**CSM**

**CROATIAN SOCIETY OF MECHANICS**

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# 10th ICCSM

## International Congress of Croatian Society of Mechanics
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*organized by*
Croatian Society of Mechanics

# Programme

*Under the auspices of*
Croatian Academy of Sciences and Arts

*Co-organizer*
Central European Association for Computational Mechanics

**cea cm**

Central European Association
for Computational Mechanics

Pula, Croatia, September 28 – 30, 2022

# Tuesday, September 27, 2022

| 16:30 – 18:30 | Registration |
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| 18:30 | **Welcome Cocktail** |

# Wednesday, September 28, 2022

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| 8:00 – 9:00 | **Registration** |
| **Room A** | |
| 9:00 – 9:30 | **Opening Ceremony** |
| **Room A** | **Plenary Lectures** <br> **Chair: Jurica Sorić** |
| 9:30 – 10:10 | **Marc GEERS** <br> **Extreme mechanics: the tungsten plasma-facing shields in the future fusion reactors** |
| 10:10 – 10:50 | **Jörg SCHRÖDER** <br> **Magnetic microstructures - modelling and FE discretization schemes** |
| 10:50 – 11:20 | **Refreshment break** |
| **Room A** | **Damage, Fatigue and Fracture** <br> **Chair: Stefan Löhnert** |
| 11:20 – 11:40 | **Giulio Alfano**, Leo Škec, Gordan Jelenić <br> **Linear and nonlinear fracture mechanics vs cohesive-zone models in the failure analysis of structural interfaces** |
| 11:40 – 12:00 | **Tomislav Lesičar**, Zdenko Tonković, Srečko Glodež <br> **Phase field modelling of material fatigue** |
| 12:00 – 12:20 | **Matej Šodan**, Mijo Nikolić, Andjelka Stanić <br> **Enhanced and embedded strong discontinuity model for fracture in solids with quadrilateral elements** |
| 12:20 – 12:40 | **Mijo Nikolić**, Andjelka Stanić, Noemi Friedman, Hermann G. Matthies <br> **Fracture parameter identification with Bayesian framework and discrete embedded strong discontinuity model** |
| **Room B** | **Solid and Structural Mechanics** <br> **Chair: Friedrich Gruttmann** |
| 11:20 – 11:40 | Matej Borovinšek, **Zoran Ren** <br> **Implementation of the Sliding Wear Analysis into the Finite Element User Interface PrePoMax** |
| 11:40 – 12:00 | **Josip Gavran**, Darko Damjanović, Dražan Kozak, Pejo Konjatić <br> **Analytical solutions of internal moments in helical girders and comparison to numerical solutions** |
| 12:00 – 12:20 | **Michal Kuciej**, Aleksander Yevtushenko, Piotr Grzes, Piotr Wasilewski <br> **3D thermal FE analysis of a railway disc brake at coefficient of friction dependent on temperature, velocity and contact pressure** |
| 12:20 – 12:40 | Aleksander Yevtushenko, Michal Kuciej, **Piotr Grzes**, Piotr Wasilewski <br> **Periodic heating in the FE axisymmetric model of the railway brake disc** |
| **Room C** | **Composites and Other Advanced Materials** <br> **Chair: Ivica Smojver** |

