

July 6, SUNDAY

Room A

Morning Session

Chairperson D.A. Indeitsev

9:30–9:40 Opening ceremony

9:40–10:20 M. Cartmell. Ten Years of Space Tether Research at the University of Glasgow

10:20–11:00 E.V. Lomakin. Crack problems in a continuum model with stress state dependent properties

11:00–11:40 S. Shaw, K. Turner, J. Rhoads, B. DeMartini, J. Moehlis. Exploiting Linear and Nonlinear Resonances in MEMS

Coffee break

Morning Session

Chairperson A.M. Krivtsov

12:00–12:40 I.G. Goraycheva, Y. Makhovskaya. Effect of adhesion on sliding and rolling friction of deformable bodies

12:40–13:20 J. Tomas. Micromechanics of fine particle adhesion – contact models and energy absorption

13:20–14:00 O. Gottlieb. The Bifurcation Structure of Microbeam Arrays Subject to Nonlinear Electrodynamic Parametric Excitation

Evening Session

Minisymposium “Mechanics of Granular Media”

Co-Chairpersons S. Antonyuk, N. Brilliantov, A. Castellanos, R. García-Rojo, F. Gilabert. Chairman J. Tomas

15:30–16:00 N. Brilliantov. Adhesive viscoelastic contact: the dynamic aspects

16:00–16:30 A. Castellanos, F.A. Gilabert, M.A.S. Quintanilla. The adhesive elastoplastic contact: phenomenological model and numerical simulation

16:30–17:00 P. Müller, S. Antonyuk, J. Tomas, S. Heinrich. Investigation and simulation of the restitution coefficient of moist granules

17:00–17:30 W.A.M. Morgado. Collision properties of granular systems and the dense state

17:30–18:00 Discussion.

Room B

Evening Session

Chairperson A. Zaitsev

Solids and structures

15:30–15:50 V. Lalin. Classification of Continuum mediums. New equations of Nonlinear elasticity

15:50–16:10 D. Zupan, M. Saje, I. Planinc. Exact buckling analysis of asymmetrically delaminated beams including transverse shear

16:10–16:30 S. Ivanov. Prediction of nonelastic deformation of fiber reinforced composites

16:30–16:50 A. Zaitsev, A. Novgorodova, D. Fedorov. The effective elastic moduli of 3D matrix-inclusion composites with anisotropic phases

16:50–17:10 E. Rudoy. On a asymptotic form of the energy functional in a problem to a curvilinear crack in a plate with possible contact of faces

17:10–17:30 R. Arutyunyan. Justification of the optimal energy consumption for the fracture of solid materials

17:30–17:50 N. Banichuk, S. Ivanova, E. Makeev. Shape Optimization of Axisymmetric and Non-Axisymmetric Solid Bodies Penetrated into Elastic-Cracked-Plastic Medium

Room C

Evening Session

Chairperson M. Cartmell

Mechanical and civil engineering applications

15:30–15:50 L. Nazarova, M. Kozlova. Evaluation of parameters of prepared seismic event based on inverse geomechanical problem solution by GPS data

15:50–16:10 L. Nazarov, A. Artemova. Direct and inverse problems of viscoelastic deformation and damage mechanics of rock

16:10–16:30 V. Sulimov, P. Shkapov. Application of particle collision algorithms to VVER-1000 coolant phase condition diagnostics

16:30–16:50 T. Schanz, J. Meier, M. Datcheva. Identification of Constitutive and Geometrical Parameters of Numerical Models with Application in Tunneling

16:50–17:10 A. Fedoroff, R. Kouhia. Stability Analysis of Simple Truss Beam

17:10–17:30 L. Banakh, A. Nikiforov. Instability areas of oscillations in highspeed rotor systems

17:30–17:50 R. Steinbuch, S. Brieger, U. Keller. Advanced Tools in Structural Optimization

July 7, Monday

Room A

Morning Session

Chairperson E. Vilchevskaya

9:30–10:10 J. Awrejcewicz, G. Kudra. Numerical modeling and analysis of mechanical systems with impacts and dry friction

10:10–10:50 W. Lacarbonara, S. Antman. On parametric instabilities in nonlinear structural dynamics

10:50–11:30 I. Andrianov. Continuous models valid for micro-and nanoscales: some new trends

Coffee break

Minisymposium “Mechanics of Granular Media”

