

JUNE 28, TUESDAY

Room A

*Morning Session*

CHAIRMAN D.A. INDEITSEV

**9:30 – 10:00 OPENING CEREMONY**

**10:00 – 10:40 V.A. Palmov.** Title to be specified

**10:40 – 11:20 W. Pietraszkiewicz.** Dynamically and Kinematically Exact Theory of Irregular Shell Structures and its Numerical Implementation

*Break*

*Minisymposium “Application of Mechanics to Aerospace Systems”*

CHAIRMAN M.P. CARTMELL

**11:30 – 12:00 A. Steindl, H. Troger.** Stability Problems Related to the Space Elevator

**12:00 – 12:30 R.W. Tucker, D. Burton.** Twisted Ring Laser Accelerometers

*Coffee break*

**12:50 – 13:20 A.M. Krivtsov.** Simulation of Earth-Moon System Development

**13:20 – 13:50 P. Duó.** Prediction of Foreign Object Damage

*Evening Session*

**15:30 – 16:00 M. Francis, D. Biamonti, A. McCall, J.P. Sanchez, G. Albaladejo, D. Moore, S. Graham, C. Murray, S. Shahid, P. Trivedi, D. Santhanakrishnan, G. Radice, G. Hughes.** Lunar Net-Lander: Mission Overview

**16:00 – 16:30 M. Francis, D. Biamonti, A. McCall, J.P. Sanchez, G. Albaladejo, D. Moore, S. Graham, C. Murray, S. Shahid, P. Trivedi, D. Santhanakrishnan, G. Radice, G. Hughes.** Lunar Net-Lander: Surface Components

*Coffee break*

**16:50 – 17:20 M. Francis, D. Biamonti, A. McCall, J.P. Sanchez, G. Albaladejo, D. Moore, S. Graham, C. Murray, S. Shahid, P. Trivedi, D. Santhanakrishnan, G. Radice, G. Hughes.** Lunar Net-Lander: Orbital Analysis

**17:20 – 17:50 M.P. Cartmell, M.C. D’Arrigo.** Simultaneous Forced and Parametric Excitation of a Space Tether

Room B

*Morning Session*

*Minisymposium “Wave Mechanics of Civil Engineering Structures”*

CHAIRMAN A.V. METRIKINE

**11:30 – 12:00 G.L. Kuiper, A.V. Metrikine.** Non-linear Analysis of Dynamic Stability of an Offshore Pipe Conveying Fluid

**12:00 – 12:30 I.V. Sturova.** Unsteady Behavior of an Elastic Beam Floating on the Surface of Deep Water

*Coffee break*

**12:50 – 13:20 A.K. Abramian.** Localized Waves in Shallow Water Caused by a Soliton Moving Along the Bottom

**13:20 – 13:50 K.L. Muratkov, A.L. Glazov.** Thermoelastic Photoacoustic Microscopy of Vickers Indented Metals

*Evening Session*

**15:30 – 16:00 L.V. Nikitin.** Statics and Dynamics of Rods with Skin Friction

**16:00 – 16:30 J. Mennink, F. Soetens, N.A. Kutanova.** Cross-sectional Stability of Aluminium Extrusions

*Coffee break*

**16:50 – 17:20 M. Steenbergen.** On the Effect of the Interface Conditions on the Dynamic Response of a Beam on a Half-Space to a Moving Load

**17:20 – 17:50 J.S. Hoving, F. Molenkamp.** The Dynamic Response of a Discrete Lattice Containing Dry-Friction Elements to a Surface Load

**17:50 – 18:20 A.V. Metrikine.** A Discontinuous-Strip Method for Calculation of the Dynamic Response of Periodically-Inhomogeneous 3D Structures to Moving Loads

JUNE 29, WEDNESDAY

Room A

*Morning Session*

CHAIRMAN I.G. GORYACHEVA

**9:30 – 10:10 E.A. Ivanova, A.M. Krivtsov, N.F. Morozov, B.N. Semenov, A.D. Firsova.** Mechanics and Nanomechanics

**10:10 – 10:50 D.P. Boso, M. Lefik, B.A. Schrefler.** Multiscale Modelling for Composites Including Continuum to Discrete Linkage