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| 11:20 – 11:40 | **Mikhail Itskov**, Khiêm Ngoc Vu, Jean-Benoît Le Cam<br>**Thermodynamics and Computational Modeling of Strain Induced Crystallization in Rubbers** |
| 11:40 – 12:00 | **Ivica Kožar**, Ivana Pranjić<br>**Nonlinear model for analysis of asphalt mixtures** |
| 12:00 – 12:20 | **Mohsen Rezaee-Hajidehi**, Karel Tuma, Stanisław Stupkiewicz<br>**Stress-induced martensitic transformation in shape memory alloys during nano-indentation: insights from phase-field simulations** |
| 12:20 – 12:40 | Mirela Galić, Gabrijela Grozdanić, Vladimir Divić, Marko Galić, **Pavao Marović**<br>**Numerical analyses of laminated glass behaviour in bending under temperature variations** |
| 12:40 – 14:00 | **Lunch** |
| **Room A** | **Damage, Fatigue and Fracture**<br>**Chair: Giulio Alfano** |
| 14:00 – 14:20 | **Hannah Knobloch**, Stefan Loehnert<br>**A Multiscale Phase-field Analysis of the Dynamic Fracture Behavior of Fiber-Reinforced Concrete** |
| 14:20 – 14:40 | **Christian Krüger**, Verena Klempt, Stefan Loehnert<br>**An Enriched Phase-Field Method for the Simulation of Fracture Processes** |
| 14:40 – 15:00 | **Branko Nečemer**, Zdenko Tonković, Tomaž Vuherer, Srečko Glodež<br>**Computational modelling of fatigue behaviour by using the inelastic energy approach** |
| 15:00 – 15:20 | **Jadran Čarija**, Mijo Nikolić, Eduard Marenić<br>**Discrete fracture model with improved elastic response** |
| 15:20 – 15:40 | **Leo Škec**, Giulio Alfano<br>**Experimental validation of a novel numerical model for rate-dependent mode-I delamination of adhesive joints** |
| **Room B** | **Solid and Structural Mechanics**<br>**Chair: Ivica Kožar** |
| 14:00 – 14:20 | **Jan Zavodnik**, Miha Brojan<br>**Evolution of the wrinkling pattern due to growth of elastic films on viscoelastic substrates** |
| 14:20 – 14:40 | **Marin Grbac**, Dragan Ribarić<br>**A Pure Bending Capable Three-Node Membrane Finite Element with True Rotations** |
| 14:40 – 15:00 | **Olha Hrytsyna**, Yuriy Tokovyy, Maryan Hrytsyna<br>**Local gradient theory for dielectrics with non-classical heat conduction law** |
| 15:00 – 15:20 | **Magdy Ismail**, Laura Žiković, Nina Čeh, Gordan Jelenić<br>**Experimental and numerical analysis of stress concentration in a plate with a circular hole** |
| 15:20 – 15:40 | **Dragan Ribarić**, Ivan Hlača<br>**Space Interface Element with Exponential Cohesive Zone Law in Delamination of Layered Sructures** |
| **Room C** | **Experimental Mechanics**<br>**Chair: Dražan Kozak** |
| 14:00 – 14:20 | **Lazar Lukačević**, Paulina Krolo, Antonio Bakran<br>**Experimental Investigation of Face-to-Core Bond Strength between Gypsum Fibreboard and PU Rigid Foam** |

| 14:20 – 14:40 | **Adriana Brandis**, Ivan Kraus, Vedran Jagodnik, Simon Petrovčič<br>**Nonlinear static experimental research of steel frames founded on dry sand compared to numerical results** |
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| 14:40 – 15:00 | **Domagoj Vrtovšnik**, Marino Brčić<br>**Influence of the cross wire welding parameters on the weld breaking force** |
| 15:00 – 15:20 | **Ana Vrgoč**, Zvonimir Tomičević, Benjamin Smaniotto, François Hild<br>**Damage characterization via Digital Volume Correlation: Application to an in-situ cyclic test on glass fiber reinforced polymer** |
| 15:20 – 15:40 | **Petra Bagavac**, Lovre Krstulović-Opara, Željko Domazet<br>**Application of infrared thermography as a non-destructive testing method: feature extraction** |
| 15:40 – 16:10 | **Refreshment break** |
| **Room A** | **Damage, Fatigue and Fracture**<br>**Chair: Tomislav Jarak** |
| 16:10 – 16:30 | **Tomislav Polančec**, Tomislav Lesičar, Zdenko Tonković<br>**Novel numerical approach for modelling of subsurface pitting phenomena by phase–field method** |
| 16:30 – 16:50 | **Krešimir Jukić**, Tomislav Jarak, Zdenko Tonković<br>**Length-scale insensitive phase-field model and dual-mesh FEM discretization for phase-field problems for reduced mesh requirements** |
| 16:50 – 17:10 | **Mijo Nikolić**<br>**Fully coupled hydro-mechanical model for failure of unsaturated soils and desiccation cracking** |
| 17:10 – 17:30 | **Mislav Vukić**, Roman Baranja, Richard Tichy, Harald Pramberger<br>**Fatigue analysis of seam welds in lightweight aluminum structures** |
| 17:30 – 17:50 | **Roman Baranja**, Matej Stanić, Martin Schwab, Richard Tichy<br>**Calibration and Validation of a Damage Model for 6005-T6 Aluminum** |
| 17:50 – 18:10 | **Marin Vukovojac**, Boris Jalušić, Tomislav Lesičar, Mato Perić, Ivica Skozrit, Ivica Garašić, Zdenko Tonković<br>**Numerical simulation of high-efficiency welding process and subsequent heat treatment for reduction of residual stresses** |
| **Room B** | **Biomechanics and Computational Biology & Smart Materials**<br>**Chair: Igor Karšaj** |
| 16:10 – 16:30 | **Petra Adamović**, Nina Bočkaj, Tanja Jurčević Lulić, Janoš Kodvanj<br>**Comparison of the conventional loading case on femur with Pauwels type III fracture with force reduction loading: A finite element study** |
| 16:30 – 16:50 | **Anja Horvat**, Željko Tuković<br>**Fluid-structure interaction analysis of thoracic aorta blood flow** |
| 16:50 – 17:10 | **Željko Tuković**, Anja Horvat, Lana Virag, Philipp Milović, Ivan Batistić<br>**Added-mass partitoned fluid-structure interaction solver for aorta disection blood flow** |
| 17:10 – 17:30 | **Ana Lisac**, Lana Virag, Igor Karšaj<br>**Numerical Growth and Remodeling Study of the Abdominal Aortic Aneurysm tortuosity** |
| 17:30 – 17:50 | Aleksander Yevtushenko, **Katarzyna Topczewska**, Przemysław Zamojski<br>**Some Thermal Problems of Friction of Functionally Graded Materials – 11** |

