INSTITUTE OF FUNDAMENTAL TECHNOLOGICAL RESEARCH
and
COMMITTEE ON MECHANICS
Polish Academy of Sciences

40th SOLID MECHANICS CONFERENCE

Warsaw, Poland
29.08 - 2.09 2016

Conference programme
<table>
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<tr>
<th>Time</th>
<th>Room A</th>
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<td>Plenary lecture</td>
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Thematic Sessions

- **Biomechanics**
- **Computational Aspects of Solid Mechanics, Fracture and Damage**
- **Elasticity, Plasticity and Phase Transition**
- **Experimental Mechanics**
- **Geomechanics and Multiscale Modelling of Materials**
- **Plates and Shells: Classical and Non-classical Models**
- **Smart Materials and Structures**
- **Stochastic Phenomena and Dynamics Inspired Methods in Neuroinformatics and Systems Biology**
- **Structural Mechanics and Optimization**

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**plenary: 45+15 min, keynote: 30+10 min, normal: 15+5 min**
About SolMech

The series of Solid Mechanics Conferences have been organized by the Institute of Fundamental Technological Research since 1953. The conferences have maintained high scientific standard and served as a forum for exchange of ideas and research information. Traditionally a set of invited lectures have been presented at the Conferences by outstanding researchers. The aim of the Conference is to bring together the researches from different countries and to create them the possibilities for the presentation of scientific results from a wide area of solid mechanics.

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Marek Skłodowski - Editorial Matters

Leszek Frąś, Paweł Jarzębski, Zdzisław Nowak, Agnieszka Pręgowska and Piotr Taulowski - Managing assistants

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Zděnek Bažant (USA)  |  Ignacio Romero (Spain)
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Conference Venue

Conference will take place in the Old Library of Warsaw University, ul. Krakowskie Przedmieście 26/28.

Social Events

- Welcome reception – Monday, August 28, 17:00
  Main Hall of the Old Library of Warsaw University
- Concert, Wednesday, August 31, 13:20
  Room A of the Old Library of Warsaw University
- Concert and Gala Dinner in Żelazowa Wola
  Thursday, September 1, departure 16:30

IPPT PAN

Institute of Fundamental Technological Research
Polish Academy of Sciences
ul. Pawińskiego 5 B
02-106 Warszawa
Poland

www.solmech2016.ippt.pan.pl
Invited Plenary Lectures

Zděnek Bažant, USA
Probabilistic nano-mechanics based finite weakest-link model for quasibrittle structure strength, size effect, lifetime and fatigue

Davide Bigoni, Italy
Folding and faulting instabilities in extreme elastic solids

Katarzyna Kowalczyk-Gajewska, Poland
Modelling of microstructure evolution in metals and alloys of high specific strength

Tomasz Lewiński, Poland
Optimization of structural topology

Ignacio Romero, Spain
A model for the multiscale simulation of thermo-chemo-mechanical problems

Alexis Rusinek, France
Discussion about dynamic behaviour of materials and structures

Werner Wagner, Germany
Multiscale methods for shell and plate structures - theory and applications
Biomechanics
R. Będziński (Poland), A. John (Poland) and T. Lekszycki (Poland)

Computational Aspects of Solid Mechanics, Fracture and Damage
T. Burczyński (Poland) and E. Oñate (Spain)

Elasticity, Plasticity and Phase Transition
(Special session commemorating professor)
(Bogdan Raniecki)
D. Bigoni (Italy), Ch. L'excellent (France) and H. Petryk (Poland)

Experimental Mechanics
Z. Kowalewski (Poland) and A. Rusinek (France)

Geomechanics and Multiscale Modelling of Materials
(Special session devoted to the anniversary of)
(professor Zenon Mróz)
S. Pietruszczak (Canada), J. Rojek (Poland),
S. Stupkiewicz (Poland) and J. Tejchman (Poland)

