

JUNE 27, THURSDAY

Room A

Morning Session

CHAIRMAN D.A. INDEITSEV

10:00–10:30 OFFICIAL OPENING CEREMONY

10:30–11:10 V.A. Palmov, E. Stein. Multiplicative decomposition on the gradient of motion in mechanics of solids

11:10–11:50 R. Kienzler. Aspects of mechanics in material space

Coffee break

12:20–13:00 V.M. Fomin. Numerical simulation of deformation and destruction processes at high velocity body interaction

Evening Session

Minisymposium “Nonlinear dynamics and chaos in engineering structures”

CO-CHAIRMEN M. WIERCIGROCH, T.KAPITANIAK

15:45–16:15 H. Yabuno. Analysis and control of nonlinear phenomena in some mechanical systems

16:15–16:45 S. Lenci, G. Rega. Numerical simulations of an optimal control method of the nonregular dynamics in a Duffing oscillator

Coffee break

17:05–17:35 M.P. Cartmell, D.I.M. Forehand, R. Khanin. Symbolic computational modelling and solution of problems in applied dynamics

17:35–18:05 A. Bandrivskyy, S. Beri, D.G. Luchinsky, P.V.E. McClintock. Stochastic mechanics of nanomotors

Room B

Room C

Evening Session

CHAIRMAN S.N. GAVRILOV

Wave motion

15:45–16:05 C. Boutin, J.L. Auriault, P. Royer. Effect of phase change on acoustics of bubbly liquids and of porous medium saturated by a bubbly liquid

16:05–16:25 S. Guenneau, C.G. Poulton, A.B. Movchan. Propagation of elastic waves in conical incidence on an array of fibers

16:25–16:45 T.A. Andreeva, W.W. Durgin. Ultrasonic technique in characterization of the grid-generated turbulent flow

Coffee break

17:05–17:25 S.B. Platts, N.V. Movchan. Scattering of elastic waves by a disordered array of fluid filled cylinders

17:25–17:45 C.G. Poulton. Defect Green's functions, density of states and band-gaps for two-dimensional periodic materials

17:45–18:05 J.J. Rushchitsky, I.N. Khotenko, K.V. Save-lyeva. Plane shear waves in piezopowders: unexpected new phenomenon - the third harmonics generation

JUNE 28, FRIDAY

Room A

Morning Session

CHAIRMAN M. WIERCIGROCH

10:00–10:40 D.A. Indeitsev. Problem of low-frequency vibration of elastic bodies in two-layer liquid

10:40–11:20 G.A. Leonov. On stability in Zhukovsky sense

Coffee break

Minisymposium “Nonlinear oscillations and stability”

CO-CHAIRMAN H. TROGER, A.M. KRIVTSOV

11:50–12:20 R. Alaggio, G. Rega. Homoclinic bifurcation to chaos in a suspended cable-mass: experimental characterization and theoretical interpretative model

12:20–12:50 B. Barkow, A. Steindl, H. Troger, G. Wiedermann. On some stability and control problems in the dynamics of tethered satellite systems

12:50–13:20 V.V. Beletsky. Regular and chaotic relative motion of a dumb-bell satellite

13:20–13:50 M.P. Cartmell, S.W. Ziegler, D.S. Neill. On the performance prediction and scale modelling of a motorized momentum exchange propulsion tether

Evening Session

Minisymposium “Nonlinear oscillations and stability”

CO-CHAIRMAN H. TROGER, A.M. KRIVTSOV

15:45–16:15 E.A. Ivanova. Motion of a rigid body on the inertial elastic plate. A nonlinear formulation of the problem and some effects

16:15–16:45 A.M. Krivtsov. Nonlinear dynamics of elastically supported centrifuge

16:45–17:15 A.D. Sergeev. Descent of elastic system into heavy liquid

Coffee break

17:35–18:05 F. Vestroni, D. Bernardini, W. Lacarbonara. Nonlinear thermomechanical responses of shape-memory oscillators

18:05–18:35 C. Wolter, M.A. Trindade, R. Sampaio. A new strategy for modal analysis: The KL method

Room B

Morning Session

CHAIRMAN V.A. EREMEYEV

Nonlinear dynamics

11:50–12:10 L.A. Slobozhanin, J. Iwan D. Alexander. Is a double soap bubble stable?

