

Day 1 – Monday, June 30

ROOM A

- 08.30–09.45 **REGISTRATION**
09.45–10.00 **OPENING CEREMONY**
10.00–11.30 **PLENARY LECTURES – I**
Chair: D.A. Indeitsev
10.00–10.45 *U. Nackenhorst.* Computational techniques for tires in rolling contact.
10.45–11.30 *M.L. Kachanov.* Micromechanics of heterogeneous materials and cross-property connections
11.30–11.50 **COFFEE BREAK**
11.50–13.30 **PLENARY LECTURES – II**
11.50–12.35 *N.N. Smirnov, A.B. Kiselev, V.F. Nikitin, A.I. Bogdanova, A.S. Manenkova.* Continua traffic flow models.
12.35–12.45 **MWM OPENING**
Chair: I.E. Berinskii
12.45–13.30 *D. Bigoni, F. Bosi, F. Dal Corso, D. Misseroni, A. Piccolroaz.* Structures releasing energy.

LUNCH BREAK

- 15.20–16.50 **MATHEMATICAL AND NUMERICAL MODELLING IN HYDRAULIC FRACTURING – I**
Chair: A.M. Linkov, G. Mishuris
15.20–15.50 *A.M. Linkov.* Speed equation, asymptotic umbrella and explicit level set method in hydraulic fracture modeling.
15.50–16.20 *M. Wrobel, G. Mishuris.* Universal algorithm for hydraulic fractures simulation based on the particle velocity.
16.20–16.50 *V. Mykhailov, O. Karpenko, I. Karpenko.* Geological features of Ukrainian shale formations promising for the presence of industrial unconventional hydrocarbons accumulations in connection with hydraulic fracturing.
16.50–17.10 **COFFEE BREAK**
17.10–19.00 **MATHEMATICAL AND NUMERICAL MODELLING IN HYDRAULIC FRACTURING – II**
Chair: A.M. Linkov, G. Mishuris
17.10–17.40 *D. Jaworski, A.M. Linkov, E. Rejwer, L. Rybarska-Rusinek.* Numerical simulation of local field concentration near the contour of a fracture.
17.40–18.10 *M. Perkowska, G. Mishuris, M. Wrobel.* Numerical simulation of PKN model of hydrofracturing for shear-thinning fluids.
18.10–18.40 *P. Kusmierczyk, G. Mishuris.* PKN based multifracturing model featuring fracture interactions. New approach and implementation.
18.40–19.00 *Discussion*

20.00 Welcome Party

Day 1 – Monday, June 30

ROOM B

- 15.30–16.50 **MWM PRESENTATIONS**
Chair: I.E. Berinskii
- 16.50–17.10 **COFFEE BREAK**
- 17.10–18.50 **NANOMECHANICS**
Chair: M.Yu. Gutkin
- 17.10–17.30 *A.K. Abramyán, N.M. Bessonov, L.V. Mirantsev, N. Reynberg.* Transport of polar and nonpolar fluids through nanotubes placed into liquid medium.
- 17.30–17.50 *M.Yu. Gutkin, A.L. Kolesnikova, S.A. Krasnitckii, A.E. Romanov.* Circular prismatic loops of misfit dislocations in bulk and hollow core-shell nanoparticles.
- 17.50–18.10 *G.I. Mikhasev.* Prediction of localized natural modes of single-walled carbon nanotubes embedded in nonhomogeneous elastic medium.
- 18.10–18.30 *K.P. Zolnikov, D.S. Kryzhevich, A.V. Korchuganov.* Influence of loading scheme on the deformation behaviour of titanium crystals.
- 18.30–18.50 *S.N. Romashin, L.Yu. Frolenkova, V.S. Shorkin.* Contact elastic bodies with taking into account their adhesion.