| Room C | Experimental Mechanics<br>Chair: Tomislav Lesičar |
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| 16:10 – 16:30 | **Zvonimir Tomičević**, Dalibor Leljak, Ana Vrgoč, François Hild<br>**DVC analysis of mat glass fiber reinforced polymer applying heterogeneous mechanical regularization at the mesoscale** |
| 16:30 – 16:50 | Damir Tomerlin, Marija Magić Kukulj, **Dražan Kozak**, Darko Damjanović<br>**Mechanical Properties of Hardox 450 Steel After Heat Treatment** |
| 16:50 – 17:10 | Ivica Kožar, **Marina Plovanić**, Tea Sulovsky<br>**Estimation of glass plate boundary conditions using laser Doppler vibrometer** |
| 17:10 – 17:30 | Ivica Kožar, **Tea Sulovsky**, Marina Plovanić<br>**Analysis of a simple model for inverse estimation of material parameters from three-point bending of beams** |
| 17:30 – 17:50 | **Petar Škvorc**, Petar Melnjak, Hrvoje Kozmar, Andrea Giachetti, Gianni Bartoli<br>**Aerodynamic Interference of Tall Buildings subjected to the Atmospheric Boundary Layer Flow** |
| 17:50 – 18:10 | **Daniel Kytyr**, Petr Zlamal, Michal Vopalensky, Matej Borovinšek, Matej Vesenjak, Zvonimir Tomičević<br>**Deformation Analysis of Advanced Pore Morphology Foam Elements using 4D X-ray Computed Micro-tomography** |

# Thursday, September 29, 2022

| Room A | Plenary Lectures<br>Chair: Peter Wriggers |
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| 9:00 – 9:40 | **Ferdinando AURICCHIO**<br>**Additive manufacturing: Design, simulations, and challenges** |
| 9:40 – 10:20 | **Laura DE LORENZIS**<br>**Unsupervised discovery of constitutive laws** |
| 10:20 – 10:50 | **Refreshment break** |
| Room A | **Special session in honor of Professor Jurica Sorić on Advanced Numerical Methods in Structural Analysis: Recent Developments and Future Challenges, organized by Central European Association for Computational Mechanics (CEACM), A. Ibrahimbegović, B. Pichler and Z. Tonković**<br>**Chair: Bernhard Pichler** |
| 10:50 – 11:10 | **Peter Wriggers**, Blaz Hudobivnik<br>**On virtual elements for Kirchhoff-Love plates and shells** |
| 11:10 – 11:30 | **Adnan Ibrahimbegović**, H.G. Matthies, S. Dobrilla, E. Karavelic, R.A. Mejia-Nava, C.U. Nguyen, E. Hajdo, E. Hadzalic, I. Imamovic<br>**Stochastic Upscaling Representation of Size & Scale Effects** |
| 11:30 – 11:50 | **Lovre Krstulović-Opara**, Alen Grebo<br>**Strain propagation evaluation based on infrared thermography and digital image correlation** |
| 11:50 – 12:10 | **Marko Čanađija**<br>**Mechanical properties of carbon nanotubes: molecular dynamics simulations and machine learning predictions** |
| 12:10 – 12:30 | **Ivica Smojver**, Darko Ivančević, Dominik Brezetić<br>**Development of Constitutive Modelling for Composite Aeronautical Structures at FMENA** |
| Room B | **Organized session: Natural Hazards and Resilience of Masonry Structures by M. Meštrović, S. Markušić, L. Abrahamczyk and D. Penava**<br>**Chair: Lars Abrahamczyk** |
| 10:50 – 11:10 | **Linda Scussolini**, Gaetano Miraglia, Erica Lenticchia, Rosario Ceravolo<br>**Model-driven design of seismic upgrade interventions in heritage structures** |
| 11:10 – 11:30 | **Lars Abrahamczyk**, Aanis Uzair, Daniel Agudelo<br>**Quantification of Irregularity in Unreinforced Masonry Façades with respect to the Reliability of Equivalent Frame Method** |
| 11:30 – 11:50 | **Filip Anić**, Davorin Penava, Vasilis Sarhosis, Lars Abrahamczyk<br>**Study of Simultaneous Inter-Storey Drift IP and Oop Loads on RC Frames With and Without Infill Walls and Openings by a Variating Angle** |