Plates and Shells: Classical and Non-classical Models
J. Chróścielewski (Poland) , V. Eremeyev (Russia),
W. Wagner (Germany) and K. Wiśniewski (Poland)

Smart Materials and Structures
E. Pieczyska (Poland) and H. Tobushi (Japan)

Stochastic Phenomena and Dynamics
Inspired Methods in Neuroinformatics and Systems Biology
R. Iwankiewicz (Germany), Z. Kotulski (Poland),
E. Postek (Poland) and J. Szczepański (Poland),

Structural Mechanics and Optimization
T. Lewiński (Poland) and P. Kowalczyk (Poland)
Tuesday, 30.08, Room A

10:00
Z. Bažant
Probabilistic Nano-Mechanics Based Finite
Weakest-Link Model for Quasibrittle Structure
Strength, Size Effect, Lifetime and Fatigue

11:20 S1
Z. Mróz
Contribution of Prof. B. Raniecki to Nonlinear
Mechanics of Solids

11:40 P209
Ch. Lexcellent
Review of Phase Transformation Surfaces Around
a Crack Tip for Shape Memory Alloys

12:00 P059
K. Takeda, R. Matsui, H.Tobushi and
E.A. Pieczyska
Subloop Deformation of Shape Memory Alloy

12:20 P069
K. Tůma, S. Stupkiewicz and H. Petryk
The Effect of Twin Spacing on the Morphology of
Austenite-Twinned Martensite Interface

13:40
A. Rusinek
Discussion About Dynamic Behaviour of
Materials and Structures

14:40 P146
R. Denzer
A Phase-Field Approach for Liquid to Solid
Phase Transformation for Binary Ni-Cu Alloy

15:00 P132
B. Skoczeń
Coupled Strain Induced Phenomena in Ductile
Materials at Extremely Low Temperatures
Session 2 cd

15:20 P215
H. Petryk and S. Stupkiewicz
A Simple Approach to Boundary-Layer and Size Effects in Gradient-Enhanced Crystal Plasticity

15:40 P212
M. Lewandowski and S. Stupkiewicz
A Study of Rate-Dependent and Rate-Independent Regularization of Crystal Plasticity at Finite Strains

16:20
W. Wagner
Multiscale Methods for Shell and Plate Structures - Theory and Applications

Session 3

17:20 P105
R. Bustamante
Implicit Constitutive Relations for Thermoelastic Bodies

17:40 P051
V. Sadowskii
On Thermodynamically Consistent Form of Nonlinear Equations of the Cosserat Theory

18:00 P053
S.N. Korobeynikov, A.Y. Larichkin, T.A. Rotanova and A.A. Oleinikov
Lagrangian Formulation of Hencky’s Hyperelastic Material Model: Theory, Experiment, and Computer Simulation

18:20 P129
I.Yu. Zubko
Material Spin and Finite Hypo-Elasticity for Two-Dimensional Orthotropic Media
Tuesday, 30.08, Room B

Session 1

11:20 P182
M.S. Chaudhry and A. Czekanski
Effect of FDM Process Parameters on Mechanical Properties of Thermoplastic Elastomer Subject to High-Strain Rates

11:40 P188
W. Moćko, P. Grzywna, Z.L. Kowalewski and J. Radziejewska
Constitutive Behaviour of DP500 Steel Exposed to Prior Cyclic Loadings

12:00 P164 keynote
N.D. Alexopoulos, A. Proiou, S.K. Kourkoulis, S. Riekehr and N. Kashaev
The Effect of Artificial Ageing Heat Treatments on the Corrosion Resistance of 2198 (Al-Cu-Li) Aluminium Alloy

Session 2

14:40 P055
M.Z. Kabir, A.E. Seyf
Special Design and Production of Fixture to Measure the Symmetric and Anti-Symmetric Tensile Buckling Load of the Notched Thin Plates

15:00 P007
J. Szafran
From Full-Scale Testing of Steel Lattice Towers to Stochastic Reliability Analysis