ROOM C

- 15.30–16.50 **SOLIDS AND STRUCTURES – I**
Chair: A.B. Freidin, E.N. Vilchevskaya
- 15.30–15.50 *E.N. Barkanov, M.I. Chebakov.* Inverse technique for characterisation of elastic and dissipative properties of materials used in a composite repair of pipelines.
- 15.50–16.10 *N.N. Myagkov, M.V. Silant'ev.* Critical behavior in high-velocity impact fragmentation.
- 16.10–16.30 *N.V. Banichuk, S.Yu. Ivanova, E.V. Makeev.* Strength analysis of axisymmetric shells moving in deformed media at high speed.
- 16.30–16.50 *P.Y. Akishin, E.N. Barkanov, M. Wesolowski, E.M. Kolosova.* Static and dynamic techniques for nondestructive elastic material properties characterisation.
- 16.50–17.10 **COFFEE BREAK**
- 17.10–19.10 **SOLIDS AND STRUCTURES – II**
Chair: A.B. Freidin, E.N. Vilchevskaya
- 17.10–17.30 *I.A. Brigadnov, K. Naumenko.* Non-homogeneous radial deformations in the problem of torsion of hyperelastic circular cylinder.
- 17.30–17.50 *A.G. Knyazeva.* Numerical investigation of admixture diffusion from surface in polycrystalline plate at the tension.
- 17.50–18.10 *R.A. Arutuynyan.* Fracture problem of brittle and quasibrittle materials.
- 18.10–18.30 *A.B. Freidin, E.N. Vilchevskaya.* Coupled problems of mechanochemistry: statements and solutions
- 18.30–18.50 *E.N. Vilchevskaya, A.B. Freidin.* On kinetics of chemical reaction front in axially-symmetric problems.
- 18.50–19.10 *I.K. Korolev, S.P. Aleshchenko, A.B. Freidin, E.N. Vilchevskaya.* FEM simulation of a chemical reaction front propagation near the stress concentrator

20.00 Welcome Party

Day 2 – Tuesday, July 1

ROOM A

09.15–11.30 **PLENARY LECTURES – III**

Chair: S.M. Bauer

09.15–10.00 **Z.-P.Huang.** A new constitutive formulation in rubber elasticity

10.00–10.45 **G.I. Mikhasev.** Thin composite sandwich beams, plates and shells containing magnetorheological elastomer: vibrations, waves and their suppression

10.45–11.30 **A. Eriksson.** Stability aspects of pressurized membranes.

11.30–11.50 **COFFEE BREAK**

11.50–13.20 **COMPUTATIONAL CONTACT MECHANICS**

Chair: U. Nackendorst

11.50–12.20 **R. Beyer, U. Nackendorst.** Towards a thermo-visco-elastic constitutive contact Model for tire-road interaction.

12.20–12.50 **A.I. Dmitriev, W. Oesterle.** About the role of tribofilms formed during automotive braking. Results of nano-scale modeling.

12.50–13.20 **R.S. Telyatnik.** Critical conditions for buckling with delamination and other misfit defects in AlN(0001)/SiC/Si(111) thin film heterostructure.

LUNCH BREAK

15.20–16.50 **SHELLS AND MEMBRANES IN BIOMECHANICS/MEDICINE – I**

Chair: S.M. Bauer, A. Eriksson

15.20–15.50 **S.M. Bosiakov, A.F. Mselati.** The analytical model of a periodontal membrane in the form of an elliptical hyperboloid.

15.50–16.20 **A.A. Stein, I.N. Moiseeva, G.A. Lyubimov.** Two-component model of the eyeball and its application to determining the mechanical characteristics of the eye in clinics.

16.20–16.50 **S.M. Bauer, A.L. Smirnov.** Deformation of the orthotropic spherical layer under normal pressure.

16.50–17.10 **COFFEE BREAK**

17.10–18.30 **SHELLS AND MEMBRANES IN BIOMECHANICS/MEDICINE – II**

Chair: S.M. Bauer, A. Eriksson

17.10–17.40 **S.M. Bauer, E.B. Voronkova, K. Kotliar.** Shell theory based models for pressure volume relationship in the human eye.