12:10–12:30 M.S. Artemyeva, D.Ju. Skubov. Magnetic suspension in alternating high-frequency field

12:30–12:50 A.K. Abramian, S.A. Vakulenko, A.H.P. vd Burgh. Rain-wind induced vibration of a simple oscillator

12:50–13:10 D.V. Iourtchenko, F. Segatori, G.J. Tomei. Response of an inertia controlled system to Gaussian and Poisson impulse processes

13:10–13:30 L.I. Manevitch, O.V. Gendelman, A.F. Vakakis. Dynamics of linear periodic chains with essentially nonlinear attachments

Evening Session

Minisymposium “Wave localization in continuous media”

CO-CHAIRMAN D.A. INDEITSEV, P. MCIVER, M. MCIVER

15:45–16:15 P. McIver, M. McIver, J. Zhang. Excitation of trapped water waves by the forced motion of structures

16:15–16:45 T.I. Khabakhpasheva, A.A. Korobkin. Analysis of floating elastic plate problem: exact solutions and diffraction

16:45–17:15 D.A. Indeitsev, V.N. Naumov, E.I. Prockuratova. Dynamic stress field in an elastic half-plane with rough free boundary

Coffee break

17:35–18:05 A.K. Abramian, S.A. Vakulenko, A.J. Hermans. Surface waves caused by a soliton moving along a bottom

18:05–18:35 I.V. Sturova. Unsteady response of an elastic beam floating on a shallow water under external load

Room C

Morning Session

CHAIRMAN E.F. GREKOVA

Solids and structures

11:50–12:10 A.I. Malkin, E.M. Podgaetsky. Hydrodynamic effects in environment-induced fracture

12:10–12:30 M.N. Perelmuter. Bridge crack model and an interface strength

12:30–12:50 N. Chinchaladze. Some contact problems for cusped plate-fluid interaction models

12:50–13:10 M.A. Osipenko, Yu.I. Nyashin, R.N. Rudakov. Some analytical solutions of the contact problem in the theory of leaf spring bending

Evening Session

CHAIRMAN I.I. BLEKHMANN

Nonlinear dynamics, chaos and vibration

15:45–16:05 J. Škliba, R. Svoboda. Mathematical model of hydraulic damper with active control of resulting force

16:05–16:25 C.E.N. Mazzilli, O.G.P. Baracho Neto. Nonlinear multi-mode of an elastic pendulum tuned into a two-to-one internal resonance

Coffee break

16:45–17:05 A.P. Seyranian, A.A. Mailybaev. Theory of parametric resonance: new results

17:05–17:25 R. Votrubic, J. Škliba. Global characteristic of mechanical systems

JUNE 29, SATURDAY

Room A

Morning Session

CHAIRMAN A.D. SERGEYEV

10:00–10:40 E.L. Aero. Essentially nonlinear dynamics of double continuum with periodic structure

Coffee break

Minisymposium “Nonlinear dynamics and chaos in engineering structures”

CO-CHAIRMEN M. WIERCIGROCH, T.KAPITANIAK

11:10–11:40 A. Stefanski, J. Wojewoda, M. Wiercigroch. Nonlinear dynamics of dry friction oscillators

11:40–12:10 D.Q. Cao, R.W. Tucker, Ch. Wang. Nonlinear behaviour of micro-structures and Cosserat quasi-rigidity

12:10–12:40 U. Galvanetto, P.B. Bornemann. Numerical investigation of the steady states of non-linear dynamic structures

Evening Session

Minisymposium “Nonlinear dynamics and chaos in engineering structures”

CO-CHAIRMEN M. WIERCIGROCH, T.KAPITANIAK

15:45–16:15 A. Ivanović, R.D. Neilson, A. Starkey, A.A. Rodger. Investigation of the debonding at the proximal fixed end of an anchorage