**10:50 – 11:30 A. Castellanos.** Correlation Between Interparticle Forces and Tensile Stresses in Fine Powders

*Break*

CHAIRMAN A.M. KRIVTSOV

*Dynamics of rigid bodies and multibody dynamics*

**11:40 – 12:00 A.V. Karapetyan.** Invariant Sets of Dynamical Systems with First Integrals: Theory and Applications

**12:00 – 12:20 T.V. Salmikova.** On the Stability of Linear Potential Gyroscopic Systems

**12:20 – 12:40 V.M. Morozov, V.I. Kalenova, M.A. Salmina.** Stability and Stabilization of Nonholonomic Systems of Special Class

*Coffee break*

**13:00 – 13:30 I.A. Pasyunkova.** Bifurcations of Cylindrical Precessions of an Unbalanced Rotor

**13:30 – 13:50 A.S. Kuleshov.** On the Snakeboard Dynamics

**13:50 – 14:10 A.A. Loktev, Yu.A. Rossikhin, M.V. Shitikova.** Dynamic Stability of an Orthotropic Plate Subjected Impact Excitation

*Evening Session*

CHAIRMAN S.N. GAVRILOV

*Mechanical and civil engineering applications*

**15:30 – 15:50 A.G. Knyazeva.** Simulation of Critical Phenomena Observed During Modification of Surface Properties

**15:50 – 16:10 B. Wilczyński, Z. Mróz.** Optimal Design of Notched Components Against Fracture and Fatigue Failure

**16:10 – 16:30 P.E. Tovstik, T.M. Tovstik, V.A. Shekhovtsov.** On the Mariner Fixed Offshore Platform Dynamics Under Random Wave Forces

*Coffee break*

**16:50 – 17:10 N.V. Banichuk, S.Yu. Ivanova, E.V. Makeev, A.V. Sinitsyn.** Non-local Shell Optimization with Application of Genetic Algorithm

**17:10 – 17:30 B.G. Tarasov.** Rock Embrittlement at Confined and Dynamic Conditions

**17:30 – 17:50 Y. Stylianos, D.G. Luchinsky, V.N. Smelyanskiy.** Reconstruction of Nonlinear Dynamics from Noisy Incomplete Measurements

**17:50 – 18:10 A.A. Dobroskok, A.M. Linkov.** Complex Variable BEM for 2D Problems of Heat, Current or Fluid Flow within, along and across Structural Elements

Room B

**E U R O M E C H C O L L O Q U I U M 468**

**“MULTI-SCALE MODELLING IN THE MECHANICS OF SOLIDS”**

JUNE 30, THURSDAY

Room A

*Morning Session*

CHAIRMAN A.M. KRIVTSOV

**9:30 – 10:10 I.G. Goryacheva.** Multi-Scale Analysis in Contact Mechanics

**10:10 – 10:50 P.A. Zhilin.** Some Nonlinear Problems of the Rod Theory

**10:50 – 11:30 K.P. Chong.** Nano Science and Engineering in Mechanics

*Break*

CHAIRMAN D.A. INDEITSEV

*Fluid and Gas*

**11:40 – 12:00 V.V. Kozlov, Yu.A. Litvinenko, L.L. Loefdahl, V.G. Chernorai, G.R. Grek.** Nonlinear Sinusoidal and Varicose Instability in the Boundary Layer (Review)

**12:00 – 12:20 A. Zebib.** Vibrational Thermocapillary Instabilities

**12:20 – 12:40 L.A. Molotkov.** Velocities of Wave Propagation in Fluid Mixtures

*Coffee break*

**13:00 – 13:20 A.A. Ivanova, V.G. Kozlov.** Lift Force Acting the Solids in Liquid Under Vibrations

**13:20 – 13:40 V. Shevtsova, A. Myaldun, D. Melnikov.** Stability of Oscillatory Flow in Liquid Column

**13:40 – 14:00 S.C. Paul, M.C. Paul, T. Korakianitis, W.P. Jones.** Large Eddy Simulation and PDF for Turbulent Combustion Flows

*Evening Session*

CHAIRMAN E.F. GREKOVA

*Solids and Structures*

**15:30 – 15:50 A. Scalia, M.A. Sumbatyan.** Harmonic Vibration of Rigid Punch on the Free Surface of a Porous Elastic Half-plane