17.40–18.10 **I.L. Slavashevich, G.I. Mikhasev, K.S. Urkevich.** Analyse of natural frequencies of reconstructed middle ear after tympanoplasty and stapedotomy.

18.10–18.30 **Discussion**

Day 2 – Tuesday, July 1

ROOM B

11.50–14.00 **NONLINEAR DYNAMICS, CHAOS AND VIBRATION – I**

Chair: I.E. Berinskii

- 11.50–12.20 Key-note lecture. *D.Yu. Skubov, I.E. Berinskii, D.A. Indeitsev, O.V. Privalova, L.V. Shtukin*. Nonlinear dynamics of mechanical systems placed in quasi-stationary magnetic and electric field.
- 12.20–12.40 *I.A. Pasyukova, P.P. Stepanova*. Nonlinear dynamics of the “rotor - massive-compliant supports” system.
- 12.40–13.00 *M.V. Shamolin*. New cases of integrability in multidimensional dynamics in a nonconservative field.
- 13.00–13.20 *V.A. Il'in, A.N. Mordvinov*. Investigation of electroconvection models of ideal dielectric in the alternating electric field of the horizontal capacitor.
- 13.20–13.40 *V.S. Sorokin*. The suppression of vibration in prescribed areas of a string subjected to action of a distributed load by continuous spatial modulation of its cross-section.
- 13.40–14.00 *R. Darula, S.V. Sorokin*. On non-linear dynamics of coupled 1+1DOF versus 1+1/2DOF electro-mechanical system

LUNCH BREAK

15.20–16.50 **MWM POSTERS**

16.50–17.10 **COFFEE BREAK**

17.10–19.10 **MWM ACTIVITIES**

Day 2 – Tuesday, July 1

ROOM C

11.50–13.30 WAVE MOTION – I

Chair: S.N. Gavrilov, E.V. Shishkina

- 11.50–12.20 Key-note lecture. *S.N. Gavrilov, E.V. Shishkina*. New phase nucleation due to collision of two non-stationary waves
- 12.20–12.40 *P.S. Uglich*. On the problem of forced plane vibrations of transversally inhomogeneous elastic layer.
- 12.40–13.00 *G.V. Filippenko*. The vibrations of the system of coaxial cylinders partially submerged into the water.
- 13.00–13.20 *R.V. Ardazishvili, M.V. Wilde*. Antisymmetric higher order edge waves in plates with fixed faces.
- 13.20–13.40 *A.P. Chugainova, A.G. Kulikovskii*. Riemann waves in elastoplastic media with hardening.

LUNCH BREAK

15.30–19.10 POSTER SESSION:

Possibility of the EU funding. Overview of FP7 and Horizon2020 EU program

- *I. Jatro, A. Piccolroaz*. CERMAT2 – New ceramic technologies and novel multifunctional ceramic devices and structures
- *F. Dal Corso, I. Jatro*. HOTBRICKS – Mechanics of refractory materials at high-temperature for advanced industrial technologies
- *D. Bigoni, I. Jatro*. INSTABILITIES – Instabilities and nonlocal multiscale modelling of materials
- *M. Gei, I. Jatro*. INTERCER2 – Modelling and optimal design of ceramic structures with defects and imperfect interfaces
- *F. Bosi, E. Mazzocchi, I. Jatro, F. Dal Corso, A. Piccolroaz, L. Deseri, D. Bigoni, A. Cocquio, M. Cova, S. Odorizzi*. A collaborative project between industry and academia to enhance engineering education at graduate and phd level in ceramic technology.
- *G. Mishuris*. HYDROFRAC - Enhancing hydraulic fracturing on the basis of numerical simulation of coupled geomechanical, hydrodynamic and microseismic processes
- *G. Mishuris*. PARM-2 Vibro-impact machines based on parametric resonance: Concepts, mathematical modelling, experimental verification and implementation
- *G. Mishuris*. TAMER - Trans-Atlantic Micromechanics Evolving Research "Materials containing inhomogeneities of diverse physical properties, shapes and orientations"
- *D. Bigoni, I. Jatro, A. Piccolroaz*. MeMic: Fracture mechanics of microstructured composites incorporating intrinsic length-scales
- *G. Mishuris, A. Piccolroaz*. INTERCRACKS: Unsolved problems in fracture mechanics of heterogeneous materials
- *G. Mishuris, I. Argatov*. OA AM: Asymptotic modelling of biomechanical contact phenomena under dynamic and impact loading.