Co-Chairpersons S. Antonyuk, N. Brilliantov, A. Castellanos, R. García-Rojo, F. Gilibert. Chairman N. Brilliantov

11:50–12:30 T. Pöschel. Contact of granular particles and the simulation of rapid flows using event-driven molecular dynamics

12:30–13:00 C. Salueña, J.A. Carrillo and T. Pöschel. Granular hydrodynamics and pattern formation in vertically oscillated granular layers

13:00–13:30 Y. Shie-Chen and M. Tzuoh-Fei. Segregation and mixing processes of binary granular mixtures under horizontal vibration

13:30–14:00 A. Baldassarri, F. Dalton, A. Petri, G. Pontuale, S. Zapperi. Stochastic approach to the stick slip dynamics in granular media

Evening Session

Minisymposium “Mechanics of Granular Media”

Co-Chairpersons S. Antonyuk, N. Brilliantov, A. Castellanos, R. García-Rojo, F. Gilibert. Chairman J. Tomas

15:30–16:00 E.F. Grekova. Continuum of contacts: a way to model granular media?

16:00–16:30 A. Tordesillas, M. Muthuswamy. Thermomechanical continuum modeling of granular materials

Coffee break

16:50–17:20 E.V. Prozorova. Influence of the dispersion on disturbance in solid mechanics for great gradient

17:20–17:50 J.L. Amoros, G. Mallol, M.J. Orts. A model for the flow curves of powders. Study of the rheological behavior of monomodal quartz particle beds under stress

Room B

Morning Session

Chairperson M. Gutkin

Mechanics of media with microstructure

11:50–12:10 I. Pavlov, A. Potapov. Mathematical models for two-dimensional nanostructures consisting of anisotropic particles

12:10–12:30 M. Gutkin, K. Mikaelyan, I. Ovid'ko. Micromechanical model for cooperative migration of grain boundaries and athermal grain growth in plastically deformed nanocrystalline materials

12:30–12:50 P. Kakavas, O. Perig, K. Anifantis, O. Laptev. Determination of the relative punch pressure and equivalent shear of an Equal-Channel Angular Extrusion (ECAE)

12:50–13:10 S. Lurie, D. Volkov-Bogorodskii, V. Zubov, N. Tuckova. Generalized eshelby solution for the gradient model of interphase layer and application to modeling of filled composites

13:10–13:30 S. Schwan, A. Cismak, U. Spohn, A. Heilmann, N. Ferrell, D. Hansford. Measurement of forces in the nanonewton range, generated by chemomechanical protein aggregates using polymer BioMEMS

13:30–13:50 A. Dmitriev, A. Zheleznyakov, A. Rudenskii. Theoretical investigation of phisico-mechanical properties of non-closed nanostructures based on crystal bilayered films

Evening Session

Chairperson A. Belyaev

Mechanics of media with microstructure

15:30–15:50 G.E. Norman, A.Yu. Kuksin, V.V. Pisarev, V.V. Stegailov, A.V. Yanilkin. Calculation of fracture kinetics from atomistic simulation

15:50–16:10 A.M. Krivtsov. Relation between micro and macroparameters for carbon nanostructures

16:10–16:30 A.K. Belyaev, M. Krommer, H. Irschik and N.V. Thang. Forces and moments acting on the rapidly rotating floating bearing

Coffee break

16:50–17:10 N. Smirnov, A. Kiselev, V. Nikitin. Space debris modeling

17:10–17:30 T. Furushima, K. Manabe, S. Aleksandrov. Effect of Statistical Distribution of Grain Properties on Development of Free Surface Roughness

17:30–17:50 P. Jalali, T. Hyppanen. Vibration-induced fluidization of solid particles packs using discrete element method (DEM)

Room C

Morning Session

Chairperson A. Metrikine

Nonlinear dynamics, chaos and vibration

11:50–12:10 E. Pavlovskaya, J. Ing, M. Wiercigroch, S. Banerjee. Dynamics of impact oscillator near grazing

12:10–12:30 A. Fenili. The Nonlinear Control of a Slewing Flexible Beam Using the Feedback Linearization Technique

12:30–12:50 S. Rumyantsev, E. Azarov, G. Vasilyeva, D. Tarasov. Non-linear dynamic of unsteady movement of vibration transport machines with independently rotating vibration exciters

12:50–13:10 L. Rybak, V. Erzhukov, A. Chichvarin. Vector analysis in problem of positioning of mechanisms with parallel structure