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| 11:50 – 12:10 | **Davorin Penava**, Lars Abrahamczyk, Shashikant Shambhu Sharma, Liborio Cavaleri, Amin Mohebkhah, Vasilis Sarhosis<br>**The effect of confinement of openings on shear resistance of RC frame with URM infill wall structure components** |
| 12:10 – 12:30 | **Domagoj Trajber**, Davorin Penava, Ivica Guljaš<br>**The Effect of a Skew Angle on Spatial Behavior of Masonry Arch Bridges on Spreading Supports** |
| **Room C** | **Beam structures**<br>**Chair: Gordan Jelenić** |
| 10:50 – 11:10 | **Marko Vukasović**, Radoslav Pavazza, Frane Vlak, Karla Delić<br>**Application of transformed area section method in bending analysis of thin-walled laminated composite beams with symmetrical open sections and shear influence** |
| 11:10 – 11:30 | Radoslav Pavazza, **Frane Vlak**, Marko Vukasović, Branka Bužančić Primorac<br>**Short thin-walled columns of open section subjected to partially distributed axial loads** |
| 11:30 – 11:50 | **Damjan Banić**, Goran Turkalj, Domagoj Lanc, Sandra Kvaternik Simonetti<br>**Stability analysis of composite beam-type structures including shear deformation effects** |
| 11:50 – 12:10 | **Miha Brojan**, Jan Zavodnik<br>**Thermomechanical modeling of TCPF actuators** |
| 12:10 – 12:30 | **Sandra Kvaternik Simonetti**, Domagoj Lanc, Goran Turkalj, Martin Zlatić<br>**Thermal buckling analysis of thin-walled FG closed sections beams** |
| 12:30 – 14:00 | **Lunch** |
| **Room A** | **Special session in honor of Professor Jurica Sorić on Advanced Numerical Methods in Structural Analysis: Recent Developments and Future Challenges, organized by Central European Association for Computational Mechanics (CEACM), A. Ibrahimbegović, B. Pichler and Z. Tonković**<br>**Chair: Adnan Ibrahimbegović** |
| 14:00 – 14:20 | **Friedrich Gruttmann**<br>**Finite element formulations for layered composite shells** |
| 14:20 – 14:40 | Maximilian Sorgner, Rodrigo Díaz Flores, Hui Wang, **Bernhard L.A. Pichler**<br>**Analysis of a Moderate Fire in a Subway Station: FE simulations and Engineering Mechanics Analysis** |
| 14:40 – 15:00 | **Boris Jalušić**, Tomislav Jarak, Marin Vukovojac, Jurica Sorić, Zdenko Tonković<br>**Modeling of heat transfer problems using mixed Meshless Local Petrov-Galerkin collocation method** |
| 15:00 – 15:20 | Josip Živić, Nino Horvat, Lana Virag, **Igor Karšaj**<br>**Biochemomechanical Fluid-Solid-Growth Model of Aortic Aneurysm** |
| 15:20 – 15:40 | **Zdenko Tonković**, Karlo Seleš, Zoran Tomić, Krešimir Jukić, Tomislav Polančec, Tomislav Jarak, Tomislav Lesičar, Jurica Sorić<br>**On Fracture and Fatigue Failure Modelling of Brittle and Ductile Materials Using Phase-Field Formulation** |

