

JUNE 24, THURSDAY

Room A

Morning Session

CHAIRMAN D.A. INDEITSEV

9:30 – 10:15 OPENING CEREMONY

10:15 – 10:55 **M.L. Kachanov.** Porous and microcracked materials: proper quantitative characterization and cross-property connections

10:55 – 11:35 **S. Matyukevich, N.F. Morozov, E. Pavlovskaya, Yu. Petrov, B. Plamenevsky, A. Utkin.** Dynamical problems for domains with corners

11:35 – 12:15 **V.A. Palmov.** Application of the theory of brownian motion to the problem of motion of aerosol

Coffee break

12:35 – 13:15 **I.G. Goryacheva.** Evolution of contact and internal stresses in wear process

Evening Session

CHAIRMAN V.A. PALMOV

15:30 – 16:10 **T.A. Beliakova, E.V. Lomakin.** Asymptotic analysis of some crack-tip fields in a material with variable elastic and plastic properties

Coffee break

16:30 – 17:10 **M.P. Cartmell, C.R. McInnes.** Proposals for a continuous Earth-Moon cargo exchange mission using the motorised momentum exchange tether concept

17:10 – 17:50 **G.A. Leonov.** Discontinuous load rating problem for induction motors

17:50 – 18:30 **I.I. Blekhman, L. Sperling.** The behaviour of the Stephenson-Kapitsa pendulum with inner degrees of freedom

Room B

JUNE 25, FRIDAY

Room A

Morning Session

CHAIRMAN N.F. MOROZOV

10:00 – 10:40 G. Maier, R. Ardito, M. Bucciarelli, G. Bolzon, R. Fedele. Inverse analyses for identification of material parameters

Break

Minisymposium “Nonlinear Waves in Complex Systems”

CO-CHAIRMEN A.V. PORUBOV, F. PASTRONE

10:50 – 11:20 J.G. Caputo, Y.A. Stepanyants. Steady-state and self-similar solutions of Richards' equation

11:20 – 11:50 K.L. Muratikov, A.L. Glazov. Nonlinear photoacoustic thermoelastic effect: Application to the problem of residual stress detection

Coffee break

12:10 – 12:40 F. Pastrone. Cosserat microstructured solids and granular media

12:40 – 13:10 A.M. Kosevich. Dynamics of dislocation lattice

Evening Session

15:30 – 16:00 A.V. Porubov, G.A. Maugin, V.V. Mareev. Two-dimensional nonlinear strain waves in plates

16:00 – 16:30 N.A. Kudryashov. Nonlinear differential equations with exact solutions

Coffee break

16:50 – 17:20 Y. Fukumoto, V.L. Okulov. Velocity field induced by a helical vortex tube of finite core

17:20 – 17:50 Y. Doi, B.-F. Feng. On the collision of intrinsic localized modes in 1D Fermi-Pasta-Ulam lattice

Room B

Morning Session

Minisymposium “Vibrational Mechanics and Synchronization”

CHAIRMAN I.I. BLEKHMAN

10:50 – 11:20 A.K. Abramian. A new model for the study of rain-wind induced vibrations

11:20 – 11:50 E.V. Shishkina. On the application of the method of direct separation of motions to continuous problems

Coffee break

12:10 – 12:40 B.R. Andrievsky, A.A. Efimov, A.L. Fradkov. Problems of controlled synchronization

12:40 – 13:10 L.S. Chechurin, V.V. Semenov. Frequency approach to combined frequencies synchronization analysis

13:10 – 13:40 H. Dresig, I.I. Blekhan, J. Vulfson. To the theory of nonlinear dissipation at polyharmonic excitation

Evening Session

CHAIRMAN A.M. KRIVTSOV

Computational mechanics

15:30 – 15:50 I. Iordanoff, N. Fillot, Y. Berthier. Discrete element method: a tool to understand wear

15:50 – 16:10 A.M. Krivtsov, E.M. Galimov, M.S. Legkostupov, A.V. Zabrodin. Rotational collapse of gas-dust cloud as possible origin for planet systems

