOME BOUNDARY VALUE PROBLEMS
ENCOUNTERED IN BEAM THEORY**

DELEANU DUMITRU

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

In this research, some boundary value problems encountered in beam theory are considered. The shooting method is used for numerically solving the ODEs associated with these problems. The results of applying this procedure show the high accuracy and efficiency of the method. For computational and plots MATLAB has been used..

Keywords: *beam theory, boundary value problems, shooting method.*

**CONCERNING AN APPLICATION OF DIRECT INTEGRATION METHODS IN
MECHANICS OF CONSTRUCTIONS**

DELEANU DUMITRU

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

In this paper our attention is focused on the dynamics of a linear structure subjected to periodic forces. The structural dynamics equation can be solved using frequency analysis methods or step-wise integration methods. Although these approaches are easy to implement, the resulting analysis can be very time consuming for systems involving several hundred degrees of freedom. Variable step integrators make adjustments to control stability and accuracy which can require very small integration steps. Consequently, less sophisticated formulations employing fixed step-size are often employed. We investigate in our paper two such algorithms in particular case of a machine tool fitted out with a dynamic damper. A program to solve the above mentioned problem was developed and questions regarding computational efficiency and numerical accuracy of these algorithms are examined.

Keywords: *direct integration methods, efficiency of a dynamic damper.*

**EXACT SOLUTIONS OF SEVERAL WAVE-LIKE EQUATIONS BY HOMOTOPY
PERTURBATION METHOD**

DELEANU DUMITRU

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

In this paper, we implement a relatively new analytical technique, the homotopy perturbation method for solving several wave-like equations. The solution is calculated in the form of a series with easily computable components. The advantage of this method is that it provides a direct scheme for solving the problem, without the need for linearization, massive computation and any transformation. Numerical results show that this method is a powerful tool for finding solutions for a large class of partial differential equation, in particular wave-like equations.

Keywords: *Homotopy perturbation method, wave-like equation, approximate and exact solution.*