**15:50 – 16:10 E. Scarpetta, M.A. Sumbatyan.** One-mode P-wave Propagation through a Periodic Array of Interface Cracks

*Coffee break*

**16:30 – 16:50 F.A. Gilabert, A.M. Krivtsov, A. Castellanos.** Computational Design and Mechanical Characterization of Microstructured Solids in Layers

**16:50 – 17:10 S.A. Atroshenko, S.I. Krivosheev, Y.V. Petrov, A.A. Utkin, G.D. Fedorovsky.** Experimental Investigation of Granite and Limestone Fracture under Impact Pulse and Static Loading

**17:10 – 17:30 D.A. Indeitsev, N.F. Morozov, V.N. Naumov, E.I. Prokuratova.** Dynamic Behavior of the Rod of Complicated Structure Under Temperature Impact

**17:30 – 17:50 R.A. Arutyunyan.** Fatigue Fracture in the Gigacycle Regime generalized

**17:50 – 18:10 V.N. Kukudzhyanov.** Rheological Instability and Fracture of Elastoplastic Specimens under Tension

**18:10 – 18:30 A.V. Kashtanov, Y.V. Petrov.** Kinetic Nature of the Incubation Time

Room B

**E U R O M E C H COLLOQUIUM 468**

**“MULTI-SCALE MODELLING IN THE MECHANICS OF SOLIDS”**

JULY 1, FRIDAY

Room A

*Morning Session*

CHAIRMAN V.A. EREMEYEV

**9:30 – 10:10 E.V. Lomakin, H.-J. Christ.** Deformation of Elastic Material with Stress-State-Dependent Properties at the Crack Tip under Longitudinal Shear Conditions  
**10:10 – 10:50 D.A. Indeitsev.** Influence of the Kinetics of Processes on the Behavior of Thin Structures in a Continuous Medium

*Break*

*Minisymposium “Biomechanics and Mechatronics”*

CO-CHAIRMEN H. IRSCHIK, A.K. BELYAEV, YU.I. NYASHIN

**11:00 – 11:30 H. Irschik.** Non-Classical Terms in the Equations of Balance for a Growing Body

**11:30 – 12:00 M. Stangl, N. Beliaev, A.K. Belyaev, H. Irschik.** Applying Lagrange Equations and Hamilton Principle to Vibrations of Fluid Conveying Pipes

*Coffee break*

**12:20 – 12:50 Yu.M. Vetyukov, V.V. Eliseev.** The Lagrangian Mechanics of Elastic Shells and Its Numerical Application

**12:50 – 13:20 L. Mitutsova, K. Delchev, V. Vitkov, I. Chavdarov, V. Latkovski, V. Yaroshevsky, N. Serbenjuk, O. Nikitin, Y. Gerasimenko.** Design of Mechatronical Systems for Foot Receptor Activation Directed to Improvement of Rehabilitation Process of Paraplegic Patients

**13:20 – 13:50 D. Okhotsimsky, O. Nikitin, Y. Gerasimenko, N. Serbenjuk, L. Mitutsova, K. Delchev, V. Vitkov, A. Platonov, V. Yaroshevsky.** A Biomechanical Stimulator for Scientific-experimental Study of the Regeneration of Spinal Cord Locomotion Capabilities after Traumatic Break

*Evening Session*

**15:30 – 16:00 Yu. Nyashin, E. Simanovskaya, V. Tverier.** Maxillo dental System as a Specialized Biomechanical System

**16:00 – 16:30 V. Lokhov, Yu. Nyashin.** Application of the Stress and Strain Control by Eigenstrain to Biomechanical Systems

*Coffee break*

**16:50 – 17:20 Yu.V. Akulich, R.M. Podgayets, A.I. Kholkina.** Quasi-static Analysis of the Muscular Efforts and Joint Reaction Forces during the Lower Extremity Movement in the Training Machine with Weights

**17:20 – 17:50 A. Anoshkin, D. Ivanov, S. Ivanov, Yu. Osorgin, A. Tashkinov, P. Udintsev, Yu. Zmeev.** Problems of Strength Evaluation of Carbon-Carbon Hip Prostheses