16:10 – 16:30 V.F. Koshelev. Stress analysis with the multi-wedge element

Coffee break

16:50 – 17:10 H. Askes, E. Kuhl, P. Steinmann. Dual equilibrium problem with applications to mesh optimisation and structural optimisation

17:10 – 17:30 A.A. Dobroskok, A. Ghassemi, A.M. Linkov. Novozhilov's structural criterion: an extension for numerical simulation of mode I and II crack growth and coalescence

17:30 – 17:50 H. Haario, Zh. Korotkaya, O. Shipilova, A. Smolianski. The novel method for a linear convection problem

17:50 – 18:10 E. Barkanov, R. Rikards, A. Chate. Finite element modelling and vibration analysis of lightweight structures with damping

18:10 – 18:30 I.A. Brigadnov. The limit analysis method in continuum mechanics

JUNE 26, SATURDAY

Room A

Morning Session

CHAIRMAN E.F. GREKOVA
Mechanics of Generalized Continua

10:00 – 10:35 E.L. Aero. Problems of the nonlinear micromechanics of media with irreversibly modified discrete structure

10:35 – 11:10 P.A. Zhilin. Symmetries and orthogonal invariants in oriented space

11:10 – 11:45 G. Capriz. Dynamics of granular and bacular fluids

Coffee break

Evening Session

CHAIRMAN A.B. FREIDIN
Phase transitions

15:30 – 16:10 Y. Fu. Surface-impedance matrix and its applications

Break

16:20 – 16:40 V.A. Eremeyev, W. Pietraszkiewicz. On the non-linear theory of elastic shells undergoing phase transitions

16:40 – 17:00 A.G. Knyazeva. Stability of stationary conversion regime in the elastic medium relative to one and two-dimensional perturbations

17:00 – 17:20 S.N. Gavrilov. Analytical approach to investigation of non-stationary dynamics of phase transformation in an elastic rod

Coffee break

17:40 – 17:55 A.B. Freidin, Y. Fu, L.L. Sharipova, E.N. Vilchevskaya. Two-phase deformations in relation with constitutive equations of solids

17:55 – 18:10 L.L. Sharipova. On heterogeneous deformation of solids due to multiple appearance of new phase layers

18:10 – 18:25 E.N. Vilchevskaya, N. Evlampieva. On phase transformations of an inclusion in an external strain field

18:25 – 18:55 DISCUSSION

Room B

Morning Session

12:00 – 14:00 Posters (PS1)

Evening Session

CHAIRMAN D.A. INDEITSEV
Waves

16:20 – 16:40 M. Kulesh, M. Holschneider, M.S. Diallo, F. Scherbaum, M. Ohrnberger. Estimating attenuation, phase and group velocity of surface waves observed on a 2D shallow seismic line using continuous wavelet transform

16:40 – 17:00 I.V. Sturova. The action of periodic surface pressures on an elastic rectangular platform floating on shallow water

17:00 – 17:20 D.P. Kouzov. Influence of gravitation on wave propagation in compressible media

Coffee break

17:40 – 18:00 S.V. Sorokin. Stationary dynamics of sandwich plates under heavy fluid loading

18:00 – 18:20 D.A. Indeitsev, V.N. Naumov, E.I. Prokuratova. Influence of rheological elements of fracture on the wave processes in one-dimensional complicated structures

18:20 – 18:40 A. Movchan. Coupled elastic and electro-magnetic fields and localisation in periodic structures

JUNE 27, SUNDAY

Room A

Morning Session

CHAIRMAN A.D. SERGEYEV

10:00–10:40 A.K. Belyaev. High frequency dynamics of structures

Break

Minisymposium “Mechatronics and Structronics”

CO-CHAIRMEN A.K. BELYAEV, H. IRSCHIK

10:50–11:20 Y. Nyashin, F. Ziegler. Separation of deformation control and controlled redistribution of load stresses

11:20–11:50 V. Lokhov, V. Kiryukhin, Y. Nyashin. Displacement Control of Structures

Coffee break

12:10–12:40 T. Mrazek, A.K. Belyaev, H. Irschik. A Versatile Shock Absorber Model for Multi-Body Systems

