



TRANSILVANIA UNIVERSITY OF BRAŞOV
FACULTY OF MECHANICAL ENGINEERING
DEPARTMENTS OF MECHANICS AND PRECISION
MECHANICS

1ST INTERNATIONAL CONFERENCE

**COMPUTATIONAL MECHANICS
AND
VIRTUAL ENGINEERING**

FINAL PROGRAMME

COMEC 2005
20 – 22 OCTOBER

SCIENTIFIC COMMITTEE

CHAIRMEN:

- ♦ **Karl – Hans LAERMANN, Prof.dr. – eng. Dr. eng. – eng. E.h. Dr.h.c.mult. Bergische Universität Wuppertal, Germany**
- ♦ **Petre P. TEODORESCU, Prof. dr. hab. Dr.h.c. eng., member of the Romanian Technical Sciences Academy**

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- **Michel CONTE, Prof. Ph.D., INSA Lyon, France**
- **Kaj BACKMANN, Dr. Lic.Tech. Principal Lecturer in Automation and CAD Technology, Espoo – Vantaa Institute of Technology, Finland**
- **Georgi GABROVSKI, Prof.Dr.Eng., University of Rousse “Anghel Kanchev”, Bulgaria**
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- **Mihai TOADER, Prof.dr.math., Polytechnical University of Timișoara, honorary member of the Romanian Technical Sciences Academy**
- **Mircea LUPU, Prof.dr.math., Transilvania University of Brașov, Romania**
- **Mostafa KATOUIZIAN, Ph.D.Eng., Germany**
- **Valentin CEAUȘU, Prof.dr.eng., Polytechnical University of Bucharest, corresponding member of the Romanian Technical Sciences Academy**
- **Nicolae PANDREA, Prof.dr.eng., University of Pitești, corresponding member of the Romanian Technical Sciences Academy**
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- **Ioan GOIA, Prof.dr.eng., Transilvania University of Braşov, honorary member of the Romanian Technical Sciences Academy**
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- ♦ **Anghel CHIRU, Prof.dr.eng., Dean of the Mechanical Engineering Faculty**
- ♦ **Aristotel CĂNCESCU, Dr.eng., President of the County Council**
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- ♦ **Ciprian OLTEANU, Prof.dr.eng., Transilvania University of Braşov**
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- ♦ **Dumitru NICOARĂ, Prof.dr.math., Transilvania University of Braşov**
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- ♦ **Dana LUCA MOTOC, Assoc. prof.dr.eng., Transilvania University of Braşov**
- ♦ **Mihai ULEA, Assoc. prof.dr.eng., Transilvania University of Braşov**
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- ♦ **Luminiţa SCUTARU**, Lecturer eng. Ph.D.Student, Transilvania University of Braşov
- ♦ **Horaţiu TEODORESCU**, Assist.dr.eng., Transilvania University of Braşov

CONFERENCE SECRETARY

- **Diana COTOROS**, Assoc.prof.dr.eng., Transilvania University of Braşov
- **Mihaela BARITZ**, Prof.dr.eng., Transilvania University of Braşov

October 20th

9.00 PARTICIPANTS REGISTRATION

10.00 FESTIVE OPENING

(MP1)

11.00 PLENARY SESSION

(MP1)

11.00 – On the Soliton Mechanism of Bending for Carbon Nanotubes

Speaker: PETRE P. TEODORESCU

11.20 - On The Optimal Control Of Quadratic Functionals For Affine Nilpotent Systems

Speaker: MIHAI POPESCU

11.40 - The Classical Model of Two Solids Colission

Speaker: NICOLAE PANDREA

12.00 – Coffee break

12.30 - Revisite de l'expansion de l'univers : contraction de l'univers reel et expansion symetrique de l'univers mirage holographique. la preuve par les sondes pioneers 10 et 11

Speaker: MICHEL CONTE

12.50 - Children and Vision: A Public Health Issue - A Forgotten Issue?

