

# ICSSM 2021 Proceedings

8th International Congress  
of the  
Serbian Society of Mechanics

June 28-30, 2021  
Kragujevac, Serbia



**The 8th International Congress of the Serbian Society of  
Mechanics Kragujevac, Serbia, June 28-30, 2021**

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# Organizers

- Serbian Society of Mechanics (SSM)
- Faculty of Engineering, University of Kragujevac
- Faculty of Mechanical Engineering, University of Belgrade
- Faculty of Technical Science, University of Novi Sad
- Faculty of Mechanical Engineering, University of Niš
- Hellenic Society of Theoretical and Applied Mechanics
- Institute of Information Technology Kragujevac
- University of Kragujevac

with the support of

- Ministry of Education, Science and Technological Development
- Serbian Academy of Sciences and Arts

and

- Serbian Society of Computational Mechanics



# Sponsor

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# Welcome Message

Dear colleagues,

It is a great pleasure for us to welcome you all at *the 8<sup>th</sup> International Congress of the Serbian Society of Mechanics* in Kragujevac, Serbia Well-known for its culture, history and industrial heritage, Kragujevac was the first capital of modern Serbia and the place where the first constitution in the Balkans was proclaimed. Today, we are more than proud to say that Kragujevac is also becoming one of the scientific capitals in the region.

In this very difficult time of the COVID-19 pandemic, we decided to make this congress a hybrid event combining physical and online sessions, so that everyone interested can join us despite the obstacles we have all been facing for more than a year now.

*8<sup>th</sup> International Congress of the Serbian Society of Mechanics* aims to bring together leading academic scientists, researchers and research scholars to exchange and share experiences and research results on various aspects of *Theoretical and Applied Mechanics*. It will bring an interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, theories, algorithms, as well as practical challenges encountered and solutions adopted in the fields of *Classical Mechanics, Solid and Fluid Mechanics, Computational Mechanics, Biomechanics, Applied Mathematics and Physics, Structural Mechanics and Engineering*.

The Congress is organized by the Serbian Society of Mechanics (SSM) in partnership with: Faculty of Engineering, University of Kragujevac, Faculty of Mechanical Engineering, University of Belgrade, Faculty of Technical Science, University of Novi Sad, Faculty of Mechanical Engineering, University of Niš, Hellenic Society of Theoretical and Applied Mechanics, Institute of Information Technology Kragujevac, University of Kragujevac, with the support of the Serbian Ministry of Education, Science and Technological Development, Serbian Academy of Sciences and Arts and Serbian Society for Computational Mechanics.

Six distinguished plenary speakers will deliver lectures:

1. Prof. Georgios E. Stavroulakis – Technical University of Crete, Greece
2. Prof. Themis Exarchos – Ionian University, Corfu, Greece
3. Prof. Mihailo R. Jovanović – University of Southern California, USA
4. Prof. Ricardo Ruiz Baier – Monash University, School of Mathematics, Clayton, Australia
5. Dr Božidar Jovanović – MISANU, Serbia
6. Dr Marko Janev – MISANU, Serbia

The Congress encompasses six main topics: General Mechanics, Fluid Mechanics, Mechanics of Solid Bodies, Biomechanics, Control and Robotics, Interdisciplinary and Multidisciplinary Problems.

Also, there are four Mini-Symposia:

- M1: 5<sup>th</sup> Serbian-Greek Symposium on Advanced Mechanics  
Chairs: Prof. Georgios Stavroulakis, President of HSTAM, Greece; Prof. Nenad Filipović, President of SSM, Serbia
- M2: Turbulence  
Chair: Prof. Đorđe Čantrak, University of Belgrade, Serbia
- M3: Mathematical Biology and Biomechanics  
Chair: Dr. Anđelka Hedrih, MI SANU, Serbia
- M4: Nonlinear Dynamics  
Prof. Julijana Simonović, University of Niš, Serbia

Within the Congress, we are also very proud to organize the 5<sup>th</sup> Serbian-Greek Symposium on *Current and Future Trends in Mechanics*. The Symposium is organized by the Serbian Society of Mechanics (SSM) and the Hellenic Society of Theoretical and Applied Mechanics (HSTAM).