16:15–16:45 T. Kapitaniak. Low-dimensional chaos in high-dimensional phase space

16:45–17:15 E. Karpenko, E. Pavlovskaya, M. Wiercigroch. Theoretical studies of Jeffcott rotor

Room B

Morning Session

CHAIRMAN S.N. GAVRILOV
Mechanics of non-classical media

11:10–11:30 V.A. Eremeyev, L.M. Zubov. Nonlinear elastic shells with microstructure and applications to the biomembranes

11:30–11:50 E. Grekova, G. Maugin. Modelling of magnetic crystals by means of gyrocontinua

11:50–12:20 V.P. Myasnikov, M.A. Guzev, A.A. Ushakov. Geometric model of internal residual stresses in solids

Evening Session

CHAIRMAN E.F. GREKOVA
Solids and structures

15:45–16:15 E.V. Lomakin. Deformation theory for isotropic solids with stress-state-dependent material properties

16:15–16:35 C. Boutin, S. Hans. Continuum dynamic modelling of idealised buildings

16:35–16:55 W.M. Huang. Failure of aluminum and polymer foams under multiaxial loads

Coffee break

17:15–17:35 V.M. Yarushina. Some features of the piecewise linear mechanics

17:35–17:55 W.M. Huang. Yield surfaces of shape memory alloys with multi-phase transformations

Room C

Morning Session

CHAIRMAN D.A. INDEITSEV
Fluid and gas

11:10–11:30 G. Panasenko. Homogenization of two-phase flow in porous media: dependence of an effective permeability on gradient of pressure

11:30–11:50 A.V. Metrikine. Dynamics of a water riser

11:50–12:10 O. Kayser-Herold, H.G. Matthies. A dual error estimator for fluid-structure interaction problems

12:10–12:30 I.I. Blekhman, L.I. Blekhman, L.A. Vaisberg, V.B. Vasilkov, K.S. Yakimova. To the theory of vibrational injection of gas in fluid

Evening Session

Minisymposium “Technological Plasticity”

CHAIRMAN S.E. ALEXANDROV

15:45–16:15 I. Doltsinis. Inelastic deformation processes with random parameters — Analysis and design

16:15–16:45 A.Yu. Ishlinskiy, D.D. Ivlev. The theory of ideal plasticity. General problems. Three-dimensional problem

16:45–17:15 K.S. Chung, W. Lee. Nonsteady plane strain ideal forming

Coffee break

17:35–18:05 E.A. Lyamina, S.E. Alexandrov. Compression of anisotropic plastic layer between two rough rotating plates

18:05–18:35 L.A. Maximova. Flow of ideally plastic material between rough plates

JULY 1, MONDAY

Room A

Morning Session

CHAIRMAN A.K. BELYAEV

10:00–10:40 I.G. Goryacheva. Effect of adhesion in contact interaction

10:40–11:20 I.I. Blekhman, D.A. Indeitsev. About methods of the theory of nonlinear oscillations

Coffee break

Minisymposium “Mechatronics and structronics”

CHAIRMAN A.K. BELYAEV

11:50–12:20 C. Linz, D. Mayer, V. Krajenski. Positive position feedback — theory and application

12:20–12:50 S. Herold, D. Mayer, C. Linz. Simulation of adaptive structures in time domain

12:50–13:20 D. Mayer, S. Herold, P.Z. Kovács. On-line identification of paths in smart structures with adaptive Kautz filters

13:20–13:50 A.V. Pesterev, L.A. Bergman, C.A. Tan. Accurate model reduction in problems of bridge vibration due to moving vehicle

Evening Session

Minisymposium “Mechatronics and structronics”

CO-CHAIRMEN A.V. PESTEREV, L. BERGMAN

15:45–16:15 U. Pichler. Piezoelectric sensing and actuation in smart structures

16:15–16:45 Ch. Zehetner, H. Irschik. Piezoelectric shape control of flexural vibrations of a beam performing a rigid-body motion

16:45–17:15 M. Nader, M. Krommer, H.-G.v. Garssen, H. Irschik. Dynamic shape control of shells of revolution by distributed piezoelectric actuation