Day 3 – Wednesday, July 2

ROOM A

- 10.00–11.30 **PLENARY LECTURES – IV**
Chair: E. Grekova
- 10.00–10.45 **V.A. Levin, I.S. Manuylovich, V.V. Markov.** Initiation and propagation of detonation waves, taking into account three-dimensional effects
- 10.45–11.30 **A.T. Perez, P. Garcia-Sanchez.** Permanent magnetic levitation of levitrons using periodic magnetic forcing.
- 11.30–11.50 **COFFEE BREAK**
- 11.50–13.40 **COMPUTATIONAL MECHANICS – I**
Chair: I.K. Korolev
- 11.50–12.20 Key-note lecture. **S.V. Petinov, T.I. Letova, R.V. Guchinsky.** Modeling of fatigue process by combining the crack initiation and growth.
- 12.20–12.40 **R.V. Guchinsky, S.V. Petinov.** Finite-element modeling of semi-elliptical fatigue crack growth using damage accumulation approach.
- 12.40–13.00 **A.V. Dimaki, A.I. Dmitriev, G.J. Polevshchikov.** Simulation of sorption of carbon dioxide in the porous coal by means of hybrid cellular automaton method.
- 13.00–13.20 **P.V. Makarov, M.O. Eremin.** Loaded solids and media as the nonlinear dynamic systems. The numerical simulation of stress-strain state and fracture evolution.
- 13.20–13.40 **K.S. Yurkevich, G.I. Mikhasev, A.D. Dosta, I.K. Korolev.** On new technique for bone fracture fixation
- LUNCH BREAK**
- 15.30–16.50 **COMPUTATIONAL MECHANICS – II**
Chair: K.S. Yurkevich
- 15.30–15.50 **I.K. Marchevsky, G.A. Shcheglov.** Numerical simulation of hydroelastic Beam dynamics in the flow using vortex element method.
- 15.50–16.10 **B.P. Kazakov, A.V. Shalimov, A.V. Zaitsev, Yu.A. Klyukin, M.A. Semin.** Mine thermodynamic parameters control by means of suballocated conditioned air distribution system.
- 16.10–16.30 **A.V. Dimaki, S.V. Astafurov, E.V. Shilko, S.G. Psakhie.** Computer-aided simulation of the mechanical response of water-saturated sandstone on the basis of the hybrid cellular automaton method.
- 16.30–16.50 **I. Neygebauer.** Continuum models with constitutive laws for body forces and moments.
- 16.50–17.10 **COFFEE BREAK**
- 17.10–19.10 **COMPUTATIONAL MECHANICS – III**
Chair: I.K. Marchevsky
- 17.10–17.40 **M. Srinivasan, P. Mättig, K.W. Glitza, B. Sanny, A. Schumacher.** Multiscale calculation for increasing the thermal conductivity of carbon fiber composite with diamond powder.
- 17.40–18.10 **Ig.S. Konovalenko, Ch.O. Toktohoev, Iv.S. Konovalenko, Vl.V. Promakhov, S.G. Psakhie.** Investigation of deformation and fracture of the ceramic composites based on nanocrystalline metaloxides. Computer simulation on the basis of movable cellular automaton method.
- 18.10–18.30 **V.D. Sulimov, P.M. Shkapov.** Derivative-free local search in hybrid algorithms for hydromechanical system model updating.
- 18.30–18.50 **S.N. Shubin, A.B. Freidin.** Sealing application of elastomer composites based on fillers with negative thermal expansion coefficient
- 18.50–19.10 **Discussion**