This year, 8<sup>th</sup> *International Congress of the Serbian Society of Mechanics* received more than 150 high-quality research papers. Each paper was reviewed and ranked by at least 2 professors and scientists in the program and the scientific review committee. As a result of the strict review process and evaluation, the committee selected 120 research papers.

We must also say that the conference would certainly not have been so successful without the efforts of many people who were actively engaged in organization of such a major nationally and internationally recognized academic event. We give our special gratitude to the members of the program and scientific review committee as well as to all chairs, organizers and committee members for their dedication and support.

On behalf of the Organizing Committee, we wish you all a pleasant stay in Kragujevac and a productive conference.

*Chairs:*

**Prof. Nenad Filipović, *president of SSM, University of Kragujevac***  
**Prof. Miloš Kojić, *Serbian Academy of Sciences and Arts***

# Organizing Committee

## Co-chairs:

- Nenad Filipović, president of SSM (University of Kragujevac)
- Miloš Kojić, (Serbian Academy of Sciences and Arts)

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# **Technical Program**

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## Monday 28 June 2021

08:45 - 09:15	Opening Ceremony - Welcome speech: <b>Prof. Nenad Filipović</b> , President of SSM, Conference Co-Chair <b>Prof. Miloš Kojić</b> , full member of SASA, Conference Co-Chair <b>Nikola Dašić</b> , Major of Kragujevac City <b>Prof. Ivica Radović</b> , State Secretary, Ministry of Education, Science and Technological Development, Serbia <b>Prof. Dobrica Milovanović</b> , Dean of Faculty of Engineering, Kragujevac
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09:15 - 09:45	Keynote speaker: Topic: <b>Analysis of a New Mixed Formulation for Hyperelasticity Using Kirchhoff Stress</b> <b>Prof. Ricardo Ruiz Baier</b> , Monash University, School of Mathematics, Clayton, Australia Chair: Hedrih A.
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### Session M.1A: 09:45-11:00

#### Biomechanics (part I)

Chairs: Kojić M., Geroski V.

**M.1A.1 – Extension of our computational model for the left ventricle tissue to include hypertrophy** – *Kojić M.*

**M.1A.2 – Coupled Ohara-Rudy numerical model for heart electro-mechanics** – *Geroski V., Milošević M., Milićević B., Simić V., Filipović N., Kojić M.*

**M.1A.3 – Electromyography detection of muscle response in musculus quadriceps femoris of elite volleyball players on different exercises** – *Radaković R., Peulić A., Kovač S., Simojlović M., Filipović N.*

### Session M.1B: 09:45-11:00

#### Mechanics of Solid Bodies (part I)

Chairs: Mastilović S., Dunić V.

**M.1B.1 – Remarks on discreteness of the nanoscale fragmentation mass distribution** – *Mastilović S.*

**M.1B.2 – Size-effect modeling of Weibull Jc cumulative distribution function based on a scaling approach** – *Mastilović S., Đorđević B., Sedmak A.*

**M.1B.3 – Material parameters identification of concrete damage plasticity material model** – *Rakić D., Bodić A., Milivojević N., Dunić V., Živković M.*

**M.1B.4 – Using of gap element for contraction joints modeling in seismic analysis of concrete arch dams** – *Živković M., Jović N., Pešić M., Rakić D., Milivojević N.*

**M.1B.5 – Finite element analysis of effects of multiple defects on welded joint integrity** – *Aranđelović M., Sedmak S., Jovičić R., Sedmak A., Radaković Z.*

11:00 - 11:30	Coffee Break
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**Session M.2A: 11:30-13:00**

**Interdisciplinary and Multidisciplinary Problems (part I)**

Chairs: Sedmak A., Nikolić D.