Coffee break

17:35–18:05 M. Sedlmayr, F. Pfeiffer. Spatial dynamics of CVT chain drives

18:05–18:35 A.K. Belyaev. Stability chart of synchronous belts and chains

Room B

Morning Session

Minisymposium “Multibody dynamics”

CHAIRMAN E.A. IVANOVA

11:50–12:20 D.Q. Cao, R.W. Tucker, Ch. Wang. Cosserat multi-quasi-rigidity

12:20–12:50 A.A. Galal, E.A. Ivanova. Motion of one-rotor gyrostat under the action of internal moment

12:50–13:20 A.A. Burov, S.Ya. Stepanov. Routh’s theorem for mechanical systems subjected to holonomic constraints

13:20–13:50 A.D. Firsova. Motion of a vibro-excited rigid body on a rough plane

Evening Session

Minisymposium “Multibody dynamics”

CHAIRMAN E.A. IVANOVA

15:45–16:15 G. Deliu, S. Vlase, M. Deliu. Optimum design of a plane mechanism

16:15–16:45 A.S. Kuleshov. On the stability and bifurcation of steady motions of a gyrostat on a plane

Coffee break

17:05–17:35 L.S. Chechurin, D. Shin. Robust controller for magnetic bearing rotor with uncertain rotational rate

17:35–18:05 M.H. Abolbashari, E. Barbarestani. Modal analysis of an automotive wheel

Room C

Morning Session

CHAIRMAN A.D. SERGEYEV

Nonlinear dynamics, chaos and vibration

11:50–12:10 O. Nekhamkina, M. Sheintuch. Spatially-‘Chaotic’ stationary solutions in reaction-diffusion systems with convection

12:10–12:30 K. Kawaguchi, M. Nakai. On the inharmonicity phenomenon of a struck string

12:30–12:50 T. Maehara, M. Nakai. Steady-state and transient chaos in nonlinear dynamic systems

12:50–13:10 S. Kraut, Feudel. Multistability, noise and attractor-hopping: the crucial role of chaotic saddles

Evening Session

CHAIRMAN S.N. GAVRILOV

Solids and structures

15:45–16:05 V. Kozák. Weibull stress model in cleavage fracture and toughness scaling model

16:05–16:25 J.Löblein, J. Schröder, F. Gruttmann. A model for finite orthotropic plasticity using generalized stress-strain measures

Coffee break

16:45–17:05 V.K. Kalpakides, G.A. Maugin. A Hamiltonian formulation for elasticity and thermoelasticity

17:05–17:25 J.M. Nitsche. Average transport mechanics of microstructured materials with diffusion and reversible binding: application to drug transport through skin

JULY 2, TUESDAY

Room A

Morning Session

CHAIRMAN A.B. FREIDIN

10:00–10:40 F.D. Fischer, N.K. Simha, J. Svoboda. A micromechanical study of the kinetics of diffusional transformation in elastic-plastic materials

10:40–11:20 A.M. Krivtsov. Deformation and fracture of solids with microstructure

Coffee break

Evening Session

CHAIRMAN A.B. FREIDIN

15:45–16:25 H. Altenbach, K. Naumenko, P.A. Zhilin. Micropolar theory of the binary mixture

Coffee break

Room B

Morning Session

12:00–13:00 Posters (PS1)

Evening Session

17:00–18:00 Posters (PS2)

Room C

JULY 3, WEDNESDAY

Room A

Morning Session

CHAIRMAN A.M. KRIVTSOV

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

10:40–11:20 H. Gao, Y. Huang, F. Abraham. Continuum and atomistic studies of intersonic and supersonic crack propagation

Coffee break

Minisymposium “Strength and fracture of solids at macro, micro and nano scale”

CO-CHAIRMEN A.M. KRIVTSOV, YU.V. PETROV

11:50–12:20 G.A. Baranov, A.A. Belyaev, N.F. Morozov, Yu.V. Petrov, A.I. Suslikov, Yu.V. Sudyankov. Laser-induced volume fracture of glasses