12:40–13:10 J. Gerstmayr, M. Stangl, M. Dibold. Numerical simulation of mechatronic systems with discontinuities

Evening Session

15:30–16:00 D. Marinova, G.E. Stavroulakis, G. Foutsitzi, E. Hadjigeorgiou, E. Zacharenakis. Robust design of smart structures taking into account structural defects

16:00–16:30 G.D. Pasgianos, K.G. Arvanitis, A.K. Boglou, P.N. Paraskevopoulos. Identification and controller tuning for double integrating plus dead time systems with application to position control

Coffee break

CHAIRMAN I.A. KUNIN

New mathematical methods in mechanics

16:50–17:20 I.A. Kunin. A new approach to complex and chaotic dynamical systems

17:20–17:40 G.A. Chernykh, I.A. Kunin. Applications of a new optimal computer algorithm to dynamical systems

17:40–18:00 V. Kreinovich, I.A. Kunin. Application of Kolmogorov Complexity to Advanced Problems in Mechanics

18:00–18:20 Y.E. Gliklikh, I.Y. Kriger, I.A. Kunin. A tensorial measure of chaotic motion

Room B

Morning Session

Minisymposium “Seismic Waves Propagation”

CHAIRMAN G.C. HERMAN

10:50–11:20 L.A. Molotkov. On attenuation in effective model of medium consisting of alternating elastic and fluid layers

11:20–11:50 D.A. Indeitsev, Yu.A. Mochalova. Low-frequency localized seismic waves in a two-layer fluid

Coffee break

12:10–12:40 F. ten Kroode, H. Chauris. On the use of multi-valued migration for sub-surface seismic imaging in complex media

12:40–13:10 G.C. Herman. Surface-wave scattering

Evening Session

15:30–16:00 R.-E. Plessix, W. Mulder. Comparison of the migration obtained from the two-way wave equation and its parabolic approximation

16:00–16:30 A. Verdel, D. van der Burg, K. Wapenaar. Ray-Based Stochastic Inversion

Coffee break

16:50–17:20 W.A. Mulder, R.-E. Plessix. Frequency-domain finite-difference two-way wave-equation migration

17:20–17:50 E.F. Grekova, G.C. Herman. Waves in rock modelled as anisotropic reduced Cosserat continuum

Room C

Morning Session

CHAIRMAN V.A. EREMEYEV

Mechanics of Generalized Continua

10:50–11:10 M. Ciarletta, G. Iovane, A.V. Nasedkin. Finite element solutions of some problems for elastic solids with voids

11:10–11:30 D. Grigoriev, S. Kipfstuhl, P.R. Sammonds, I. Hamann, S.H. Faria. Experimentally observed bifurcation shape instability of rigid inclusions in power law plastic matrix

11:30–11:50 M. Brocato. Lattice discontinuities in Cosserat continua

Coffee break

12:10–12:30 A.A. Zelenina, L.M. Zubov. Nonlinear Saint-Venant problem of torsion of prismatic elastic bodies with couple stresses

12:30–12:50 O.A. Plekhov, O.B. Naimark, S.V. Uvarov, Th. Palin-Luc, N. Saintie. Theoretical and experimental investigation of fatigue of metal materials by infrared thermography

12:50–13:10 Y.V. Grinyaev, N.V. Chertova, M.A. Chertov. Dynamic equations of field theory of defects and its applications to description of solids deformation

13:10–13:30 I. Sevostianov. Cross-property connections for anisotropic inhomogeneous materials

13:30–13:50 D. Besdo. On models denoting the elastic-plastic transition after large deformations and their influence on spring-back predictions

Evening Session

CHAIRMAN A.M. KRIVTSOV

Solids and Structures

15:30–15:50 W. Oliferuk, M. Maj. Analysis of plastic instability in austenitic steel

15:50–16:10 M.A. Grekov. An application of a boundary perturbation method to some problems of elasticity

16:10–16:30 V.V. Kalashnikov, M.I. Karyakin. Second order effects in a problem of torsion of nonlinear elastic shaft