13:10–13:30 G. Filippenko. Vibration of different shells partially submerged into the layer of liquid

Evening Session

Chairperson E. Pavlovskaya

Nonlinear dynamics, chaos and vibration

15:10–15:50 I.I. Blekman, L.A. Vaisberg, L.I. Blekhman, V.B. Vasilkov, K.S. Yakimova. Nonlinear effects in vibrational vessels with fluid and granular material

15:50–16:10 A. Sharifulin, S. Suslov. Bifurcations in convection of incompressible fluid in a rotated square cylinder

16:10–16:30 F. Palis. Concept of vibration damping using electric equivalent schemes

Coffee break

16:50–17:10 P. Krot. Chatter vibrations in the high speed cold rolling mills

17:10–17:30 V. Vladimirov. Vibrations of Viscous Fluid Studied by the Vishik-Lyusternik Method

17:30–17:50 A. Kireenkov. Connected polycomponents models of combined dry friction

July 8, Tuesday

Room A

Morning Session

Chairperson V. Eremeev

9:30–10:10 O.I. Kiselev. Application of nanotechnology tools and approaches in creation of new nanobiotech product
10:10–10:50 A. Metrikine. Vortex- and ice-induced vibrations of structures

10:50–11:30 H. Altenbach, V. Eremeyev. On the Application of Zhilin's Theory of Simple Shells to Plates made of Functionally Graded Materials

Coffee break

Minisymposium "Mechanics of Granular Media"

Co-Chairpersons S. Antonyuk, N. Brilliantov, A. Castellanos, R. García-Rojo, F. Gilabert. Chairman N. Brilliantov

11:50–12:30 H. Hayakawa, H. Kuninaka. Super-elastic collisions of thermally activated nanoclusters

12:30–13:10 S. Luding, M.K. Müller. Discrete models for materials with strong repulsive-attractive forces

13:10–13:40 F. Ludewig, N. Vandewalle. Non smooth contact dynamics for granular compaction

13:40–14:10 D. Moiseenko, P. Maksimov. Stochastic cellular automata and discrete thermodynamic approach for simulation of nanoparticle precipitation in IF steel

Evening Session

Minisymposium "Mechanics of Granular Media"

Co-Chairpersons S. Antonyuk, N. Brilliantov, A. Castellanos, R. García-Rojo, F. Gilabert. Chairman S. Antonyuk

15:30–16:00 J. Blum, C. Guttler, M. Krause, R. Geretshauser, R. Speith. Collision mechanics of protoplanetary dust agglomerates

16:00–16:30 D. Heisselmann, H.J. Fraser, J. Blum. Experimental studies of particle collisions in Saturn's rings

Coffee break

16:50–17:20 S. Rosenkranz, A. Kwade. Analysis of grinding media motion in planetary ball mills

17:20–17:50 A.S. Bodrova, N.V. Brilliantov. Dynamic equilibrium in aggregating and shattering systems

17:50–18:20 F. Spahn, E. Viera Neto, A.H. Guimares. Fragmentation kinetics of adhesive agglomerates

Room B

Morning Session

Chairperson A. Zaitsev

Mechanics of media with microstructure

11:50–12:10 V.G. Morozov. The Eddy Model of elastic-plastic fluid at shock

12:10–12:30 A. Abramyan, L. Mirantsev. Vibration and bounding wall structure effects on a flow in nano-channels

12:30–12:50 E. Shilko, S. Astafurov, S. Psakhie. The approach to estimating local stress in active block boundaries in interfacially-structured materials and media on basis of interfacial response to dynamic loading

12:50–13:10 A. Nasedkin. Some approaches to the finite element modeling of porous piezoceramics and piezoelectric ultrasonic devices

13:10–13:30 N. Kizilova. A thermodynamic model of the growing biomaterials as viscoelastic solids with internal variables

Evening Session

Chairperson A. Freidin

Mechanics of media with microstructure

15:30–15:50 T. Shimizu, K. Manabe, M. Yang. Effect of surface topography on material flow in milli-scale deep drawing
15:50–16:10 A. Vakulenko, A. Zakharov. Orientational dynamics induced by temperature gradient in nematic hybrid-oriented cells

16:10–16:30 K. Zolnikov, A. Zheleznyakov. Atomic mechanisms of plastic deformation nucleation in vanadium crystallite under mechanical loading