**17:50 – 18:20 L.B. Maslov, V.I. Shapin, S.E. Lvov, E.V. Bleskin.** Forced Vibration Technology for Non-destructive Testing in Orthopaedy

**18:20 – 18:50 A.G. Soldatos, K.G. Arvanitis, S. Papathanassiou, A. Kladas.** Control for Vibration Attenuation in Variable Speed Wind Turbines

**18:50 – 19:20 G. Lehov, P. Petkov, K. Arvanitis.** Collocated and Noncollocated  $\mu$ -Synthesis Control of a Flexible – Link Manipulator

Room B

E U R O M E C H COLLOQUIUM 468

“MULTI-SCALE MODELLING IN THE MECHANICS OF SOLIDS”

## JULY 3, SUNDAY

### Room A

#### *Morning Session*

CHAIRMAN I.I. BLEKHMEN

**9:30 – 10:10 V.V. Beletsky.** Title to be specified

**10:10 – 10:50 C. Vallée, S. Charlesm, S.Ya. Stepanov, A.A. Burov.** On Time Domain Identification Method for Linear Oscillation Mechanical Systems

#### *Break*

CHAIRMAN A.M. KRIVTSOV

#### *Computational Mechanics*

**11:00 – 11:20 V.A. Bratov, P. Stähle.** Viscous Cohesive Zone Model for Fracture under Rapid Loading

**11:20 – 11:40 R. Crouch, T. Li.** On the Use of Auxillary Surfaces in Computational Plasticity Return Mapping

**11:40 – 12:00 A. Smolianski, O. Shipilova, H. Haario.** Particle Transport Method for convection-reaction problems

#### *Coffee break*

**12:20 – 12:40 V.P. Fedotov, L.F. Spevak, V.B. Trukhin, V.V. Privalova.** A Numerical-Analytical Technique for Solving Problems of Mathematical Physics

**12:40 – 13:00 N. Loguinova.** Oscillations in a Hardsphere Model under Gravity

**13:00 – 13:20 V.F. Koshelev, A.M. Linkov.** On Numerical Implementation of Non-local Fracture Criterion to Inhomogeneous Media

**13:20 – 13:40 A.B. Kiselev, O.V. Nekhaeva.** Computational Simulation of Irreversible Dynamic Deforming and Fracture of Damageable Solids and Structures

**13:40 – 14:00 I.I. Kossenko.** An Analysis of the Computer Model for the Unilateral Multibody Systems Dynamics

#### *Evening Session*

**15:15 – 16:45 Posters (PS1)**

#### *Break*

**17:15 – 18:45 Posters (PS2)**

### Room B

#### *Morning Session*

CHAIRMAN E.F. GREKOVA  
*Mechanics of Generalized Continua*

**11:00 – 11:20 V.A. Eremeyev, A.N. Soloviev.** On Elastic Micro- and Nano-Crystals Lattices Modelling

**11:20 – 11:40 I. Smolin.** Cosserat Continuum as a Model of Mesoscale

**11:40 – 12:00 I.V. Shirko.** Two Problem of Poromechanics

#### *Coffee break*

**12:20 – 12:50 E.L. Aero, A.N. Buliguin.** Nonlinear Theory of Cardinal Rearrangement of Solid Structure under Catastrophic Deformations

**12:50 – 13:10 J.M. Nitsche, T.-F. Wang, G.B. Kasting.** Micromechanics of Molecular Diffusion through Multiscale “Brick-and-Mortar” Composite Materials, with Application to the Permeability of Human Skin

**13:10 – 13:30 T. Chen, H.-Y. Kuo.** Exact Correspondences between  $N$ -dimensional Anisotropic and Isotropic Green’s Functions in Conductions