Speaker: MARIE – SOPHIE BLONDEAU

13.30 - LUNCH

15.30 – Paper presentation

SECTION 1

(MP1)

COMPUTATIONAL METHODS AND MATHEMATICAL MODELLING

CHAIRMEN:

- Prof.dr.math. Mircea LUPU
- Prof.dr.math. Adrian CARABINEANU
- Dr.math. Mihai POPESCU

1. Carabineanu A., Lungu E. - [NUMERICAL INVESTIGATION OF THE MHD DUCT FLOW](#)
2. Condurache D., Martinuși V. - [AN EXACT SOLUTION TO SATELLITE RELATIVE ORBITAL MOTION](#)
3. Condurache D., Martinuși V. - [COMPUTING THE LOGARITHM OF HOMOGENOUS MATRICES IN SE\(3\)](#)
4. Conte M., Roșca I. - [EQUIVALENCE ENTRE CHARGE ELECTRIQUE, ENERGIE ET MASSE: ORIGINE ET NATURE QUANTIQUES DE LA CHARGE SUIVANT LA THEORIE DES ENTITES EVTD2](#)
5. Conte M., Roșca I. - [LA THEORIE UNIFICATRICE DES QUATRE FORCES PAR LES EVTD2 : LA GRAVITATION EN SERAIT LA FORCE MERE](#)
6. Conte M., Roșca I. - [LE PHENOMENE DE LA DIFFRACTION VU A TRAVERS LA THEORIE DES EVTD2](#)
7. Conte M., Roșca I. - [REVISITE DES VITESSES SUPRALUMINIQUES ET DE LA REFLEXION PARTIELLE PAR LA THEORIE DES ENTITES EVTD2](#)
8. Dragomirescu C., Iliescu V. - [SOME ASPECTS OF THE DYNAMIC STABILITY OF AN INDUSTRIAL MACHINE](#)
9. Dumitrache Al., Dumitrescu H. - [A METHOD FOR CALCULATING THE FARFIELD BLADE/VORTEX INTERACTION NOISE](#)
10. Lupu M., Isaia Fl. - [THE STUDY OF SOME NONLINEAR DYNAMICAL SYSTEMS WITH DISTRIBUTED PARAMETERS](#)
11. Marin M., Ivan G. - [ON INELASTIC EFFECTS IN THERMOELASTICITY](#)
12. Mihai D. - [FOKKER-PLANCK EQUATION- AN APPLICATION IN THE DYNAMIC DISTURBING SYSTEM](#)
13. Roșca I. - [L'EQUIVALENCE ENTRE MASSE INERTIELLE ET GRAVITATIONNELLE EXPLIQUEE PAR LA THEORIE DES EVTD2](#)

SECTION 3

(MP3)

COMPUTER VISION AND OPTOMETRY

CHAIRMEN:

- Prof.dr.eng. Mihaela BARITZ
- Dipl. I.E.P. Marie – Sophie BLONDEAU

1. Alexandru C. - [VIRTUAL PROTOTYPING OF THE TRACKING SYSTEMS USED FOR SOLAR THERMAL AND PHOTOVOLTAIC PANELS](#)
2. Ardelean I. - [OPTICAL CONCENTRATION TRANSDUCERS FOR TURBIDITY MEASUREMENT](#)
3. Barbu I., Luculescu M., Barbu D. - [VIRTUAL PROTOTYPING METHODS APPLIED IN MECHANICAL ENGINEERING](#)
4. Baritz M. - [MEDICAL REHABILITATION USING VIRTUAL REALITY](#)
5. Baritz M. - [VIDEO MOTION AND TRACKING CAPTURE](#)
6. Baritz M., Dănăilă C. - SIMULATE MOVING HUMAN BODY BY LABVIEW
7. Baritz M. - COMPUTER VISION AND EYE SAFE – CARE
8. Braun B., Drugă C., Turcu C. - [THE USE OF THE VIRTUAL INSTRUMENTATION FOR THE DIMENSIONAL CONTROL – FIRST PART](#)
9. Drugă C., Braun B., Cismaru M., Turcu C. - [THE USE OF THE VIRTUAL INSTRUMENTATION, SECOND PART](#)
10. Turcu C., Braun B., Drugă C. - [THE USE OF THE VIRTUAL INSTRUMENTATION FOR THE ANALYSIS AND SYNTHESIS OF THE HIGHER COUPLING MECHANISMS](#)
11. Cârdei P., Muraru V., Sfârșu R. - [COMPUTER SIMULATION OF TESTS FOR VEHICLE PROTECTION STRUCTURES](#)
12. Dumitriu A. - [OBJECT GRASPING USING MULTI-FINGER DEVICES](#)
13. Dumitriu A. - [ASPECTS REGARDING THE CALCULUS OF ELASTIC STRUCTURES WITH STATIC UNDETERMINED RODS FOR FORCE/TORQUE SENSORS](#)
14. Izrar B., Dudeck M. - [ARC JET PLASMA SIMULATION](#)