NIGHT EXCURSION (optional)

Day 3 – Wednesday, July 2

ROOM B

11.50–13.50 MULTISCALE MODELLING IN CERAMICS – I

Chair: A. Piccolroaz

- 11.50–12.10 **S. Sprio, A. Ruffini, S. Panseri, A. Tampieri.** From wood to bone: a new generation of biomorphic scaffolds for regeneration of long segmental bones.
- 12.10–12.30 **A. Nobili, E. Radi, L. Lanzoni.** Full field solution for a rectilinear crack in an infinite Kirchhoff plate supported by a Pasternak elastic foundation.
- 12.30–12.50 **S. Rudykh.** Magneto- and electroactive deformable composites
- 12.50–13.10 **D. Bigoni, F. Bosi, F. Dal Corso, D. Misseroni, A. Piccolroaz.** Forming of ceramic powders.
- 13.10–13.30 **F. Dal Corso, M. Bacca.** Multiscale modelling of ceramic composites.
- 13.30–13.50 **L.P. Argani, D. Bigoni, G. Mishuris.** Dislocations and inclusions in prestressed solids.

LUNCH BREAK

15.30–16.50 MULTISCALE MODELLING IN CERAMICS – II

Chair: D. Bigoni

- 15.30–15.50 **A. Piccolroaz, L. Morini, P. Gourgiotis.** Incorporating intrinsic length-scales in fracture toughness of microstructured ceramics.
- 15.50–16.10 **E. Bortot, R. Springhetti, M. Gei.** Enhancing the performance of soft dielectric generators using ceramic fillers.
- 16.10–16.30 **L. Morini, A. Piccolroaz.** Modelling of interface cracks between dissimilar ceramic materials of interest for solid oxide fuel cells fabrication.
- 16.30–16.50 **A. Zagnetko.** To the modelling of crack in the bimaterial anisotropic structures.

16.50–17.10 COFFEE BREAK

17.10–19.10 MULTISCALE MODELLING IN CERAMICS – III

Chair: G. Mishuris

- 17.10–17.30 **F. Bosi, A. Piccolroaz, M. Gei, Corso F. Dal, A. Cocquio.** Mechanical characterization of the elasto-plastic behaviour of aluminum silicate spray dried powder during cold compaction.

17.30–18.50 Poster presentations announcement:

- **E. Bortot, R. Springhetti, F. DalCorso, M. Gei.** Numerical analysis of cracks and rigid line inclusions in elastic plates.
- **F. Bosi, A. Cocquio, M. Cova.** Testing protocol and experimental investigation on green body.
- **F. Dal Corso, S. Shahzad, D. Misseroni, G. Noselli.** Validation of rigid inclusion model for the analysis of reinforced composite materials.
- **M. Jones, S. Fearn, G. Mishuris, R. Winter, A. Lennie, J. Parker, S. Thompson, C. Tang.** Dynamic strain in granular ceramics probed by real-time x-ray diffraction.
- **F. Bosi, D. Misseroni.** Elastic characteristics of green bodies detected by ultrasonic tests
- **D. Misseroni, D. Bigoni, G. Noselli.** S-shape constraints for elastic rods: tensile buckling in tension and multiple bifurcations.
- **L. Pryce, L. Morini, G. Mishuris.** Mathematical modelling of interfacial cracks in anisotropic and piezoelectric ceramic materials
- **L. Morini, A. Piccolroaz, G. Mishuris.** Cracks propagation in ceramic materials: a singular integral formulation
- **M. Penasa, A. Piccolroaz, L. Argani, D. Bigoni.** Integration algorithms of elastoplasticity for ceramic powder compaction
- **I.Yu. Smolin, M.O. Eremin, P.V. Makarov, S.P. Buyakova.** Simulation of pore space structure and mechanical behavior of porous ceramics
- **S. Sprio, M. Dapporto, A. Tampieri.** Highly osteointegrative, self-hardening biomimetic bone cements for vertebral regeneration.
- **L. Pryce, A. Vellender, A. Zagnetko, G. Mishuris.** Mathematical modelling of anisotropic bimetals with imperfect interfaces