**13:30 – 13:50 A. Valance, C. Pascot, R. Delannay.** Shear Instabilities in Granular Mixtures under Gravity

## JULY 4, MONDAY

### Room A

#### *Morning Session*

CHAIRMAN P.A. ZHILIN

**9:30 – 10:10 G.M.L. Gladwell.** Inverse Problems in Vibration — Past, Present and Future

**10:10 – 10:50 I.I. Blekhman, L.A. Vaisberg.** Adaptive Properties of Dynamic Objects  
*Break*

#### *Minisymposium “Nonlinear Methods and Integrable Models in Mechanics”*

CO-CHAIRMEN N.A. KUDRYASHOV, A.V. PORUBOV

**11:00 – 11:30 V.I. Erofeyev, A.V. Sharabanova.** Elastic Shear Waves in Bimodal Materials

**11:30 – 12:00 O.V. Nagornov, Yu.V. Konovalov.** Modelling of Ice Flow of Glaciers Subjected to Climatic Changes

*Coffee break*

**12:20 – 12:50 A.V. Borisov, I.S. Mamaev.** Dynamics of a Circular Cylinder Interacting with Point Vortices

**12:50 – 13:20 M. Hirayama, K. Ogawa.** Non-linear Dynamic Behaviors of the Glider Balloon; the Newly Developed Ballooning

**13:20 – 13:50 A.V. Porubov, I.V. Lavrenov.** Formation of the Rogue Waves and Holes in Ocean

#### *Evening Session*

**15:30 – 16:00 N.A. Kudryashov.** Nonlinear Heat Equations: Fifty Years Later

**16:00 – 16:30 M.L. Gandarias.** Nonclassical Potential Symmetries for Some Diffusion Equations

*Coffee break*

**16:50 – 17:20 E.Yu. Malyuta, M.M. Bogdan.** Stability of Gap Soliton Modes in Modulated Nanoclusters

**17:20 – 17:50 R. Conte, M. Musette.** All the Elliptic Solitary Waves of Evolution Equations

**17:50 – 18:20 H. Tsuji, M. Oikawa.** Nonlinear Internal Waves Generated by Topography in a Stratified Fluid

**18:20 – 18:40 M.A. Chmykhov, N.A. Kudryashov.** Analytical and Numerical Solutions of Smog Propagation Problems

**18:40 – 19:00 I.L. Chernyavsky, N.A. Kudryashov.** System of Equations for Nonlinear Pressure Waves in a Viscoelastic Vessel

### Room B

#### *Morning Session*

CHAIRMAN I.I. BLEKHMAN  
*Nonlinear Dynamics and Vibration*

**11:00 – 11:20 A. Dabrowski.** Energy Flow and Synchronization in the Energy Space

**11:20 – 11:40 H. Mahbadi, M.R. Eslami, M. Kamran.** Analysis of Rotating Disks Under Cyclic Thermal and Mechanical Loads

**11:40 – 12:00 I.V. Barmin, M.V. Veselov, Y.M. Epifanov.** Cable Mast Dynamics of Moving with Account of Its Flexural Vibrations

*Coffee break*

#### *Evening Session*

CHAIRMAN S.N. GAVRILOV  
*Solids and Structures*

**15:30 – 15:50 M.F. Ghanameh, D. Thevenet, A. Zeghloul.** Effects of Joint Configuration and Loading Type on Stress Concentration in Offshore Welded Tubular Joints

**15:50 – 16:10 S.H. Sargsyan, A.J. Farmanyan, M.N. Mutafyan, S.A. Vardanyan.** Some Problems of Statics, Thermoelasticity and Dynamics of Micropolar Bars

*Coffee break*

**16:30 – 16:50 A.I. Oleinikov.** Anisotropic Elasto-Visco-Plasticity of Aluminum Alloy

**16:50 – 17:10 E.I. Ryzhak.** An Idea and Theory of Shear Device for Investigating the Localization Phenomena

**17:10 – 17:30 A.I. Khromov, A.A. Bukhanko, S.L. Stepanov.** Deformations Concentrators and Fracture of Plastic Bodies

**17:30 – 17:50 M. Benabdoun, T. Dorbani, S. Hamamda, I. Zerrouk.** Dilatometric and Calorimetric Study of an Al-Mg-Zn Alloy

**17:50 – 18:10 G. Kostin, V. Saurin.** Integro-differential Approach in the Linear Theory of Elasticity

JULY 5, TUESDAY

Room A

*Morning Session*

CHAIRMAN D.A. INDEITSEV

Room B

***10:00–12:30***    **ROUND TABLE. CLOSING CEREMONY**