15. Lache S. - RESEARCH REGARDING SPECIFIC ISSUES OF PRESSURE MICROSENSORS CONCEPTUAL DESIGN

SECTION 4

(MI3)

INDUSTRIAL APPLICATIONS

CHAIRMEN:

- Prof.dr.eng. Mihai TOADER
- Prof.dr.eng. Nicolae POSEA

1. Ardelean I. - ASPECTS CONCERNING THE OPTIMIZATION OF INDUSTRIAL CONTROL NETWORKS
2. Cârdei P., Muraru V., Sfârșu R. - MATHEMATICAL MODELS FOR VEHICLE TESTS
3. Constantin Fl. - ASSESSING THE SUSPENSION QUALITIES THROUGH SPECTRAL AND CORRELATION ANALYSIS OF THE TRACTOR SEAT EXCITATION AND RESPONSE
4. Constantin Fl. - SUSPENSION HIDROPNEUMATIQUE A DEUX COUSSINS
5. Cotoros D., Nicoară D. - MODEL OF A DYNAMICALLY TUNED GYROSCOPE
6. Cotoros D., Nicoară D. - MODEL FOR A GYROSCOPE WITH INNER ROTORS CONNECTED AT 120°
7. Deliu Gh., Botezatu D. - DYNAMICS OF A MONOWHEEL VEHICLE
8. Deliu M., Deliu Gh. - DRILLING TORQUE - A DIAGNOSIS CRITERION OF THE DRILL WEAR
9. Diaconescu D., Jaliu C., Săulescu R. - SPEED MECHATRONIC VARIATOR Part I. CONCEPTUAL ASPECTS
10. Diaconescu D., Munteanu O., Lăteș M. - SPEED MECHATRONIC VARIATOR Part II. DYNAMIC ASPECTS
11. Goia I., Antoneac D. - CALCULUS OF LIFESPAN FOR AN AIRCRAFT WING SPAR
12. Goia I., Micu I., Tofan M. - HOLLOW SOLUTION FOR THE POLE USED IN ATHLETIC EVENTS
13. Luca Motoc D. - THEORETICAL APPROACHES ON ELECTRICAL PROPERTIES OF PARTICLE REINFORCED COMPOSITE MATERIALS AS CANDIDATES FOR ALTERNATIVE INDUSTRIAL APPLICATIONS

14. Manea D., Căndea I., Marin E. - MATHEMATICAL MODEL FOR THE THEORETICAL AND EXPERIMENTAL DATA PROCESSING FROM THE DISTRIBUTION DEVICES WORKING PROCESS OF CENTRAL MEASURING SEEDING MACHINES
15. Maraloi C. - HYPER - SUSTENTATION SYSTEMS WITH SLOT AT THE ENTERING EDGE OF THE HYBRID SAILS
16. Maraloi C. - SAILS USED AS AN ADDITIONAL THRUST MEAN
17. Nițescu V., Cârdei P., Muraru V., Sfârșu R., Căndea I. - DIMENSIONING OF THE HYDRAULIC CYLINDER FOR THE REVERSING MECHANISM OF A REVERSIBLE PLOUGH BY USING THE KINEMATIC AND DYNAMIC SIMULATION OF THE REVERSING PROCESS
18. Olteanu C., Luca Motoc D. - EXPERIMENTAL RESEARCH ON ELECTRICAL PROPERTIES OF PARTICLE REINFORCED COMPOSITE MATERIALS AS CANDIDATES FOR VARIOUS INDUSTRIAL APPLICATIONS
19. Petrova R. - SIMULATION OF THE DYNAMICS OF A CIRCULATING DETACHABLE BICABLE ROPEWAY EXPOSED TO LATERAL WIND LOADS, REGARDING THE MASS OF THE ROPES
20. Petrova R. - SIMULATION OF THE DYNAMICS OF A CIRCULATING BICABLE ROPEWAY WITH GONDOLAS WITH JOINT CONNECTION "HANGER-CABIN" EXPOSED TO LATERAL WIND LOADS
21. Petrova R., Karapetkov S., Moneva I. - DYNAMICS OF A CLOSED SYSTEM "MOTOR – CLUTCH – WORKING MACHINE-REGULATOR"
22. Plămădeală R., Tofan M. - UPON THE STIFFENING BY INTERNAL NETWORKS OF THE AERIAL CROSSING OF TWO MASTER GAS PIPES
23. Preda I., Ciolan Gh. - DYNAMIC BEHAVIOUR STUDY OF ALL-TERRAIN VEHICLE DRIVETRAIN
24. Roșca C. - CAE METHODOLOGY USED TO DESIGN AND SIMULATE THE BEHAVIOUR OF A MILLING MACHINE USED IN MINING INDUSTRY PART I – THE FINITE ELEMENT MODEL
25. Roșca C. - CAE METHODOLOGY USED TO DESIGN AND SIMULATE THE BEHAVIOUR OF A MILLING MACHINE USED IN MINING INDUSTRY PART II – THE FINITE ELEMENT ANALYSIS
26. Scutaru L. - ASPECTS CONCERNING THE INFLUENCE OF CUTTING TOOLS OF WOOD