| Room B | Organized session: Natural Hazards and Resilience of Masonry Structures by M. Meštrović, S. Markušić, L. Abrahamczyk and D. Penava<br>Chair:  Davorin Penava |
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| 14:00 – 14:20 | **Lars Abrahamczyk**, K. Webber, F. Rinaudo, D. Penava, S. Usmanov, G. Anvarova, M. Hidirov, J. Niyazov, Sh. Usmonov<br>**Environmental risk assessment and mitigation on Cultural Heritage assets in Central Asia** |
| 14:20 – 14:40 | Davorin Penava, **Ante Vrban**, Jakov Uglešić, Davor Stanko, Snježana Markušić<br>**Episcopal seminary building and classical gymnasium (Jesuit college) in Dubrovnik construction 1662-1765 in terms of contemporary earthquake resistant design supported by measurements** |
| 14:40 – 15:00 | **Elizabeta Šamec**, Petra Gidak, Antonia Jaguljnjak Lazarević, Jakov Oreb<br>**On the selection of distinct element method for numerical analysis of Zagreb Cathedral** |
| 15:00 – 15:20 | **Marija Demšić**, Maja Baniček, Petra Gidak, Damir Lazarević<br>**Kinematic analysis of out-of-plane wall failure using visual programming** |
| 15:20 – 15:40 | Romano Jevtić Rundek, Ante Pilipović, Mario Uroš, Marija Demšić<br>**Adaptation of Abaqus output data for application in seismic analysis of buildings** |
| Room C | Beam structures & Solid and Structural Mechanics<br>Chair:  János Lógó |
| 14:00 – 14:20 | **Sudhanva Kusuma Chandrashekhara**, Dejan Zupan<br>**Strain softening in spatial frame like structures using velocity-based formulation for a geometrically exact beam** |
| 14:20 – 14:40 | **Ivan Hlača**, Leo Škec, Dragan Ribarić<br>**Effect of loading system on double cantilever beam test** |
| 14:40 – 15:00 | Maedeh Ranjbar, **Leo Škec**, Gordan Jelenić, Dragan Ribarić<br>**Using Timoshenko beams with Quadratic Linked Interpolation for Modelling Mixed-mode Delamination** |
| 15:00 – 15:20 | **Jan Tomec**, Gordan Jelenić<br>**Objective Formulation for Beam-to-Beam Contacts** |
| 15:20 – 15:40 | **Kamila Martyniuk-Sienkiewicz**, Wojciech Gilewski<br>**Smart polygonal structures based on 2D tensegrity modules** |
| 15:40 – 16:10 | **Refreshment break** |
| Room A | Organized session: Cellular structures by L. Krstulović-Opara, M. Vesenjak and Z. Ren<br>Chair: Lovre Krstulović-Opara and Zoran Ren |
| 16:10 – 16:30 | **Antonio Bakran**, Paulina Krolo, Lazar Lukačević<br>**Experimental Determination of Shear Modulus of Polyurethane Foam Using Two Test Procedures** |
| 16:30 – 16:50 | **Nejc Novak**, Oraib Al-Ketan, Lovre Krstulović-Opara, Matej Vesenjak, Zoran Ren<br>**The computational design and experimental mechanical validation of hybrid Triply Periodical Minimal Surface (TPMS) cellular structures** |