- M.2A.1 – Noise induced dynamics of earthquake nucleation model** – *Kostić S., Vasović N.*
- M.2A.2 – Nonlinear landslide dynamics** – *Kostić S., Vasović N.*
- M.2A.3 – Computational mechanics – welding joint as a case study** – *Jeremić L., Sedmak A., Sedmak S., Martić I.*
- M.2A.4 – Experimental electrochemotherapy using novel design single needle device** – *Cvetković A., Cvetković D., Milasinović D., Jovičić N., Mialović N., Nikolić D., Mitrović S., Filipović N.*
- M.2A.5 – Cavitation diagrams for merchant ships using four blade b series propellers** – *Veg M., Kalajdžić M.*
- M.2A.6 – Microfluidic lab-on-chip system development for cell culture cultivation** – *Milivojević N., Živanović M., Nikolić D., Jovanović Ž., Šeklić D., Nikolić M., Filipović N.*

**Session M.2B: 11:30-13:00**

**Mechanics of Solid Bodies (part II)**

Chairs: Rakić D., Obradović A.

- M.2B.1 – New pipe ring tensile specimen for pipeline material fracture assessment** – *Trajković I., Rakin M., Milošević M., Sedmak A., Međo B.*
- M.2B.2 – Mass minimization of an AFG Timoshenko cantilever beam with a large body placed eccentrically at the beam end** – *Obradović A., Mitrović Z., Zorić N.*
- M.2B.3 – On concentrated surface loads and the flat punch contact problem in strain gradient elasticity** – *Zisis T., Gourgiotis P., Georgiadis H.*
- M.2B.4 – Geometric optimization of shaft transition zone based on stress-strain analysis of nature inspired design** – *Atanasovska I., Momčilović D.*
- M.2B.5 – A comparative analysis of fatigue behaviour between S355J2+N and Strenx 700 steel grade** – *Živković M., Milovanović B., Dišić A., Jovičić G., Topalović M.*
- M.2B.6 – Linear transient analysis of spatial curved Bernoulli – Euler beam using isogeometric approach** – *Jočković M., Nefovska Danilović M.*

13:00 - 14:00

Buffet Lunch

**Session M.3A: 14:00-15:00**

**Interdisciplinary and Multidisciplinary Problems (part II)**

Chairs: Milošević M., Šušteršič T.

- M.3A.1 – Analysis of atherosclerotic plaque in carotid arteries by using convolutional neural networks** – *Arsić B., Dorović S., Anić M., Gakovc B., Končar I., Filipović N.*
- M.3A.2 – Structural condition assessment and rehabilitation of ‘Karpos’ system bridge** – *Milošević M., Živković S., Marković Branković J., Marković M.*
- M.3A.3 – Epidemiological predictive modelling of COVID-19 spread** – *Šušteršič T., Blagojević A., Cvetković D., Cvetković A., Lorencin I., Baressi Šegota S., Car Z., Filipović N.*
- M.3A.4 – In vitro and in silico testing of stent device** – *Nikolić D., Saveljić I., Filipović N.*

**Session M.3B: 14:00-15:00**

**Mechanics of Solid Bodies (part III)**

Chairs: Dunić V., Milovanović V.

**M.3B.1 – Waves in composite layer reinforced with two families of inextensible fibres –** *Milosavljević D., Radaković A., Čukanović D.*

**M.3B.2 – Simulation of damage evolution in metal structures –** *Živković J., Dunić V., Milovanović V., Živković M.*

**M.3B.3 – Analysis of Hertz contact stresses for metallic material with carbides –** *Atanasovska I., Momčilović D.*

**M.3B.4 – Tuning a fractionally damped piezoelectric energy harvester with attached concentrated masses –** *Paunović S.*

15:00 - 15:30	Keynote speaker: Topic: <b>Coronary Atherosclerosis Assessment: A New Anatomical, Functional, Morphological and Bio-mechanical Approach</b> <b>Prof. Themis Exarchos</b> , Ionian University, Corfu, Greece Chair: Filipović N.
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**Session M.4A: 15:30-16:30**

**General Mechanics (part I)**

Chairs: Rakić D.

**M.4A.1 – Design and practical realization of a frame with stiffness at its ending point –** *Radomirović D., Kovačić I., Gatti G.*

**M.4A.2 – Problematizing the orbital mechanics' two first integrals –** *Nedić S.*

**M.4A.3 – Simple algorithm for computing the stiffness matrix of composite cross-section –** *Lazović Radovanović M., Nikolić J., Radovanović J.*

**M.4A.4 – Topological interface states in acoustic metamaterials –** *Cajić M., Karličić D., Adhikari S.*

**Session M.4B: 15:30-16:30**

**Mechanics of Solid Bodies (part IV)**

Chairs: Mićunović M., Anđelić N.