- 27.Scutaru L. - EFFECTS OF CONTINUOUS PRESSING WITH AND WITHOUT COOLING
- 28.Secară E. - THE ANALYSIS OF DETERIORATIONS GENERATED WITHIN GEAR BOXES BY WEAR, DEFORMATION, STRESS AND SHOCKS
- 29.Secară E. - DESIGN METHODS BASED ON RELIABILITY
- 30.Stanciu L., Cârdei P., Cîndea I. - MODELING OF WORKING PROCESS AT CORN HARVESTING EQUIPMENT ENDOWED WITH A SINGLE CORN COB DETACHMENT ROLL AND SIMULTANEOUS STEM CHOPPING
- 31.Toader M., Herişanu N. - ESTIMATION OF THE INFLUENCE OF MICRO-PROFILE OF ROLLING TRACK ON VEHICLE DYNAMICS
- 32.Ulea M., Babeu T., Vasu O. - STATIC TESTS OF THE ROMANIAN TRUCKS AXLES
- 33.Ursu – Fischer N., Haiduc N., Morariu R., Ursu M. - SOME MATHEMATICAL ASPECTS AND THE CAD OF THE CONICAL HELIX
- 34.Varga – Orban B. - MATERIALS IN AIRCRAFT BUILDING

18.30 Concert at the “Black Church”

October 21st

9.30 – Paper presentation

SECTION 2

(MP1)

COMPUTATIONAL AND SOLID MECHANICS

CHAIRMEN:

- Prof.dr.eng. Marina VASILE
- Prof.dr.eng. Ioan CURTU

1. Biț C. - AN ELASTIC CONTACT OPTICAL TECHNIQUE
2. Biț C. - MICROSTRUCTURAL CONSIDERATIONS ON FATIGUE CRACKS

3. Boisse P., Daniel J.L., Gasser A., Launay J., Soulat D. - SIMULATION OF COMPOSITE REINFORCEMENT FORMING FOR RTM PROCESS
4. Camciuc A., Gheorghiu H., Constantin N., Găvan M. - ASPECTS CONCERNING THE IMPLEMENTATION OF THE PROBABILISTIC APPROACH IN EVALUATING THE RELIABILITY OF THE STRUCTURES
5. Cerbu C., Curtu I. - CHANGE OF THE MECHANICAL PROPERTIES DUE TO THE WATER AND SEAWATER ABSORPTION IN CASE OF SOME COMPOSITE MATERIALS
6. Cherecheș M., Scutaru L. - MODELISATION DE LA CONDUCTIVITE THERMIQUE APPARENTE DANS UN MILIEU POREUX
7. Ciofoaia V. - ASPECTS OF METAL-RUBBER DISK VARIATIONAL MATHEMATICAL BEHAVIOR
8. Comănescu I., Radu Gh. - ON THE ACCELERATED LIFE TESTS OF PRESSURE GAUGES PART I – THEORETICAL CONSIDERATIONS
9. Comănescu I., Radu Gh. - ON THE ACCELERATED LIFE TESTS OF PRESSURE GAUGES PART II – EXPERIMENTAL RESULTS
10. Curtu I., Pascu A., Ciofoaia V., Stanciu M., Repanovici A. - OPTIMIZATION OF PERFORATED PLATE STRUCTURES WITH CIRCULAR HOLES
11. Curtu I., Pascu A., Oleksik V., Ciofoaia V., Repanovici A., Stanciu M., - USING THE FINITE ELEMENT METHOD FOR THE STUDY OF THE BEHAVIOUR OF A WOVEN WIRE NET STRESSED AT UNIAXIAL TRACTION
12. Curtu I., Ciofoaia V., Stanciu M., Repanovici A., Tătar C.G. – OPTIMIZING THE SANDWICH STRUCTURES WITH LIGHTWEIGHT HONEYCOMB CORE
13. Enescu I. - UNIFORM PRESSURE APPLIED TO A POLIGONAL REGION
14. Enescu I. - NON-UNIFORM PRESSURE APPLIED TO A POLIGONAL REGION
15. Goia I., Ulea M. - THERMICAL TENSIONS IN A THIN WALLED CYLINDER PLACED BETWEEN TWO RIGID PLATES ASSEMBLED WITH BOLTS
16. Marina V., Marina Viorica - THE INFLUENCE OF THE TENSION STATE AT MYCROSCOPIC SCALE AND OF THE MATERIAL STRUCTURE UPON THE TENSION STATE AT MYCROSCOPIC SCALE

17. Mihăilescu T., Curtu I. - MODELLING COMPRESSION OF WOOD INCORPORATING EARLY WOOD AND LATE WOOD USING THE FEM
18. Olaru D., Prisăcaru Gh., Ianus G., Lorenz P. - FRICTION MODELING IN MICRO LINEAR ROLLING SYSTEMS FOR MEMS APPLICATIONS
19. Radu Gh., Comănescu I. - A STUDY OF DISKS, PRESENTING CUTS-OFF AND BEING IN A ROTATIONAL MOVEMENT AND THERMAL REGIME (THEORETICAL AND EXPERIMENTAL CONSIDERATIONS OVER BOUNDARY ELEMENT METHOD-BEM) PART I – THEORETICAL CONSIDERATIONS
20. Radu Gh., Comănescu I. - A STUDY OF DISKS, PRESENTING CUTS-OFF AND BEING IN A ROTATIONAL MOVEMENT AND THERMAL REGIME (THEORETICAL AND EXPERIMENTAL CONSIDERATIONS OVER BOUNDARY ELEMENT METHOD-BEM) PART II – EXPERIMENTAL RESULTS
21. Teodorescu H., Vlas S., Cotoros D. - EXPERIMENTAL METHOD TO DETERMINE RESIDUAL INTERNAL STRESSES IN TUBULAR COMPOSITE STRUCTURES
22. Ulea M., Goia I. - HEAT TRANSFER BETWEEN TWO WALLS
23. Vieru I., Stănescu N.D., Marinescu D. - STRESS STUDY OF THE VARIABLE STEP SPRING USED WITHIN THE REAR SUSPENSION
24. Vlas S. - SECOND ORDER EFFECTS IN THE MULTIBODY SYSTEMS WITH ELASTIC BARS

SECTION 5

(MP3)

BIOMECHANICS

CHAIRMEN:

- Prof.dr.eng. Ileana ROȘCA
- Prof. Ph.D. Michel CONTE

1. Cismaru M., Braun B., Drugă C. - MODELING THE HUMAN LOWER LIMBS
2. Cismaru M., Roșca I. - ANIMATING THE HUMAN LOWER LIMBS MODEL

3. Corneci M. - **BIOMECHANICS OF THE HAND - PATHOLOGY AND RECOVER OF FUNCTIONALITY**
4. Corneci M. - **HAND SMALL JOINTS ARTHROPLASTY**
5. Lache S. - **STUDY UPON ADVANCED MODELS AND SYSTEMS FOR HUMAN BODY PROTECTION AGAINST VIBRATIONS AND OCCUPATIONAL DISEASES PREVENTION**
6. Luculescu M. - **COMPUTER AIDED DIAGNOSTIC SYSTEM FOR MACULAR DISEASES**
7. Mândru D., Teutan E. - **ANKLE REHABILITATION SYSTEM BASED ON TETHRAEDICAL MODULE**
8. Noveanu S., Csibi V., Lobonțiu N. - **INFLUENCE OF THE FLEXURE HINGE GEOMETRY ON COMPLIANT MECHANISMS FUNCTIONING**
9. Radu C. - **APPLICATION OF COMPUTER GRAPHICS IN A 3D RECONSTRUCTION OF HUMAN ANKLE**
10. Radu C. - **FINITE ELEMENT MODELING IN BIOMECHANICAL SYSTEMS**
11. Rodean S., Arghir M. - **STUDY OF THE OWNER RESPONSE OF THE HUMAN BODY UNDER THE VERTICAL VIBRATIONS ACTION INTO A VEHICLE**