15:20 P074
P. Bajerski and R.B. Pęcherski
Influence of Additive Manufacturing Technology on Mechanical Properties of Glass-Filled Fine Polyamide PA3200 GF

15:40 P163
N. Alexopoulos, Z. Paragamian, S.K. Kourkoulis and P. Poulin
Tensile and Fracture Toughness Enhancement of Epoxy Resin Reinforced with Graphene Nanoplatelets
Session 3

17:20 P187
A.M. Stręk, K. Wańczyk, B. Lipowska, P. Kasza and R.B. Pęcherski
Compression of Aluminum Sponge

17:40 P240
K. Makowska and Z.L. Kowalewski
Barkhausen Noise and Magnetoacoustic Emission as a Potential Tools for Mechanical Properties Estimation of Ferromagnetic Materials

18:00 P221
A. Kwiecień, M. Gams, T. Rousakis and A. Viskovic
Use of Deformable Polymers Between RC Frames and Masonry Infills for Improved Seismic Performance

18:20 P229
D.M. Jarząbek and M. Chmielewski
The Measurement of the Adhesion Force Between Ceramic Particles and Metal Matrix in Ceramic Reinforced-Metal Matrix Composites

18:40 P231
W. Dera, C. Dziekoński and D.M. Jarząbek
The Measurement of Viscosity of Thin Polymer Films
Tuesday, 30.08, Room C

Session 1

11:20 P158 keynote
M. Gilbert, L. He, C.J. Smith and T. Johnson
Layout Optimization in Structural Analysis & Design: Recent Developments

12:00 P088
M. Nowak, W. Gnarowski and P. Abratowski
Structural Optimization of Helicopter Air-Landing Rope Console with Multiple Loading Conditions

12:20 P144
B. Bochenek and M. Mazur
A Novel Heuristic Algorithm for Minimum Compliance Topology Optimization

Session 2

14:40 P104
B. Bochenek and K. Tajs-Zielińska
Efficient Generator of Structural Topologies Based on Irregular Cellular Automata

15:00 P255
W. Szteleblak
Generalized Topology Optimization of Shallow Shells

15:20 P087
R. Kutyłowski and M. Szweczłowicz
Thighbone-Implant Interaction - Topology Optimization Analysis

15:40 P045
E. Šamec, K. Frel and M. Baniček
Iterative Application of the Force Density Method
17:20 P168
**A. Pichugin, A. Tyas and M. Gilbert**
Few Observations on the Optimal Configuration of Some Common Types of Bridges

17:40 P222
**T. Sokół and T. Lewiński**
Solution of the Three Force Problem in a Case of Two Forces Being Mutually Orthogonal

18:00 P052
**M. Shimoda, K. Kameyama and J.X. Shi**
Parameter-Free Shape-Size Optimization for Deformation Tailoring of a Frame Structure

18:20 P084
**Z. Bieniek**
Self-Equilibrium Geometry of the Class-Theta Tetrahedral Tensegrity Module
Tuesday, 30.08, Room D

Session 1

11:20 P047 keynote
E. Majchrzak and G. Kałuża
Analysis of Thermal Processes Occuring in the Heated Multilayered Metal Films Using the Dual-Phase Lag Model

12:00 P018
H.M. Shodja and M.R Delfani
Capturement of the Nanoscopic Morphological Parameters in Chiral SWCNT’s via a Well-Posed Continuum Model

12:20 P155
A. Uściłowska and M. Chudzicka-Adamczak
Collation of Thermal Imaging and Computer Simulations Using Method of Fundamental Solutions for Building Envelopes

Session 2

14:40 P126 keynote
M. Nitka, J. Suchorzewski and J. Tejchman
Effect of Aggregate Shape on Concrete Fracture During Compression and Bending in DEM Calculations

15:20 P151
M. Ostaszewska, J. Suchorzewski, E. Korol, J. Tejchman and Z. Mróz
Numerical and Experimental Investigations of Size Effect in Reinforced Concrete Beams Scaled in One Direction