**M.4B.1 – Low-cycle fatigue damage modeling with hysteretic energy loss –** *Perović Z., Šumarac D.*

**M.4B.2 – A model for the analysis of elasto-plastic buckling of compressed columns –** *Milekić N., Bendić M., Ćorić S., Perović Z.*

**M.4B.3 – On diffuse instability of orthotropic viscoplastic plates –** *Kudrjavčeva Lj., Mićunović M.*

**M.4B.4 – One view on the optimization of thin-walled cantilever channel-section and Z-section beams –** *Anđelić N., Milošević Mitić V., Petrović A., Đurđević Đ.*

16:30 - 17:00	Coffee Break
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**Session M.5: 17:00-18:30**

**General Mechanics (part II)**

Chairs: Nikolić D.

**M.5.1 – Determination of dynamic load factor for single element camshaft using various laws of follower motion** – *Jovanović D., Milenković B.*

**M.5.2 – Behaviour, examination and stability of the constrained mechanical system described with nonlinear equations** – *Vesović M., Radulović R.*

**M.5.3 – Kowalevski exponents for the Kirchhoff equations** – *Dragović V., Gajić B.*

**M.5.4 – Added mass method application for dam-accumulation interaction analysis** – *Rakić D., Jelić L., Živković M., Milivojević N., Bojović M.*

**M.5.5 – Comparative bending analysis of composite laminate and functionally graded plates based on the new shape function** – *Milosavljević D., Radaković A., Čukanović D., Bogdanović G., Ivanović L.*

**M.5.6 – Vehicle motion in the presence of nonholonomic constraints** – *Žigić M., Grahovac N.*

**Tuesday 29 June 2021**

08:30 - 09:00	Keynote speaker: Topic: <b>Auxetic and other Metamaterials in Dynamics</b> <b>Prof. Georgios E. Stavroulakis</b> , <i>Technical University of Crete, Greece</i> Chair: Kojić M.
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**Session T.1A: 09:00-11:00**

**Mini-Symposia I: 5th Serbian-Greek Symposium on Advanced Mechanics (part I)**

Chairs: Filipović N., Kojić M.

**T.1A.1 – Rolling without slipping a heavy homogeneous rigid ball on a torus – Hedrih Stevanović K.**

**T.1A.2 – Exact augmented perpetual manifolds: a corollary for their uniqueness – Georgiades F.**

**T.1A.3 – Effect of chiral materials on presence of band gaps – Koutsianitis P., Tairidis G., Kougkoulos A., Stavroulakis G.**

**T.1A.4 – Viscoelastic fillers in cellular shear wall panels: behavior under dynamic loads – Syrimi P., Papathanasiou S., Tsopelas P.**

**T.1A.5 – Mathematical modelling of electro-elastic dislocations in piezoelectric materials and the J-integral – Agiasofitou E., Lazar M.**

**T.1A.6 – Free vibration of axially functionally graded Timoshenko cantilever beam with a large rigid body attached at its free end – Obradović A., Šalinić S., Tomović A.**

**T.1A.7 – A study of rectangular plates under colinear point load with both approximate and exact solution – Tsiatas G., Pavlović M.**

**T.1A.8 – Bullet penetration in auxetic star-shape armor plates – Ntintakis I., Stavroulakis G.**

**Session T.1B: 09:00-11:00**

**Biomechanics (part II)**

Chairs: Kojić M., Marković Z.