SECTION 6

(MI3)

MULTIBODY DYNAMICS, OPTIMIZATION, CONTROL AND STABILITY

CHAIRMAN:

- Prof.dr.eng. Nicolae PANDREA

1. Batog I. - **A MULTI-BODY MODEL OF VIBRATORY EQUIPMENT DRIVEN BY UNBALANCED MOTORS**
2. Burcă I., Tofan M., Modrea A. - **APPROXIMATION OF THE HUMAN MEMBERS LAWS OF MOTION DURING A HURDLE RACE USING KINETIC LAWS OF EXPLOSIVE BURN**
3. Burcă I., Micu I., Tofan M. - **IDENTIFICATION OF SOME CEBICHEV COMPONENTS IN THE POLE – VAULTER POLE DIALOGUE WITHIN THE CENTRE OF INERTIA MOTION**
4. Camciuc A., Gheorghiu H., Constantin N. - **ASPECTS CONCERNING THE OPTIMIZATION OF AN AUTOMOTIVE REAR AXLE**

5. Ghițescu M., Vișa I. - [STRUCTURAL MODELING BY MBS METHOD APPLIED TO LINKAGES USED TO FLAPS AIRCRAFT CONTROL](#)
6. Mândru D., Noveanu S., Crișan R., Lobonțiu N. - [COMPLIANT MECHANISMS ACTUATED BY SHAPE MEMORY ALLOY ACTUATORS](#)
7. Micu I., Tofan M. - ASSESING OF THE TORQUES DEVELOPED BY THE ATHLET DURING THE POLE VAULT
8. Neagoe M., Jaliu C., Săulescu R. - [THE INFLUENCE OF ERRORS ON THE JOINT MOTIONS FROM AN ISOSTATICAL MECHANISM \(7R\). PART I: KINEMATICAL MODELING](#)
9. Jaliu C., Diaconescu D., Neagoe M. - [THE INFLUENCE OF ERRORS ON THE JOINT MOTIONS FROM AN ISOSTATICAL MECHANISM \(7R\). PART II: EFFECTS ANALYSIS THROUGH NUMERICAL SIMULATION](#)
10. Nicoară D., Cotoros D. - [EQUIVALENT LINEARIZATION OF NONLINEAR SYSTEMS BY OPTIMIZATION METHOD](#)
11. Nicoară D., Cotoros D. - [VIBRATION CONTROL USING SEMI-ACTIVE TUNED MASS DAMPERS \(PART II – PARAMETRIC OPTIMIZATION\)](#)
12. Pandrea M., Pandrea N. - [PLANE COLLISION WITH FRICTION](#)
13. Popescu D. - [3D SIMULATION – AN ALTERNATIVE TO STUDY VIBRATING SYSTEMS](#)
14. Stănescu N.D. - [ON THE PERIODICAL MOTIONS AROUND THE EQUILIBRIUM POSITION FOR AN AUTOMOBILE WITH NONLINEAR SUSPENSION](#)
15. Stănescu N.D., Vieru I. - [ON THE STABILITY OF THE EQUILIBRIUM POSITIONS FOR AN AUTOMOBILE WITH NONLINEAR SUSPENSION](#)
16. Zelenyak L., Deliu Gh. - [LONGITUDINAL STABILITY OF WIG](#)
17. Hâncu O., Matieș V., Bălan R. - MODELING AND SIMULATION OF A HYDRAULIC SERVO SYSTEM
18. Pozdirca Al. - PROJECT OF LOADER IN AUTODESK INVENTOR MEDIUM, MODELLING, SIMULATION, APPLICATION

12.00 Trip + lunch

19.00 Festive meal