Coffee break

16:50–17:10 R.A. Arutyunyan, N.A. Kutanova. Creep and fracture of polymer materials undergoing irradiation

17:10–17:30 V.I. Kondaurov. Simulation of collapse of high-altitude buildings

17:30–17:50 G. van der Heijden. Topological issues in very large deformations of rods and filaments

17:50–18:10 E. Taroco, R.A. Feijóo, A. Novotny, C. Padra. Configurational mechanics and shape sensitivity analysis

18:10–18:30 L.B. Getsov. Thermal fatigue. Problems of prediction of life time for thermocyclic loading

18:30–18:50 I. Demidova. The advancement of L.M. Kachanov's ideas on the creep theory and the modeling

JUNE 28, MONDAY

Room A

Morning Session

CHAIRMAN D. HARRIS

10:00 – 10:40 A. Castellanos. Microstructure and bulk behaviour of powders: what we can/cannot measure?

Break

Minisymposium “Problems in the Mechanics of Granular Materials and Systems”

CHAIRMAN D. HARRIS

10:50 – 11:20 J.T. Jenkins, L. la Ragione. Effect of particle spin in granular material

11:20 – 11:50 R.E. Wieman. Time-periodic solutions in a simplified granular flow model

Coffee break

12:10 – 12:40 F.A. Gilabert, J.-N. Roux, A. Castellanos. Cohesive granular packings: structure and plastic consolidation

12:40 – 13:10 X. Jia, P. Mills, P. Massaad, T. Brunet. Probing cohesive granular materials with acoustic waves

Evening Session

15:30 – 16:00 H.H. Shen, J.T. Jenkins, S. Ji. Geometrically constraint flow behavior with uniform disks

16:00 – 16:30 D. Harris. Slow flows of granular materials

Coffee break

16:50 – 17:20 J. Parrott, A. Champneys, D. Muir-Wood. Shear banding in soils

17:20 – 17:50 V.M. Chuyko, I.M. Kolgotin, V.M. Yarushina. The creep of microcracked materials

Room B

Morning Session

Minisymposium “Nonlinear dynamics of engineering systems”

CO-CHAIRMEN E.E. PAVLOVSKAIA, M. WIERCIGROCH, M. BOLTEZAR

10:50 – 11:20 E.E. Pavlovskaja, X. Xu, F. Romeo, M. Nilde Cerri, S. Lenci, M. Wiercigroch. Experimental and theoretical studies of vertically driven pendulum

11:20 – 11:50 F. Romeo, G. Rega. Propagation properties of nonlinear oscillatory chains

Coffee break

12:10 – 12:40 J. Slavič, M. Boltežar. Nonlinear and nonsmooth multibody dynamics as a linear complementarity problem

12:40 – 13:10 C. E. Truman, D. J. Wagg. An experimental investigation into the influence of elastic compliance on non-smooth system dynamics

13:10 – 13:40 K.V. Avramov, Yu.V. Mikhlin, S.N. Reshetnikova. Analysis of forced steady-state vibrations in systems containing nonlinear absorbers

Evening Session

CHAIRMAN E.A. IVANOVA

Dynamics of rigid bodies and multibody dynamics

15:30 – 15:50 V.V. Beletsky, A.S. Kuleshov. Dynamics of rotational motion of the satellite in sunlight flux

15:50 – 16:10 S.A. Lychev. Nonsymmetric integral transformations and their applications

16:10 – 16:30 J. M. Nitsche. Rates of convection-diffusion of flexible molecules by a kinetic theory for continuous deformable bodies

Coffee break

CHAIRMAN S.N. GAVRILOV

Mechanical and civil engineering applications

16:50 – 17:10 T.-P. Fries, H. G. Matthies. Coupled meshfree/mesh-based methods for fluid dynamics: An alternative to the chimera grid technique

17:10 – 17:30 A.D. Sergeyev. Buoyancy loss by a covered object due to bending of its flexible shell subjected to distributed pressure

17:30 – 18:00 A.V. Metrikine. Parametric Instability of a catenary-pantograph system