18.50–19.10 Discussion

NIGHT EXCURSION (optional)

Day 3 – Wednesday, July 2

ROOM C

11.50–13.30 **MECHANICS OF MEDIA WITH MICROSTRUCTURE – I**

Chair: A.T. Perez

- 11.50–12.10 **M.I. Karyakin, O.A. Mayorova, O.G. Pustovalova.** Bending and torsion of nonlinearly elastic body with microstructure.
- 12.10–12.30 **E. Grekova, F. Ruiz-Botello, A. Castellanos, V. Tournat.** Reduced Cosserat medium with local anisotropy: a model for powders at low consolidation?
- 12.30–12.50 **F. Ruiz-Botello, A. Castellanos, V. Tournat, E. Grekova.** Sound wave propagation in cohesive powders at low consolidations
- 12.50–13.10 **L.A. Nazarov, L.A. Nazarova, G.N. Khan.** Determination of underground void geometrics by the subsidence trough configuration on the basis of inverse problem solution.
- 13.10–13.30 **L.A. Nazarova, L.A. Nazarov, A.L. Karchevsky, A.V. Panov.** Inverse problems for the productive stratum geomechanics.

LUNCH BREAK

15.20–16.50 **DYNAMICS OF RIGID BODIES AND MULTIBODY DYNAMICS – I**

Chair: W.H. Mueller, P.E. Tovstik

- 15.20–15.50 Key-note lecture. **W.H. Mueller.** The spin, the nutation and the precession of the Earth axis revisited: a (numerical) mechanics perspective.
- 15.50–16.10 **A.S. Kuleshov, V.V. Rybin.** Controllability of the Ishlinsky system.
- 16.10–16.30 **G.B. Filimonikhin, I.I. Filimonikhina.** On investigation of process of changing angle of nutation of rotating carrying body in an isolated system.
- 16.30–16.50 **V.V. Goncharov, G.B. Filimonikhin.** To analytical study of transient processes in rotor systems with passive auto-balancers.

16.50–17.10 **COFFEE BREAK**

17.10–18.50 **DYNAMICS OF RIGID BODIES AND MULTIBODY DYNAMICS – II**

Chair: W.H. Mueller, P.E. Tovstik

- 17.10–17.30 **P.E. Tovstik.** Kinematic and dynamics of the Stewart platform.
- 17.30–17.50 **L.Ya. Banakh.** Oscillations of branched self-similar systems.
- 17.50–18.10 **O.A. Volokhovskaia.** Model of a rotor oscillations having an initial deflection and mounted on anisotropic supports.
- 18.10–18.30 **V.G. Kozlov, V.D. Schipitsyn.** Behavior of neutral buoyancy solid in cavity with liquid under rotational vibration.
- 18.30–18.50 **Discussion**

NIGHT EXCURSION (optional)

Day 4 –Thursday, July 3

EXCURSION

21.00 BANQUET

Day 5 – Friday, July 4

ROOM B

10.00–11.30 **PLENARY LECTURES – V**

Chair: O.S. Loboda

10.00–10.45 *G. Martin, A. Mikhailova, B. Pavlov.* Beating of modes in dissipative systems, with applications to seismo-gravitational oscillation of tectonic plates

10.45–11.30 *V.A. Babeshko, O.V. Evdokimova, O.M. Babeshko, D.V. Grishenko.* Localization in mechanics and nature.

11.30–11.50 **COFFEE BREAK**

11.50–13.50 **MOLECULAR AND PARTICLE DYNAMICS**

Chair: V.A. Kuzkin

11.50–12.10 *V.A. Kuzkin, A.M. Krivtsov.* Nonlinear positive/negative thermal expansion of a chain with longitudinal and transverse vibrations.