**T.1B.1 – Torsional oscillations of a tree trunk with branches through a biomechanical oscillatory model in the form of a complex cantilever – Hedrih A., Hedrih Stevanović K.**

**T.1B.2 – Inhibitory effect of coumarin derivate on vitamin K epoxide reductases (VKOR) responsible for anticoagulation effect – Milanović Ž., Avdović E., Milenković D., Marković Z.**

**T.1B.3 – Substituent effect on the binding mode and toxicity of selected 1,4-benzodiazepin-2-one – Milanović Ž., Dimić D., Kesić A., Milenković D.**

**T.1B.4 – Entresto (Sacubitril/Valsartan): molecular docking simulations with Nprilysin and Angiotensin II receptor – Antonijević M., Marković Z., Filipović N., Đorović Jovanović J.**

**T.1B.5 – Inhibitory effect of the 4-Hydroxy-(E)-N'-(1-(2,4-Dioxochroman-3-YL)Ethyl)-Benzohydrazide on the  $\alpha$ -Glucosidase – Antonijević M., Simijonović D., Avdović E., Đorović Jovanović J.**

**T.1B.6 – Left ventricle model generated from echocardiographic data – Milićević B., Milošević M., Geroski V., Simić V., Trifunović D., Filipović N., Kojić M.**

**T.1B.7 – Fluid-electro-mechanical parametric model of the left ventricle – Simić V., Milošević M., Milićević B., Geroski V., Filipović N., Kojić M.**

**T.1B.8 – Numerical analysis of blood flow through the cerebral aneurysm – Milovanović A., Saveljić I., Jovanikić O., Filipović N.**

11:00 - 11:30	Coffee Break
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**Session T.2A: 11:30-13:00**  
**Mini-Symposia I: 5th Serbian-Greek Symposium on Advanced Mechanics (part II)**  
Chairs: Kojić M., Vulović A.

**T.2A.1 – Analysis of freight wagons for transporting of bulk materials** – *Vulović S., Pavlović D., Živković M., Vužanac R., Topalović M.*

**T.2A.2 – Physics-informed neural networks for elastic plate problems** – *Muradova A., Stavroulakis G.*

**T.2A.3 – Crack analyses in a sandwich specimen under flexural loading** – *Theotokoglou E., Tourlomousis I.*

**T.2A.4 – Stochastic response of nonlinear energy sinks subjected to gaussian white noise base excitation** – *Karatzia D., Tsiatas G.*

**T.2A.5 – Ageing of equilibrium contact angle in capillary flows** – *Lazaridis K., Wu Y., Muniyal Krishna S., Yu C., Krivilyov M., Sekulić D., Mesarović S.*

**T.2A.6 – Calculation of femoral cortical bone elasticity modulus from computed tomography scans** – *Vulović A., Filipović N.*

**Session T.2B: 11:30-13:00**  
**Biomechanics (part III)**  
Chairs: Milošević M., Đorović S.

**T.2B.1 – Blood flow in arterial bifurcation calculated by turbulent finite element model** – *Nikolić A., Topalović M., Simić V., Blagojević M.*

**T.2B.2 – Analytical model: calculation of fractional flow reserve** – *Starčević S., Savić S., Filipović N.*

**T.2B.3 – Computational model for polymeric bioresorbable Poly-L-Lactic acid (PLLA) stents** – *Milošević M., Anić M., Geroski V., Nikolić D., Isailović V., Filipović N., Kojić M.*

**T.2B.4 – Computational modeling of tumor cell circulation in capillary with platelets** – *Nikolić A., Simić V., Milošević M., Ziemys A., Yokoi K., Kojić M.*

**T.2B.5 – Alterations of human articular cartilage due to osteoarthritis in terms of real and complex-conjugate derivatives** – *Žigić M., Mikulić Gutman S., Grahovac N., Mitić I., Spasić D.*

**T.2B.6 – Numerical analysis of knee joint at maximum power tennis serve** – *Jovičić G., Vulović A., Đorović S., Vukićević A., Vulović R., Radaković R., Filipović N.*

13:00 - 14:00	Buffet Lunch
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**Session T.3A: 14:00-15:00**  
**Mini-Symposia I: 5th Serbian-Greek Symposium on Advanced Mechanics (part III)**  
Chairs: Car Z., Simić V.

**T.3A.1 – On inelasticity of damaged quasi rate independent orthotropic materials** – *Mićunović M., Kudrjavčeva Lj.*

**T.3A.2 – Artificial intelligence approach to parameter learning in nonlinear control systems** – *Nestorović T., Pal A., Oveisi A.*

**T.3A.3 – Determining inverse kinematics of a serial robotic manipulator through the use of genetic**

**programming** – Car Z., Baressi Šegota S., Anđelić N., Lorencin I., Musulin J., Štifanić D., Mrzljak V.

**T.3A.4 – Biomechanics of left ventricle and in silico drug testing** – Filipović N., Milićević B., Milošević M., Simić V., Georski V., Kojić M.