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| 16:50 – 17:10 | **Yunus Emre Yılmaz**, Zoran Ren<br>**Challenges in characterizing cellular materials in direct impact tests** |
| 17:10 – 17:30 | **Andrija Zaplatić**, Zvonimir Tomičević, Juro Bilobrk, Petar Kosec, François Hild<br>**Mechanical characterization of a woven GFRP composite subjected to simple shear loading** |
| 17:30 – 17:50 | **Anja Mauko**, Nejc Novak, Miran Ulbin, Lovre Krstulović-Opara, Matej Vesenjak, Zoran Ren<br>**Impact testing of novel axisymmetric auxetic cellular metamaterial with graded structure** |
| 17:50 – 18:10 | Darko Ivančević, **Luka Stanić**<br>**Advanced numerical methodology for impact damage modelling in laminated CFRP structures** |
| **Room B** | **Organized session: Natural Hazards and Resilience of Masonry Structures by M. Meštrović, S. Markušić, L. Abrahamczyk, D. Penava & Risk assessment and resilience estimation of civil engineering structures and systems by Ž. Nikolić, M. Hadzima-Nyarko and E. Benvenuti**<br>**Chair: Željana Nikolić and Davorin Penava** |
| 16:10 – 16:30 | Lars Abrahamczyk, **Masha Mirboland**, Ch. Koch, D. Penava, R. Höffer, R. Apostolska, N. Lopes, U. Kähler<br>**Holographic/Virtual Experiments for Higher Education in Structural Engineering** |
| 16:30 – 16:50 | **Željana Nikolić**, Elena Benvenuti, Luka Runjić, Vedrana Kozulić, Nives Ostojić Škomrlj<br>**Assessment of seismic vulnerability of existing masonry buildings in urban area** |
| 16:50 – 17:10 | Ana Perić, **Ivan Kraus**, Marijana Hadzima-Nyarko<br>**Seismic risk assessment of a traditional rammed earth structure from Eastern Croatia** |
| 17:10 – 17:30 | Sanja Lukić, **Hrvoje Draganić**, Marijana Hadzima-Nyarko, Goran Gazić<br>**An Overview of the Design Guidelines for Blast Loaded Columns** |
| 17:30 – 17:50 | **Alen Kadić**, Maja Lončar Jamičić, Josip Atalić, Marta Šavor Novak, Mario Uroš, Maja Baniček<br>**The project "Earthquake risk assessment of the City of Zagreb": the development of the building database** |
| **Room C** | **Meshless and Other Novel Computational Methods**<br>**Chair: Božidar Šarler** |
| 16:10 – 16:30 | **Maximilian Reichel**, Jörg Schröder<br>**A comparison of finite element schemes for micromagnetic simulations** |
| 16:30 – 16:50 | **Csaba Gáspár**<br>**A Localized Version of the Method of Fundamental Solutions in a Multi-level Context** |
| 16:50 – 17:10 | **Vedrana Kozulić**, Blaž Gotovac, Nives Brajčić Kurbaša<br>**A new approach to solving boundary value problems in arbitrarily bounded domains** |
| 17:10 – 17:30 | **Ante Jurčević**, Tomislav Lesičar, Zdenko Tonković, Jurica Sorić<br>**Multiscale submodeling technique for ductile heterogeneous materials** |
| 17:30 – 17:50 | **Francesco Scabbia**, Mirco Zaccariotto, Ugo Galvanetto<br>**How to improve the numerical integration in peridynamic models** |

| 17:50 – 18:10 | Philip Lederer, **Rolf Stenberg**<br>**A posteriori estimates by the hypercircle method** |
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| 19:30 | **Congress Dinner** |

# Friday, September 30, 2022

| Room A | Optimal Design of Engineering Structures<br>Chair: Nenad Gubeljak |
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| 8:30 – 8:50 | **János Lógó**, Piotr Tauzowski, Bartlomiej Blachowski<br>**New type of optimal topologies of elastoplastic structures based on different reliability methods** |
| 8:50 – 9:10 | **Niko Trumbić**, Ian Strelec, Ivan Čular, Krešimir Vučković<br>**Multi-parameter Weight and Efficiency Optimization of a Cylindrical Gear Pair without Standard Basic Rack Geometry Limitations** |
| 9:10 – 9:30 | **Renato Skejić**<br>**Applicability of Michell Wave Resistance Theory During Preliminary Design of Marine Vehicles** |
| 9:30 – 9:50 | **Jurica Rožić**, Marko Jokić<br>**Grouping sensors into preset clusters with a mixed $L\_2/L\_0$ norm** |
| **Room B** | Dynamics<br>Chair: Claudio Borri |
| 8:30 – 8:50 | **Meisam Ansari**, Christin Zacharias, Carsten Koenke<br>**An Experimental Study on the Impact of the Core-Coating Inclusions on the Damping Ratio** |
| 8:50 – 9:10 | Krunoslav Haramina, Nenad Kranjčević, **Matija Hoić**, Joško Deur, Andreas Tissot<br>**Modelling of E-clutch axial dynamics based on experimentally characterized clutch component stress-strain characteristics** |
| 9:10 – 9:30 | **Željan Lozina**, Damir Sedlar, Anđela Bartulović<br>**Torsional vibration induced with the position dependent impacts** |
| 9:30 – 9:50 | **Damir Sedlar**, Željan Lozina, Anđela Bartulović<br>**Acoustic signal analysis using cross-correlation method in experiments with different sound source** |
| **Room C** | Concrete Structures & Masonry Structures<br>Chair: Ivica Skozrit |
| 8:30 – 8:50 | **Silvio Prskalo**, Martin Schanz, Michael Gfrerer<br>**Modeling of concrete during early age hydration** |
| 8:50 – 9:10 | **Drahomír Novák**, Radomír Pukl<br>**70 years old concrete bridge - is it still safe for the today´s heavy traffic?** |
| 9:10 – 9:30 | **Stefan Löhnert**, Nadja Oneschkow<br>**Simulation of High-Strength Concrete under Cyclic Compressive Loads** |
| 9:30 – 9:50 | Benedek András Lógó, **Matteo Bruggi**, János Lógó<br>**Computational aspect of a reconstruction of heritage structure built as ribbed masonry vaults** |
| 9:50 – 10:20 | **Refreshment break** |
| **Room A** | Optimal Design of Engineering Structures & Neural Networks<br>Chair: Marko Čanađija |