12.10–12.30 *A.Yu. Panchenko, O.S. Loboda, A.M. Krivtsov.* Analytical and numerical investigation of stationary correlations in ideal crystal lattices

12.30–12.50 *V.V. Pisarev, S.V. Starikov.* Two-temperature atomistic model for ion tracks in UO₂

12.50–13.10 *A.D. Pshenov, V.A. Kuzkin.* Dynamic buckling of discrete elastic rods: influence of loading rate.

13.10–13.30 *A.N. Fedorova, M.G. Zeitlin.* Beam-beam interaction: from localization to non-gaussian spectrum

13.30–13.50 *A.N. Fedorova, M.G. Zeitlin.* RMS envelope moment beam dynamics via nonlinear/non-gaussian effects.

LUNCH BREAK

15.30–16.50 **WAVE MOTION – II**

Chair: A.P. Kiselev

15.30–15.50 *A.R. Dehadrai, I. Sharma, S.S. Gupta.* Stability of an inclined traveling heavy cable

15.50–16.10 *T.Kuklin, Y. Mochalova, D.A. Indeitsev.* Localized buckling of elastic beams on weakened Winkler foundation.

16.10–16.30 *A.M. Tagirdzhanov, A.P. Kiselev.* Generalized spherical waves. A short review

16.30–16.50 *D.P. Kouzov, M.G. Zhuchkova.* Low-frequency vibrations of a semi-infinite floating elastic plate interfaced with a rigid vertical wall.

16.50–17.10 **COFFEE BREAK**

17.10–17.50 **NONLINEAR DYNAMICS, CHAOS AND VIBRATION – II**

Chair: M.G. Zhuchkova

17.10–17.30 *I.I. Blekhman, L.I. Blekhman, L.A. Vaisberg, V.B. Vasilkov, K.S. Yakimova.* Vibrational segregation - simulation, experiment, and application to create new classifying machines.

17.30–17.50 *A.A. Gubaidullin, A.V. Yakovenko.* Numerical investigation of the gas dynamics in the vibrating cylindrical cavity.

17.50–18.10 *A.D. Polishchuk.* The different types transverse oscillations of thin helical beam.

18.10–19.10 **AEROSPACE MECHANICS**

Chair: A.Yu. Panchenko

18.10–18.30 *P.Yu. Georgievsky.* Application of thermal spike for control of supersonic flow past blunt and pointed bodies

18.30–18.50 *M.N. Smirnova, A.V. Zvyaguin.* Comparison of analytical and numerical solutions for a problem of thin body motion in gas near rigid surface

18.50–19.10 *A.S. Murachev, A.M. Krivtsov.* Equilibrium of a dust and gas cloud

Day 5 – Friday, July 4

ROOM C

11.50–13.50 **MECHANICAL AND CIVIL ENGINEERING APPLICATIONS**

Chair: B.N. Semenov

- 11.50–12.10 **B.N. Semenov, Yu.V. Sudenkov, A.V. Voronin.** Impact of plasma jet on tungsten barrier. Experiment and simulation.
- 12.10–12.30 **V.I. Monine, J.T. Assis, L.D. Rodrigues, J.L.F. Freire, V.E.L. Paiva.** Influence of surface roughness on stress measurements by x-ray diffraction technique.
- 12.30–12.50 **I.Yu. Smolin, V.P. Kuznetsov, A.I. Dmitriev.** Numerical analysis of the stress-strain state of the steel superficial layer under nanostructuring burnishing.
- 12.50–13.10 **S.E. Al-Lubani.** The effect of copper content, annealing temperature, and aging time on the hardness of aluminum alloys using artificial neural networks.
- 13.10–13.30 **A.V. Morozov.** Estimation of the coefficient of friction epilam - coated materials.
- 13.30–13.50 **V. Kolykhalin, A. Novoselova.** About the compensating technique of low frequency components of magnetic electric motor noise.