12:20–12:50 S.A. Atroshenko, G.D. Fedorovsky, S.I. Krivosheev, Yu.V. Petrov, A.A. Utkin. Static and dynamic fracture of glass microballoons filled composite

12:50–13:20 R.A. Arutyunyan, N.Yu. Evlampieva. Fatigue fracture criterion based on damage evolution and stepwise crack propagation law

Evening Session

Minisymposium “Strength and fracture of solids at macro, micro and nano scale”

CO-CHAIRMEN A.M. KRIVTSOV, YU.V. PETROV

15:45–16:15 F.A. Gilabert, A.M. Krivtsov, A. Castellanos. Computer simulation of mechanical properties for powder particles using Molecular Dynamics

16:15–16:35 E.I. Koneva, I.F. Golovnev, V.M. Fomin. Continual criteria for fracture of solids: molecular-dynamics consideration

16:35–17:05 A.V. Chemakin, N.L. Shwartz, Z.Sh. Yanovitskaya, A.V. Zverev. Simulation of pore sealing on silicon surface

Coffee break

17:25–17:55 A. Lissowski, R. Wojnar. Nanocrystallization by 5-7 dislocations

17:55–18:25 A.V. Kashtanov, Yu.V. Petrov. On the relation between energetic and kinetic approaches in the continual damage mechanics

Room B

Morning Session

Minisymposium “Synchronization”

CHAIRMAN I.I. BLEKHMAN

11:50–12:20 I.I. Blekhman, A.L. Fradkov. On the general definition of synchronization

12:20–12:50 L. Sperling, H. Duckstein, B.V. Ryzhik. A survey of recent results for automatic balancing

12:50–13:20 B.V. Ryzhik, L. Sperling, H. Duckstein. Sommerfeld-effect in a two-plane automatic balancing

Evening Session

Minisymposium “Synchronization”

CHAIRMAN L. SPERLING

15:45–16:15 F.T. Arecchi. Control and synchronization of homoclinic chaos and its implication for neurodynamics

16:15–16:45 M. Kurch. Self-synchronisation of two vibro-exciter with inner degrees of freedom in a vibrating system

Coffee break

17:05–17:35 I.I. Blekhman, N.P. Yaroshevich. Grounding of expanded formulation of the integral stability criterion for the problems of object synchronization with nearly uniform rotation

17:35–18:05 V. Maltsev, S. Rumyantsev, A. Kosolapov, A. Yudin. Problems of dynamics of transients and synchronizations of vibrational transport machines

Room C

JULY 4, THURSDAY

Room A

Morning Session

CHAIRMAN E.F. GREKOVA

10:00–10:40 I.A. Kunin. On extracting physical information from mathematical models of chaotic and complex systems

Coffee break

Minisymposium “Chaos — Complexity — Algorithms”

CHAIRMAN YU.A. KUPERIN

11:10–11:40 Yu.E. Gliklikh, S. Preston, I.A. Kunin. Geometry of chaos revisited

11:40–12:10 I.A. Kunin, G.A. Chernykh. Lorenz-type controlled pendulum

12:10–12:40 Yu.A. Romashev. On the Hilbert space approach to nonlinear dynamical systems

12:40–13:10 B. Yamrom, I.A. Kunin, G.A. Chernykh. Method of algorithmic transformations with applications to chaotic Systems

Evening Session

Minisymposium “Chaos — Complexity — Algorithms”

CHAIRMAN I.A. KUNIN

15:45–16:15 L.A. Dmitrieva, Yu.A. Kuperin, I.V. Soroka. Methods of nonlinear dynamics in Time Series Analysis

16:15–16:45 Yu.A. Kuperin, I.A. Kunin. Operator approach to nonlinear dynamics

16:45–17:15 B. Yamrom, G.A. Chernykh, I.A. Kunin. Centroidal trajectories and frames for chaotic dynamical systems

Coffee break

18:15–18:55 S. Gilmson. J.S. Bach: Goldberg Variations

Room B

Morning Session

Minisymposium “Wave processes in mechanics; acoustics”