18:00 – 18:20 A.I. Andrianov, A.J. Hermans. Hydroelastic behaviour of a ring-shaped plate

18:20 – 18:40 S.N. Veritchev, A.V. Vostroukhov. Fast algorithm for calculation of the dynamic response of a stratified soil subjected to a harmonic load

18:40 – 19:00 E. Glushkov, N. Glushkova, M. Golub, E. Shapar. Resonance phenomena in layered structures with defects

JUNE 29, TUESDAY

Room A

Morning Session

CHAIRMAN A.M. KRIVTSOV

10:00 – 10:40 M. Wiercigroch. Nonlinear dynamics for engineering design

Break

Minisymposium “Nonlinear dynamics of engineering systems”

CO-CHAIRMEN E.E. PAVLOVSKAIA, M. WIERCIGROCH, M. BOLTEZAR

10:50 – 11:20 A. Starkey. Review of an iterative process in solving a non-linear problem

11:20 – 11:50 A.V. Vostrokhov, N.V. Derendyaev, I.N. Soldatov. Development of finite degrees-of-freedom models for fluid-filled rotor systems: methodological and engineering benefits

Coffee break

12:10 – 12:40 A. Balanov, N. Janson, E. Schöll. Control of noise-induced oscillations by delayed feedback

12:40 – 13:10 P. Szuminski. Determination of the stiffness of rolling, low-speed kinematic pairs

Evening Session

CHAIRMAN A.M. KRIVTSOV

15:30 – 16:10 V.P. Myasnikov, M.A. Guzev. Tensor nature of the chemical potential

Room B

Morning Session

CHAIRMAN I.A. KUNIN

New mathematical methods in mechanics

10:50 – 11:10 M.F. Dimentberg, D.V. Iourtchenko. On the width of resonant domain of a certain strongly nonlinear system

11:10 – 11:30 N.B. Loguinova. Evolution under gravity of a three-dimensional hard-sphere system and a three-dimensional granular gas

11:30 – 11:50 S. Fedotov, I. Bashkirtseva, L. Ryashko. Stochastic analysis of non-normal dynamical system: application to dynamo theory

Coffee break

12:10 – 12:30 Y.A. Kuperin, I.A. Kunin. Operator approach to nonlinear dynamics and stochastic control of chaos

12:30 – 12:50 I.V. Andrianov. Artificial Small Parameter Method

12:50 – 13:10 I.A. Miklashevich. The energy flux and fracture in inhomogeneous media

13:10 – 13:30 K.A. Lurie. On certain material implementations of the concept of dynamic materials

Evening Session

Coffee break

Evening Session

16:30 – 18:30 Posters (PS2)

JULY 1, THURSDAY

Room A

Morning Session

CHAIRMAN P.YE. TOVSTIK
Mechanics of elastic shells

10:00 – 10:30 P.E. Tovstik. On the 2D shell theory of the Timoshenko's type

10:30 – 10:50 V.A. Zarutsky, N.Ya. Prokopenko, I.Yu. Podilchuk. On the influence of the discrete placement of the ribs on the dynamical characteristics of cylindrical shells, made from composite materials

10:50 – 11:10 S.P. Chernjaev. The stability of thin plates and shells laying on the elastic foundation.

11:10 – 11:30 G.S. Nikoghosyan, S.H. Sargsyan. Asymptotic method of construction of general theory of micropolar elastic thin shells

Coffee break

CHAIRMAN V.A. EREMEYEV

Nonlinear dynamics

11:50 – 12:10 W. E. Seemann, H. Hetzler. Numerical und analytical study of a new simple model describing vibrations in vehicle brake systems

12:10 – 12:30 J. Vulfson, P. Dyatlova. On the problem of dynamic unloading of machine's drives with nonlinear characteristics

12:30 – 12:50 V. D'Agostino, D. Guida, A. Ruggiero, A. Senatore. On the effects of rotation on the thin disk axial vibrations and critical speeds

12:50 – 13:10 L.C. Nitsche. Particle-swarm simulations of interfacial coalescence, rupture and surface wetting

Room B