15:40 P199
G. Vadillo, J. Reboul and J. Fernández-Sáez
A Modified Gurson Model to Account for the Influence of the Lode Parameter at High Triaxialities
Session 3

17:20 P008
A. Kaczyński
Thermal Stresses in an Elastic Isotropic Space with an Anticrack Under Symmetric Temperature Loads

17:40 P096
J. Jaśkowiec
Very High-Order Elements in Thermal and Mechanical Problems

18:00 P130
G. Dziatkiewicz
Complex Variable Step Method for Derivative Computation of Green’s Functions in 3D Magneto-Electro-Elasticity

18:20 P072
A. Długosz
Multiobjective Optimization in Two-Scale Thermoelastic Problems for Porous Solids
Session 1

11:20 P256 keynote
W. Witkowski
Selected Topics of Implementation of the Nonlinear 6-Parameter Shell Theory

12:00 P031
N. Chinchaladze and G. Jaiani
Anti-plane Strain (Shear) of Orthotropic Non-Homogeneous Prismatic Shell-Like Bodies

12:20 P145
S.I. Zhavoronok
On the Variational Formulaton of the Extended High-Order Shell Theory of I. N. Vekua Type

Session 2

14:40 P015
N.F. Morozov, P.E. Tovstik and T.P. Tovstik
Multilayer Plate Bending Model with Application to a Nano-Plate Bending and Free Vibrations

15:00 P181
S. Burzyński, J. Chróścielewski, K. Daszkiewicz and W. Witkowski
Elastoplastic Analysis of Functionally Graded Shells in Nonlinear 6 Parameter Shell Theory

15:20 P131
M.R. Moeini, M. Salehi and M. Yarmohammadi
Dynamic Behavior of Composite Laminated Plate with Eco-Friendly Matrix and Natural Fibers and Bio-Inspired Stacking

15:40 P113
A. Al Sabouni-Zawadzka, J. Klósowska, P. Obara and W. Gilewski
Continuum Model of Orthotropic Tensegrity Plate-Like Structures with Self-Stress Included
Session 3

17:20 P082
J. Chróścielewski, A. Sabik, B. Sobczyk and W. Witkowski
Pucks Criterion - Nonlinear 6 Parameter Shell Theory Approach

17:40 P156
A.P. Kerzhaev, M.D. Kovalenko and I.V. Menshova
On the Analytical Solutions of Boundary Value Problems of the Elasticity Theory for Finite Domains with the Angular Points of a Boundary and the Changing Points of the Type of Boundary Conditions

18:00 P026
D. Pawlus
Evaluation of Critical Loads of Three-Layered Annular Plates with Damaged Composite Facings

18:20 P046
F. Zakęś
Vibrations of Point Supported Rectangular Thin Plates Subjected to a Moving Force
09:00
I. Romero
A Model for the Multiscale Simulation of Thermo-Chemo-Mechanical Problems

10:00 S2
S. Stupkiewicz
On Contributions of Professor Zenon Mróz to Solid Mechanics

10:20 P239 keynote
T. Wierzbicki, E. Sahraei and J. Zhu
The Mechanics of Lithium-Ion Batteries

11:00 P094
J. Kozicki and J. Tejchman
Effect of Grain Shape on Creation of Vortex/Anti-Vortex- Structures in Granular Bodies Using DEM

11:40 P234 keynote
S. Pietruszczak
Modelling of Localized Damage Using an Enhanced Embedded Discontinuity Approach: an Overview

12:20 P253 keynote
T. Burczyński, A. Mrozek and W. Kuś
Computational Models of New Graphene-Like Nano-Structures
15:00
D. Bigoni
Folding and Faulting Instabilities in Extreme Elastic Solids

16:00 P050
M. Klimczak and W. Cecot
Comparison of Two Methods for Numerical Upscaling