**Session T.3B: 14:00-15:00**

**Control and Robotics**

Chairs: Lazarević M., Obradović A.

**T.3B.1 –  $H_\infty$  proportional-integral control of a turbofan engine** – Zorić N., Jazarević V., Obradović A.

**T.3B.2 – PI velocity control of a mechanical system** – Živanović M.

**T.3B.3 – Robust constrained state space ILC for 3DOF robot manipulator** – Dubonjac A., Lazarević M.

**T.3B.4 – Adaptive iterative learning control of robotic system based on particle swarm optimization** – Živković N., Lazarević M., Petrović M.

**T.3B.5 – Open closed-loop PD $\mu$ /PD type ILC control of neuroarm robotic system** – Cvetković B., Lazarević M., Mandić P., Šekara T., Lino P.

15:00 - 15:30	Keynote speaker: Topic: <b>Classical Neumann System on Stiefel Manifolds: Integrability, Geometric and Algebraic Aspects, and Linearization</b> <b>Dr Božidar Jovanović, MISANU, Serbia</b> Chair: Lazarević M.
15:30 - 16:00	Coffee Break
16:00 - 18:00	<b>SSM Annual Meeting and Assembly 2021</b>
20:00 - 23:00	Gala Dinner - Restoran Di Trevi

**Wednesday 30 June 2021**

08:30 - 09:00	Keynote speaker: Topic: <b>Noether's Theorem for Herglotz Type Variational Problems Involving Real and Complex Order Fractional Derivatives</b> <b>Dr Marko Janev, MISANU, Serbia</b> Chair: Mađarević D.
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**Session W.1: 09:00-10:15**

**Mini-Symposia III: Mathematical Biology and Biomechanics**

Chairs: Hedrih A., Simonović J.

**W.1.1 – Volume optimization of the worm gear using biologically inspired algorithm – Milenković B., Jovanović Đ.**

**W.1.2 – Generalized function of fractional type dissipation energy in double DNA helix chain – Hedrih Stevanović K.**

**W.1.3 – Bone regenerative potential driven by periodic excitation: deterministic and stochastic mathematical models – Simonović J., Woolley T.**

**W.1.4 – Modelling the influence of externally induced cholesterol pulses on hypothalamic-pituitary-adrenal axis perturbed with ethanol – Stanojević A., Anđelković M., Čupić Ž., Kolar Anić Lj.**

**W.1.5 – Rotation transformation matrix of the joint coordinate system with the application to the knee joint – Rosić N.**

10:15 - 10:45	Coffee Break
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**Session W.2A: 10:45-13:00**

**Fluid Mechanics**

Chairs: Saveljić I., Topalović M.

**W.2A.1 – Influence of second order effects on pressure distribution in microtubes – Guranov I., Milićev S., Stevanović N.**

**W.2A.2 – Simulating fluid flow within coronary arteries using parallelized sparse lattice Boltzmann method – Đukić T., Filipović N.**

**W.2A.3 – Saffman-Taylor instability - History and application – Cvetković I., Milićev S., Pihler Puzović D.**

**W.2A.4 – Multi-component mixture of Euler fluids - continuum/kinetic closure – Pavić Čolić M., Mađarević D., Simić S.**

**W.2A.5 – Multi-component mixture of Euler fluids - shock structure analysis – Mađarević D., Pavić Čolić M., Simić S.**

**W.2A.6 – FSI analysis of hydrofoils using FEM and SPH methods – Topalović M., Nikolić A., Vulović S., Milovanović V.**

**W.2A.7 – Natural convection due to lower plate temperature nonuniformity – Jovanović M., Milanović S., Spasić Ž.**

**W.2A.8 – Numerical simulation of laminar flow in periodical grooved channel – Lečić L., Stevanović**



V.