Coffee break

Chairperson E. Vilchevskaya

Solids and structures

16:50–17:10 A. Freidin, M. Antimonov, E. Vilchevskaya. Transformation surfaces construction for stress-induced phase transformations

17:10–17:30 P.E. Tovstik. On the localized buckling modes
17:30–17:50 V.A. Postnov, D.A. Indeitsev. About existence of second spectrum in Timoshenko beam theory

17:50–18:10 E.N. Vilchevskaya, A.B. Freidin. Modeling coupled interaction between crack growth, stress-assist diffusion and chemical reactions

Room C

Morning Session

Minisymposium "Nonlinear oscillations and waves in media with fine structure, dispersion and dissipation: nature of continuous and discontinuous solutions"

Co-Chairpersons E. Aero, A. Porubov

11:50–12:30 A.G. Kulikovskii, A. Chugainova. The influence of small scale dispersion and dissipation on nonlinear waves in elastic media. The problem of solution non-uniqueness in hyperbolic approximation

12:30–13:00 E. Aero. Nonlinear theory of waves in complex crystalline lattice

13:00–13:30 Yu. Meshcheryakov. Effect of shock-induced phase transformation on dynamic plasticity and strength of maraging steels

13:30–14:00 K. Muratikov, A. Glazov. Nonlinear thermoelastic waves and photoacoustic imaging of indented areas in brittle and ductile stressed materials

Evening Session

Minisymposium "Nonlinear oscillations and waves in media with fine structure, dispersion and dissipation: nature of continuous and discontinuous solutions"

Co-Chairpersons E. Aero, A. Porubov

15:00–15:30 A. Il'ichev. Neutral stability of bending oscillations of nonlinear-elastic rod

15:30–16:00 S. Lisina, A. Potapov. Acoustic waves in the medium with oscillatory degrees of freedom

16:00–16:30 V. Odintsova. Isothermal transition to instability of phase transition interface in porous medium

Coffee break

16:50–17:15 V. Erofeev, V. Romashov, O. Artamonova. Nonlinear acoustic waves in a dislocated solid

17:15–17:40 H. Altenbach, I. Brigadnov, V. Eremeyev. Dynamics of a Magneto-Sensitive Elastic Sphere

17:40–18:05 A. Porubov. Influence of internal fine structure on propagation of strain solitary waves in crystals

18:05–18:30 A. Zemlyanukhin, V. Katson. Propagation and interaction of two-dimensional solitary waves in systems with geometric and physical nonlinearity

July 9, Wednesday

Room A

Room B

YOUNG SCIENTISTS SESSION

Morning Session

Chairperson O. Loboda

9:15–9:30 Opening ceremony

9:30–10:10 G. Leonov. Strange attractors and classical stability theory

10:10–10:50 A. Cherkhev. Theories for materials and structures with exotic responses

10:50–11:30 E. Cherkheva. Inverse problems for composites

Coffee break

Chairperson I. Berinskiy

11:50–14:00 Poster presentations

21.00 Banquet

Evening Session

15:30–16:30 Poster Session (Young Scientists)

16:30–18:30 Poster Session

July 10, Thursday

Room A

Morning Session

Chairperson S. Antonyuk

10:10–10:50 A.V. Manzhirov. Mechanics of accreted solids with applications to technological and natural processes
10:50–11:30 V.A. Palmov. Is the multiplicative decomposition of deformation gradient the only one way in elastoplasticity for large strains?

Coffee break

Minisymposium “Mechanics of Granular Media”

Co-Chairpersons S. Antonyuk, N. Brilliantov, A. Castellanos, R. García-Rojo, F. Gilibert. Chairman N. Brilliantov

11:50–12:20 S. Luding, O. Herbst, A.S.J. Suiker. Self-healing of particulate solids

12:20–12:50 R. Jasevicius, J. Tomas, R. Kacianauskas. Simulation of microscopic compression-tension behavior of cohesive dry powder by applying DEM

12:50–13:20 F.A. Gilibert, J.-N. Roux, A. Castellanos. Tensile strength calculations in simulated cohesive granular assemblies

13:20–13:50 S. Antonyuk, J. Tomas. Continuum modeling and discrete element simulation of deformation and failure of dry cylindrical agglomerates

Evening Session

Minisymposium “Mechanics of Granular Media”

Co-Chairpersons S. Antonyuk, N. Brilliantov, A. Castellanos, R. García-Rojo, F. Gilibert. Chairman A. Castellanos

15:30–16:00 S. Palis, S. Antonyuk. Breakage modeling of needle-shaped crystals using the discrete element method (DEM)

16:00–16:30 T. Piechatzek, A. Kwade. DEM based numerical investigations of stirred media mills

Coffee break

16:50–17:20 M. Siahpoosh, J. Mosayebi. Simulation of hydraulic brake system components

17:20–17:50 O. Mouraille, S. Luding. Acoustic waves in granular materials

17:50–18:05 Closing of the minisymposium.