16:20 P119
W. Bielski and R. Wojnar

16:40 P152
W. Beluch and M. Hattas
Multiscale Identification of Parameters of Inhomogeneous Materials by Means of Global Optimization Methods

17:00 P174
M. Wojciechowski and M. Lefik
Optimal Boundary Conditions and RVE of Arbitrary Shape for Computational Homogenization of Disordered Media

17:20 P177
M. Lefik and D.P. Boso
Identification of Parameters of Adsorption by Approximation of Inverse Relation and Using Artificial Neural Networks
Wednesday, 31.08, Room B

Session 4

10:00 P049
H. Zaririnzadeh, M.Z. Kabir and A. Deylami
Experimental and Numerical Fatigue Crack Growth of an Aluminum Pipe Under Mixed Mode Fracture Condition

10:20 P060
K. Takeda, R. Matsui, H. Tobushi and K. Hattori
Influence of Ultrasonic-Shot Peening on Fatigue Life of Tini Shape Memory Alloy

10:40 P230
C. Dziekoński, W. Dera, L. Frąś and D.M. Jarząbek
Precise Force Sensors for Micro and Nanotensile Tests

11:00 P244
L.J. Frąś, D. Jarząbek, C. Dziekoński and R.B. Pęcherski
Viscoplastic Deformation of Magnethoreological Solids

Session 4

11:40 P223
L. Rauch, K. Perzyński, L. Madej, K. Bzowski and M. Pietrzyk
The Strategy for Efficient Modelling of Phase Transformations in Materials Processing

12:00 P184
A. Uściłowska
The Computer Simulation of Some Metal Forming Processes - Numerical Experiment Based on FEM and MFS

12:20 P180
M. Kursa and H. Petryk
Algorithm for Rate-Independent Plasticity of Single Crystals Based on Incremental Work Minimization

12:40 P173
B. Wcisło, J. Pamin and A. Menzel
Simulations of Thermal Softening in Large Strain Thermoplasticity with Degradation
Session 5

16:00 P001

Yu.M. Grigoriev
Regularized Analytical Solution of Cauchy Problem for Elastic Rectangle

16:20 P009

D.R Mcarthur and L.J. Sudak
A Circular Inclusion with Inhomogeneous Rough Imperfect Interface in Harmonic Materials

16:40 P027

F. Ojaghnezhad and H.M. Shodja
Effective Elastic Constants and Surface Characteristics of Films with Nanometric Thickness

17:00 P205

A.R. Shahmohamadi, M. Salehi, M. Sadighi and S. Saber-Samandari
Improving Mechanical Properties of Composites by Nanoparticles Using a Three Dimensional Model
Wednesday, 31.08, Room C

Session 4

10:00 P108 keynote
B. Poplawski, G. Mikułowski and Ł. Jankowski
On-Off Damping of Free Vibrations and Optimum Actuator Placement

10:40 P137
R Rafiee, M. Moradi and M. Khanpour
Analyzing Structural Behavior of a Composite Wind Turbine Blade Using Simplified Modeling

11:00 P004
R. Steinbuch
Improving the Earthquake Response of High Buildings by Bionically Optimized Passive Tuned Mass Dampers

Session 5

11:40 P041
I. Goda, J.F. Ganghoffer and T. Lewiński
Evolutionary and Topology Optimization Based Algorithms for Bone External and Internal Remodeling

12:00 P075
T. Łukasiak
Two-Phase Isotropic Composites of Extremal Moduli. The Inverse Homogenization Problem

12:20 P090
G. Dzierżanowski
Inverse Homogenization in Isotropic Material Design

12:40 P023
X. Chen and S.A. Meguid
Stability Analysis of Thermally and Electrically Actuated Functionally Graded Material Microbeam
16:00 P172
J. Pozorska and Z. Pozorski
On Face Layer Wrinkling in Sandwich Structures with an Orthotropic Core

16:20 P054
R. Idzikowski and P. Śniady
System of Coupled Beams as a Model of Timber Face Sheets  Sandwich Beam - Experimental Verification