CO-CHAIRMEN V.S. BULDIREV, D.P. KOUZOV

11:10–11:40 S. Gavrilov. Dynamics of system “string on an elastic foundation — moving inertial inclusion”

11:40–12:10 E.V. Shishkina. Oscillation of elastic spiral rods

12:10–12:40 V.E. Koissin, S.Yu. Krahmalev, V.R. Skvortsov. The response of sandwich structures to local dynamic loading

Coffee break

13:00–13:30 Y. Lee. Analysis and estimation of the noise in the electric multiple unit

13:30–14:00 A.P. Kiselev, Yu.V. Roslov, E.A. Vse-mirnova, V.O. Yarovoy. Polarization anomalies of elastic waves

Evening Session

Minisymposium “Wave processes in mechanics; acoustics”

CO-CHAIRMEN V.S. BULDIREV, D.P. KOUZOV

15:45–16:15 V.S. Buldyrev, A.V. Nikonov, L. Yu. Frad-kin. The generalized impedance boundary conditions for modeling a thin elastic layer between two elastic half-spaces and utilization of them for the calculation of the reflection and refraction coefficients

16:15–16:45 D.P. Kouzov, M.G. Zhuchkova. On approximate methods of calculation of surface waves scattering

Coffee break

17:05–17:35 N.N. Myagkov. Asymptotic modeling of non-linear wave processes in shock-loaded solids

17:35–18:05 P.V. Krauklis, L.A. Krauklis. Slow wave in a crack containing magmatic or hydrothermal fluids

Room C

Morning Session

CHAIRMAN A.M. KRIVTSOV
Computational mechanics

11:10–11:30 A. Banerjee, J.W. Hancock. A crack normal to the interface of elastically and plastically mismatched solids

11:30–11:50 I.A. Brigadnov. Dual limit analysis problem in non-linear elasticity

11:50–12:10 R. Mueller, G.A. Maugin, D. Gross. Material forces induced by Finite Element Discretizations

12:10–12:30 N.M. Bessonov, S.F. Golovashchenko. Generalization of Wilkins method for numerical simulation of dynamic and quasi-static forming processes of hyperelastic-plastic solids with large strains

12:30–12:50 A. Zaitsev, V. Wildemann, A. Babkin. Damage ensemble evolution, strain-softening and failure of granular heterogeneous solids under triaxial proportional loading

Evening Session

CHAIRMAN V.A. EREMEYEV
Phase transitions

15:45–16:05 A.B. Freidin. Equilibrium and stability of two-phase deformations in frames of phase transition zones

16:05–16:25 M. Bournane, S. Hamamda, M. Nedjar, A. Hakem, A.F. Sirenko. Internal friction of Al-Mg porous alloy

16:25–16:45 M. Bournane, M. Nedjar, Y. Sadaoui, A.F. Sirenko. Microplasticity of aged Al-Cu alloy

Coffee break

17:05–17:25 V.A. Eremeyev, A.B. Freidin, L.L. Sharipova. On centrally symmetric two-phase deformations

17:25–17:45 M.Yu. Gutkin, K.N. Mikaelyan, V.E. Ver-ijenko. Micromechanics of heterogeneous nucleation of martensite

JULY 5, FRIDAY

Room A

Evening Session

Minisymposium “Chaos — Complexity — Algorithms”

CHAIRMAN B. YAMROM

15:45–16:15 V. Kreinovich, I.A. Kunin. Kolmogorov complexity theory and chaotic phenomena

16:15–16:45 G.A. Chernykh, B. Yamrom. On some invariants of chaotic systems in the Space Time Discretization method

Coffee break

17:05–17:35 K. Grigoriadis, I.A. Kunin. Alternating projection algorithms for linear matrix inequality problems with rank constraints

17:35–18:05 Yu.M. Pis’mak. Self-organization in local scale invariant stochastic dynamical systems

18:05–18:25 OFFICIAL CLOSING CEREMONY

Room B

Morning Session

11:00–12:00 Posters (PS3)

Coffee break

Room C