**W.2A.9 – Numerical modeling the motion of otoconia particles in the semicircular canal under whole body vibration** – *Saveljić I., Mačužić Saveljić S., Nikolić D., Đukić T., Đorović S., Lukić J., Filipović N.*

**Session W.2B: 10:45-13:00**

**Mini-Symposia IV: Nonlinear Dynamics**

Chairs: Hedrih Stevanović K., Simonović J.

**W.2B.1 – Schools of asymptotic methods on nonlinear mechanics Krilov-Bogolyubov-Mitropolsky and scientific research in Serbia** – *Hedrih Stevanović K.*

**W.2B.2 – Tracking of periodic signal through the orthogonal lattice of nonlinear chains by synchronisation** – *Simonović J.*

**W.2B.3 – Forced vibration of the nano-system composed from elastically connected nano-plate and nano-shell with influence of different parameters** – *Stamenković Atanasov M., Pavlović I., Jovanović D.*

**W.2B.4 – Exact augmented perpetual manifolds: corollary about linear and nonlinear perpetual mechanical systems** – *Georgiades F.*

**W.2B.5 – Nonlinear vibration of fractional viscoelastic beam on nonlinear layer** – *Nešić N., Čajić M., Karličić D., Jović S., Simonović J.*

**W.2B.6 – Analysis of evolution equations of a nonstationary axisymmetric body in a nonstationary central gravitational field** – *Minglibayev M., Prokopenya A., Bizhanova S.*

**W.2B.7 – Vibration suppression and energy harvesting application of an axially moving beam** – *Karličić D., Čajić M., Adhikari S.*

**W.2B.8 – Motion of two coupled bodies on a rough horizontal plane with variable coefficient of friction** – *Prokopenya A.*

**W.2B.9 – Finite-time stability of neutral fractional-order time-varying delay systems with nonlinear parameter uncertainties and perturbations** – *Lazarević M., Radojević D., Maione G., Pisl S.*

13:00 - 14:00	Buffet Lunch
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14:00 - 14:30	Keynote speaker: Topic: <b>Color of turbulence: Stochastic Dynamical Modeling of Turbulent Flows</b> <b>Prof. Mihailo R. Jovanović</b> , <i>University of Southern California, USA</i> Chair: Čantrak Đ.
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**Session W.3: 14:30-17:30**

**Mini-Symposia II: Turbulence**

Chairs: Čantrak Đ.

**W.3.1 – High efficiency optimization of a multistage centrifugal pump based on combination of modified BA and CFD** – *Wang W., Pei J., Osman M.*

**W.3.2 – Challenges to accurate computation of propeller performances at low angular velocities** – *Svorcan J.*

**W.3.3 – Energy harvesting from the hot water transportation pipelines** – *Sonawat A., Kim J.*

**W.3.4 – Experimentally determined response of impinging turbulent axisymmetric air jet modified by low-amplitude sound modulation** – *Cvetinović D., Erić A., Škobalj P., Milutinović N., Tihon J., Nakabe K., Tatsumi K.*

**W.3.5 – Convolutional neural networks for flow sensing in wall turbulence** – *Cuellar Martín A., Güemes A., Discetti S., Ianiro A.*

**W.3.6 – TSI Presentation** – *Sponsor presentation*

**W.3.7 – Model-based design of riblets for turbulent drag reduction** – *Jovanović M., Ran W., Zare A.*

**W.3.8 – Sizing valve regulating element** – *Savić Lj., Janković N., Čantrak Đ., Ilić D.*

**W.3.9 – Simulating transitional and turbulent flow around airfoils at medium angles-of-attack** – *Svorcan J., Hasan M., Tanović D., Popović L.*

**W.3.10 – Five hole fast response probe for measurements of 3D velocity and pressure fields** – *Bojović D., Čantrak Đ., Janković N., Nedeljković M.*

**W.3.11 – Numerical investigation of reynolds number effects on rotor aerodynamic performances in hover** – *Svorcan J., Kovačević A., Ivanov T., Jovanović M.*

**W.3.12 – Forced vortex in turbulent swirling flow** – *Čantrak Đ., Janković N., Lečić L.*

17:30 - 18:00	Closing Ceremony
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