16:40 P038
I. Paczelt, Z. Mróz, S. Kucharski and A. Baksa
Analysis of Wear Processes for Monotonic or Periodic Sliding and Loading Conditions

17:00 P228
L. Wittenbeck
Optimal Design of Pressure Vessel Head
Wednesday, 31.08, Room D

Session 4

10:00 P061
S. Hirobe and K. Oguni
Modeling and Numerical Analysis Methods for the Desiccation Cracks

10:20 P103
J. Lachowski and J. Borowiecka-Jamrozek
Mathematical Model of Diamond Particle in Metallic Matrix

10:40 P134
J. Reboul and G. Vadillo
Extended Gurson-Type Yield Criteria for Strain Rate Sensitive Materials

11:00 P241
M. Korobeynikova and S. Schmauder
The Influence of Graphene Slices on the Mechanical Properties of Mono- and Polycrystalline α - Iron

Session 5

11:40 P085
K. Nowak
Nonlocal Approach to Cafe Solution of Creep Crack Growth Problem

12:00 P044
W. Ogierman and G. Kokot
Pseudo-Grain Discretization in Homogenization of Misaligned, Inelastic Composites

12:20 P179
A. Urbaś, A. Jabłoński and J. Kłosiński
Application of the Lugre Friction Model in the Dynamics Analysis of a Truck-Mounted Crane with a Flexible Link.

12:40 P219
P. Dzewulski and S. Stanisławek
The Influence of Forming Process on Road Barrier Strength
16:00 P071
P. Fedeliński
Effective Mechanical Properties of Materials with Branched and Intersecting Cracks

16:20 P078
Ł. Kaczmarczyk and Ch. Pearce
Implicit Analysis of Crack Propagation in Brittle 3D Solids

16:40 P081
E. Postek and T. Sadowski
A Crack Model Around Junctions in Wc\Co Composite

17:00 P086
T. Sadowski, L. Marsavina and E. Craciun
Cracking in 2-Phase Ceramic Matrix Composite Materials Under Uniaxial Quasi-Static Deformation

17:20 P099
M. Majewski, P. Hołobut, M. Kursa and K. Kowalczyk-Gajewska
Micromechanical Modelling of Packing and Size Effects in Particulate Elastic-Plastic Composites
Wednesday, 31.08, Room E

----------- Session 4 -----------

10:00 P073 keynote
**V. Eremeyev, B. Sun, K.A. Lazopoulos and E.C. Aifantis**
On Plates Models Based on Strain Gradient Elasticity

10:40 P042
**S. Fialko**
Triangular Flat Shell Finite Element for Analysis of Reinforced Concrete Thin-Walled Structures

11:00 P122
**K. Wiśniewski and E. Turska**
Recent Results on Nine-Node Shell Elements Using Two-Level Approximation of Strains

----------- Session 5 -----------

11:40 P043
**J.C.G. Verschaeye**
A Web-Spline Solver for Plates Supported by an Arbitrary Stiffener Arrangement

12:00 P077
**Ł. Kaczmarczyk and Ch. Pearce**
Prism Solid-Shell Element with Hierarchical Approximation

12:20 P218
**S. Burzyński**
On Deformations of Geometrically Nonlinear 6-Parameter Stiffened Shells

12:40 P100
**P. Jarzębski and K. Wiśniewski**
Evaluation of Partial Factorization for Condensation of Shell and Solid-Shell Elemental Matrices
16:00 P030
T. Okawa, S. Shimizu, S. Shimizu, G. Fujita and N. Tanaka
Study on the Vertical Buckling Collapse of I-Shaped Steel Girders

16:20 P141
W. Guggenberger and M.B. Tekleab
Buckling of Liquid-Filled Thin-Walled Conical Shells: a Long-Standing Puzzle Resolved

16:40 P083
M. Psotny and J. Havran
Stability Analysis of the Very Shallow Shell with Imperfection