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| 10:20 – 10:40 | **Martin Hrabačka**, Radek Bulín, Michal Hajžman<br>**Design of active tensegrity structures using computational approaches** |
| 10:40 – 11:00 | Mario Jelović, **Mate Šimundić**, Filip Kozlik, Matej Poletar<br>**How to Model a 3D Battery Module in 5 Simple Steps?** |
| 11:00 – 11:20 | **Dominik Birt**, Matija Hoić, Daniel Miler<br>**Optimization of Chebyshev's Lambda Mechanism stride length by combining Genetic algorithm and numerical simulation** |
| 11:20 – 11:40 | **Valentina Košmerl**, Ivan Štajduhar, Marko Čanađija<br>**Neural network approach for predicting stress-strain behavior of carbon nanotubes** |
| 11:40 – 12:00 | **Martin Zlatić**, Marko Čanađija<br>**A neural network model for incompressible rubber thermo-elasticity** |
| **Room B** | **Dynamics**<br>**Chair: Antonia Jaguljnjak Lazarević** |
| 10:20 – 10:40 | **Bepo Schira**, Paolo Fabijan, Gordan Jelenić, Nina Čeh<br>**Multiple-support excitation of slender long-span structures: numerical investigation and experimental validation** |
| 10:40 – 11:00 | **Teo Mudrić**, Nina Čeh, Gordan Jelenić, Emina Smlatić, Stefan Hante, Martin Arnold, Manuela Paschowski<br>**Rocking of a rigid block on an elastic beam – a non-smooth contact dynamics method approach** |
| 11:00 – 11:20 | **Tomislav Jarak**, Alvaro Iglesias-Pordomingo, Alvaro Magdaleno, Antolin Lorenzana<br>**Experimental approach for optimal design of a TMD in a lightweight footbridge** |
| 11:20 – 11:40 | **Nina Čeh**, Maria Lissner, Nik Petrinić<br>**Energy-loss mechanism in vertical and horizontal impacts during rocking: experimental investigation and numerical modelling** |
| 11:40 – 12:00 | **Marin Jalšić**, Neven Alujević, Srećko Arandia-Krešić, Ivan Ćatipović<br>**Stability and Performance Analysis of a Reciprocity Defying Active Acoustic Metamaterial Cell** |
| **Room C** | **Plasticity & Strain Gradient Continuum**<br>**Chair: Mikhail Itskov** |
| 10:20 – 10:40 | Maciej Ryś, **Stanisław Stupkiewicz**, Henryk Petryk<br>**Predictive modelling of the indentation size effect: gradient-enhanced hardening law combined with Cosserat crystal plasticity model** |
| 10:40 – 11:00 | **Ante Bubalo**, Zdenko Tonković, Dalibor Zorica<br>**Development of quick and reliable method for electric terminal crimp design** |
| 11:00 – 11:20 | **Sara Grbčić Erdelj**, Gordan Jelenić<br>**Finite element analysis of the pure bending problem in non-linear micropolar elasticity** |
| 11:20 – 11:40 | **Laura Žiković**, Gordan Jelenić<br>**Quadrilateral 2D Finite Elements with Enhanced Fixed-Pole Interpolation in Linear Analysis of Micropolar Continuum** |
| 11:40 – 12:00 | **Vedrana Cvitanić**, Ivan Čorić, Maja Džoja<br>**Anisotropic plasticity models with shear constraint** |
| 12:00 – 13:00 | **Lunch** |