LUNCH BREAK

15.30–16.50 **FLUID AND GAS – I**

Chair: N.N. Smirnov

- 15.30–15.50 **R. Hechter, K. Rozovsky, A. Yakhot.** Turbulent pulsatile flow in an axisymmetric stenotic tube.
- 15.50–16.10 **Ya.N. Parshakova, T.P. Lyubimova.** Numerical investigation directional solidification of binary alloys under the action of rotational vibrations.
- 16.10–16.30 **N.N. Kizilova.** Mathematical modelling of coupled newtonian and non-newtonian flows for blood flows in the cardiovascular system.
- 16.30–16.50 **S.A. Chivilikhin.** The stokes equations in the special non-inertial system of reference.

16.50–17.10 **COFFEE BREAK**

17.10–18.50 **FLUID AND GAS – II**

Chair: N.N. Smirnov

- 17.10–17.30 **V.S. Teslenko, A.P. Drozhzhin, R.N. Medvedev.** Dynamics of cavitation clusters and vortex rings in water.
- 17.30–17.50 **A.P. Drozhzhin, V.S. Teslenko.** Generation of pulse-cyclic flows in a liquid.
- 17.50–18.10 **R.N. Medvedev, V.S. Teslenko.** Calculation of the period of toroidal bubble pulsations during electrical discharge in an electrolyte in adiabatic approximation.
- 18.10–18.30 **A.A. Alabuzhev.** Cylindrical drop in oscillating electric field
- 18.30–18.50 **Discussion**

Day 6 – Saturday, July 5

ROOM A

10.00–11.30 **PLENARY LECTURES – VI**

Chair: N.F. Morozov

10.00–10.45 **A.M. Krivtsov.** Thermomechanical processes in discrete mechanics.

10.45–11.30 **I.A. Ovid'ko, A.G. Sheinerman.** Models of strength and toughness of nanostructured materials and graphene.

11.30–11.50 **COFFEE BREAK**

11.50–13.50 **MECHANICS OF MEDIA WITH MICROSTRUCTURE – II**

Chair: S.A. Lurie

11.50–12.10 **A.V. Porubov, I.E. Berinskii.** Longitudinal plane waves in media with hexagonal structure.

12.10–12.30 **J.A.W. Van Dommelen, A. Sedighiamiri, L.E. Govaert.** Micromechanics of the deformation and failure kinetics of semicrystalline polymers.

12.30–12.50 **E.L. Aero, A.N. Bulygin, Yu.V Pavlov, N.A. Reinberg.** Nonlinear theory of Deformation of crystal media with complex structure of lattice: plane deformation.

12.50–13.10 **E.L. Aero, A.L. Korzhenevskii.** Microscopic approach to reconstructive and martensitic phase transformations.

13.10–13.30 **A.A. Vakulenko, A.V. Zakharov** Microflows and periodic distortions in nematic liquid crystal cells imposed by a strong orthogonal electric field.

13.30–13.50 **A.T. Akhmetov, A.A. Rakhimov, A.A. Valiev.** Hydrodynamic effects emulsions and biological dispersions in microchannels with different configurations.

LUNCH BREAK

15.30–16.50 **MECHANICS OF MEDIA WITH MICROSTRUCTURE – III**

Chair: A.V. Porubov

15.30–15.50 **S.A. Lurie.** Refined theory of microstructure-dependent beams and plates.

15.50–16.10 **M. Poluektov, J.A.W van Dommelen., L.E Govaert., M.G.D Geers.** Micromechanical modelling of the thermo-mechanical behaviour of oriented semicrystalline polymer foils.

16.10–16.30 **T.M. Michelitsch, B.A. Collet.** Nonlocal constitutive laws: lattice model approaches and their continuum limits.

16.30–16.50 **S.H. Sargsyan, K.A. Zhamakochyan.** Finite element method for solving boundary value problems of bending of micropolar elastic thin bars.

16.50–17.10 **COFFEE BREAK**

19.10–19.30 **CLOSING CEREMONY**

ROOM B

17.10–19.10 **POSTER SESSION**