17:00 P127
N. Kuczyńska, P. Hajko, M. Wójcik and J. Tejchman
Stability Analyses of Cylindrical Steel Silos with Corrugated Sheets and Columns Containing Bulk Solids
Thursday, 1.09, Room A

09:00
T. Lewiński
Optimization of Structural Topology

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Session 4
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10:00 P021 keynote
A.V. Manzhirov
Fundamentals of the Theory of Surface Growth with Applications to Geomechanics and AM Technologies

10:40 P002 keynote
V.N. Hakobyan
Periodic and Doubly Periodic Problems for Piecewise Space with Defects

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Session 5
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12:40 P202
A. Niemunis, C.G. Tavera, T. Wichmann and T. Triantafyllidis
Modeling of Peak Stress Obliquity in Drained and Undrained Sands

13:00 P191
P. Hajko and J. Tejchman
Modelling of Granular Flow in Silo Within Non-Local Hypoplasticity Using Material Point Method

13:20 P159
M. Sobótka and C. Machelski
Hysteretic Live Load Effect in Soil-Steel Structures

13:40 P211
I. Bagińska, M. Kawa and M. Wyjadłowski
The Reliability Analysis of Sheet Pile Wall Located in Soil with Random Parameters

14:00 P236
Z. Mróz, J. Tejchman and A. Bobiński
Extended Scale Effect Analysis Required for Structural Size and Shape Variation
10:00 P039
M. Svanadze
Boundary Value Problems of Steady Vibrations in the Theory of Thermoelastic Double Porosity Materials

10:20 P095
P.B Béda
On Non-Local Materials, Internal Length and Fractional Calculus

10:40 P237
W. Sumelka, J. Fernández-Sáez and R. Zera
On Dispersion Phenomena in the Framework of the Fractional Continuum Mechanics

11:00 P089
O. Sergushova
Asymptotic Formulae for the Lowest Natural Frequencies of Strongly Inhomogeneous Structures

12:40 P058
K. Takeda, R. Matsui, H. Tobushi and S. Hayashi
Deformation Property of Functionally-Graded Shape Memory Polymer

13:00 P185
M. Smaga and T. Beck
Phase Transformation and Deformation Behaviour of Steels with Different Content of Metastable Austenite

13:20 P091
T. Wegner and D. Kurpisz
Construction of the Limit Surface for Nonlinear Elastic Material Under Complex Load State with Using the Energetic Criterions

13:40 P106
P. Sulich, W. Egner, S. Mroziński and H. Egner
Thermomechanical Fatigue of P91 Steel

14:00 P102
M. Banaszkiewicz, W. Radulski and K. Dominiczak
Numerical Modelling of Creep-Fatigue Damage Development in Steam Turbine Rotors Using Inelastic Material Models
Thursday, 1.09, Room C

Session 1

10:00 P242 keynote
T. Ikeda
Constitutive Model of Shape Memory Alloy for Cyclic Deformation Based on One-Dimensional Phase Transformation Model

10:40 P014
I. Ario, Y. Chikahiro, M. Nakazawa, J. Holnicki-Szulc, P. Pawłowski and C. Graczykowski
Structural Analysis of a Two-Unit of Scissors Structure

11:00 P064
T. Węgrzyn, J. Piwnik, Z. Stanik and W. Tarasiuk
Argon-Nitrogen Gas Mixtures for Micro-Jet Cooling After Steel Welding

Session 2

12:40 P161 keynote
R. Lammering and N. Rauter
Nonlinear Elastic Waves for Evaluation of Composite Material Deterioration

13:20 P165
T. Bartel, B. Kiefer, K. Buckmann and A. Menzel
A Variational Framework for the Modelling of Variant Switching and Reorientation in MSMA Using Energy Relaxation Methods

13:40 P057
K. Takeda, R. Matsui, H. Tobushi and E.A. Pieczyska
Design of Rotary Driving Actuator by Using Torsional Deformation of Sma Tapes