18:05–19:00 Closing ceremony.

Room B

Morning Session

Chairperson V. Eremeev
Fluid and gas

11:50–12:10 R. Siraev, V. Yakushin. Convection and heat transfer in a horizontal cylindrical layer of the saturated porous medium

12:10–12:30 S. Suslov, A. Bozhko, G. Putin. Thermo-magneto-convective instabilities in a vertical layer of a ferro-magnetic fluid

12:30–12:50 A. Elsafty. Experimental and CFD Investigation of Air Supply Location on the ADPI in Ship’s Crew Cabins

12:50–13:10 S. Kazemzadeh Hannani, A. Azimi. Unknown Boundary Condition Identifications of Transient Inverse Convective Heat Transfer Problems within a Channel: Laminar Flow

13:10–13:30 M. Filimonov. Application of method of special series for numerical and analytical research of nonlinear partial differential equations

Evening Session

Chairperson V. Stegailov
Mechanics of media with microstructure

15:30–15:45 A. Yanilkin, A. Kuksin, V. Stegailov. Influence of nanoprecipitates on fracture of metals. Molecular dynamics simulation

15:45–16:00 A. Kuksin, A. Yanilkin. Edge dislocation movement in the Al-Cu system: atomistic simulation

16:00–16:15 V. Stegailov, A. Kuksin, G. Norman. Atomistic simulation of mechanical stability of crystals

16:15–16:30 I. Berinskiy, A. Krivtsov. Determinations of macroscopic characteristics for graphene layer using many-body potentials of atomic interaction

Coffee break

16:50–17:05 A. Le-Zacharov, A. Krivtsov. Molecular dynamics modeling of heat wave propagation in crystals

17:05–17:20 E. Podolskaya. Modeling of hexagonal close-packed crystal lattices

17:20–17:35 A. Kudarova. Modeling of graphene lattice

17:35–17:50 N. Dvas. Stability analysis and modeling the phase transition in BCC lattice

Room C

Morning Session

Chairperson A. Porubov
Wave motion

11:50–12:10 T. Khantuleva, I. Nikulin, N. Serebryanskaya. Turbulent velocity pulsations in nonstationary wave front in solids

12:10–12:30 A. Loktev. Dynamic contact of the elastic body and spherical shell taking propagation waves into account

12:30–12:50 L. Molotkov. Wave propagation in a porous Biot layer with closed pores on boundaries

12:50–13:10 I. Keller. Wave regimes under uniaxial tension and twisting of superplastic specimens

13:10–13:30 M. Shitikova, Yu. Rossikhin, V. Shitikov. Analysis of the collision of two thermoelastic rods

13:30–13:50 V. Bashurov, V. Simonenko, N. Skorkin, T. Elperin, S. Usherenko. Model of the superdeep penetration of microparticles in solid body

Evening Session

Chairperson A. Kuleshov
Dynamics of rigid bodies and multibody dynamics

15:10–15:30 H. Askes, A. Rodriguez-Ferran, T. Bennett. Regularised softening continua based on gradient elasticity

15:30–15:50 I.M. Gitman, H. Askes, E.C. Aifantis. Gradient elasticity for anisotropic materials

15:50–16:10 I. Pasyukova, G. Khvatkov. Influence of non-linear damping on whirling of a rigid rotor with four degrees of freedom

16:10–16:30 A. Kuleshov. Nonlinear Dynamics and Stability of a Simplified Skateboard Model

Coffee break

16:50–17:10 P. Dyatlova, O. Shalnev. To the theory of soft toroidal shells

17:10–17:30 N. Pop. A numerical analysis of the thermomechanically contact problems with friction

17:30–17:50 E. Tarunin. There is no necessity to rewrite textbooks of mechanics