| Room A | Solid and Structural Mechanics & Smart Materials & Neural Networks & Composites and Other Advanced Materials<br>Chair: Zdenko Tonković |
|---|---|
| 13:00 – 13:20 | Zoran Tomić, **Nenad Gubeljak**, Tomislav Jarak, Luka Ferlič, Zdenko Tonković<br>**Effect of different porosity of sintered steel on fatigue S-N curves** |
| 13:20 – 13:40 | Tomáš Návrat, Bořek Ščerba, **Jindřich Petruška**<br>**Influence of angular deviation of rollers on the performance and results of the cross roll straightening of bars** |
| 13:40 – 14:00 | **Dragan Pustaić**<br>**Steady-State Creep of the Gas Turbine Disk-an Analytical Approach** |
| 14:00 – 14:20 | **Matija Novak**, Eduard Marenić, Tomislav Jarak, Mijo Nikolić<br>**Piezoelectric beam element with embedded discontinuity** |
| 14:20 – 14:40 | **Matej Stanić**, Tomislav Lesičar, Ante Jurčević, Zdenko Tonković<br>**Modelling the elastoplastic behaviour of heterogeneous materials using neural networks** |
| 14:40 – 15:00 | Laszlo Takacs, Laszlo Kovacs, Anna Nagy, **Milena Babić**<br>**A numerical modeling method to predict failure in polymer sandwich structures with inhomogeneous core** |
| Room B | Dynamics & Meshless and Other Novel Computational Methods & Concrete Structures<br>Chair: Hrvoje Kozmar |
| 13:00 – 13:20 | **Radek Bulín**, Michal Hajžman, Pavel Polach<br>**Newmark Type of Integration Methods with Quasi-Newton Iterations for Flexible Multibody System with Friction** |
| 13:20 – 13:40 | **Michal Hajžman**, Jan Rendl, Luboš Smolík, Pavel Polach, Štěpán Dyk, Miroslav Byrtus<br>**Computational modelling of various journal bearings and related software implementation** |
| 13:40 – 14:00 | **Krunoslav Haramina**, Matija Hoić, Joško Deur, Nenad Kranjčević<br>**Modelling of synchronizer dynamics for dual clutch automatic transmission** |
| 14:00 – 14:20 | **Stipe Perišić**, Jani Barle, Predrag Đukić<br>**Bootstrap technique for Coulomb friction estimation** |
| 14:20 – 14:40 | **Grgo Kamber**, Hrvoje Gotovac, Vedrana Kozulić<br>**Adaptive modeling with hierarchical Fup basis functions and control volume within isogeometric analysis– 32** |
| 14:40 – 15:00 | Kajo Ferić, Hrvoje Gotovac, **Ana Romić**, Sathish Kumar Veerappan, Krste Živković<br>**Laboratory investigations of horizontal structures with pervious concrete – 133** |
| Room C | Fluid Mechanics<br>Chair: Željko Tuković |
| 13:00 – 13:20 | **Giulio Ferri**, Claudio Borri, Enzo Marino<br>**Frequency-Domain Optimization of large Floating Offshore Wind Turbines – 64** |
| 13:20 – 13:40 | **Božidar Šarler**, Saša Bajt, Grega Belšak, Henry Chapman, Jurij Gregorc, Krištof Kovačič, Ajda Kunavar, Khush Bakhat Rana, Zlatko Rek, Gal Savšek, Rizwan Zahoor, Bor Zupan<br>**Recent advances in experiments and numerical modelling of microfluidic sample delivery systems for femtosecond crystallography** |

| | |
|---|---|
| 13:40 – 14:00 | **Jan Tibaut**, Jure Ravnik, Martin Schanz<br>**The Fast Boundary -Domain Integral Method: An overview and application on fluid flow simulation** |
| 14:00 – 14:20 | **Hrvoje Kozmar**<br>**The effect of turbulence on surface pressure underlying conical vortices** |
| 14:20 – 14:40 | **Luka Lanča**, Luka Grbčić, Karlo Jakac, Stefan Ivić<br>**Two-dimensional flow reconstruction from scattered measurements using CFD model fitting** |
| 14:40 – 15:00 | **Karlo Jakac**, Ante Sikirica, Luka Lanča, Stefan Ivić<br>**Comparison of Lagrangian and Eulerian approach for modeling dynamics of the probability distribution driven by sea surface flow field** |
| **Room D** | |
| 15:00 | **Closing** |

**The Tourism Office Pula will organize the sightseeing of the town of Pula with local guide for the Congress participants. It is free of charge. For application and more information please contact the registration desk.**

## Saturday, October 1, 2022

**Conference Excursion is organized by the Perfect Meetings Agency. It is not covered by the registration fee. More information is available at the registration desk.**

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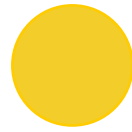
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