14:00 P208
Thermomechanical Behavior of Gum Metal Under Cyclic Loading
Thursday, 1.09, Room D

Session 7
10:00 P169 keynote
B. Wcisł0, M. Mucha, K. Kowalczyk-Gajewska and J. Pamin
Large Strain Thermo-Elasto-Plasticity: Simulation of Shear Banding for Different Stress States

10:40 P166
J. Tabin, B. Skoczeń and J. Bielski
Damage Affected Discontinuous Plastic Flow

11:00 P070
P. Sadowski, K. Kowalczyk-Gajewska and S. Stupkiewicz
Efficient Algorithmic Treatment of the Incremental Mori-Tanaka Scheme for Elasto-Plastic Composites

Session 8
12:40 P227 keynote
M. Wilkus, M. Kaszuba, Z. Gronostajski, Ł. Rauch and M. Pietrzyk
Accounting for Various Mechanism of Failure in Modelling of Tool Wear in Hot Forging

13:20 P109
A. Sahakyan and N.N. Shavlakadze
The Contact Problem for Piecewise-Homogeneous Elastic Plate Reinforced by Finite Elastic Stringer of Variable Stiffness

13:40 P114
P. Pandi and G. Bolzon
A Numerical Investigation of the Influence of the Material Microstructure on the Failure Mode of Metal-Ceramic Composites

14:00 P198
Z. Poniżnik, Z. Nowak and M. Basista
Numerical Modeling of Fracture Toughness of Metal-Ceramic Interpenetrating Phase Composites with Account of Material Microstructure
Session 1

10:00 P162 keynote
FEM-based Estimation of Mechanical Strength of Human Vertebrae as New Indicator of Bone Disease and Fracture

10:40 P136
T. Klekiel, R. Będziński and J. Wodzisławski
Modeling of Damping Properties of Articular Cartilage During Impact Load

11:00 P076
S.K. Kourkoulis and A. Mitousoudis
An Experimentally Validated Model for the Ilizarov Fixator Considering the Loss of Wire's Pretension

Session 2

12:40 P066
E. Bednarczyk and T. Lekszycki
Osteophytes Development During OA - Consideration Angiogenesis, Mechanical Loading and Tissue Microstructure

13:00 P024
J. Miodowska, J. Bielski and M. Kromka-Szydek
A New Model of Bone Remodeling

13:20 P147
A. Maknickas, V. Alekna, O. Ardatov, N. Kizilova, M. Tamulaitien and R. Kačianauskas
Numerical Failure Study of Trabeculae in Osteoporotic Degradation of Lumbar Vertebral Bod

13:40 P167
A.M. Ryniewicz and T. Madej
Fem Analysis in the Hip Joint Reconstructed by Hip Resurfacing

14:00 P203
K. Kamieniecki, J. Piechna and P. Borkowski
Analysis of a Dynamic Response of a Cochlea Using Fluid-Structure Interaction Model
09:00
K. Kowalczyk-Gajewska
Modelling of Microstructure Evolution in Metals and Alloys of High Specific Strength

Session 6

10:00 P056
R. Rafiee, A. Ghorbanhosseini
Hierarchichal Multi-Scale Modeling of CNT-Coated Fiber-Reinforced Laminates

10:20 P118
G. Bolzoni and M. Shahmardani
Adhesion Properties and Macroscopic Response of Metal-Polymer Laminates

10:40 P121
Z. Wang and R. Michalowski
Contact Maturing and Aging of Silica Sand

11:00 P178
R. Balevičius and Z. Mróz
Modeling of Frictional Contact Interaction of Spherical Particles

Session 7

11:40 P160
M. Doroszko and A. Seweryn
Pore-Scale Modeling of the Sintered Porous 316L Deformation Process Using Micro Computed Tomography

12:00 P193
J. Rojek, Sz. Nosewicz, M. Mażdziarz, P. Kowalczyk and K. Wawrzyk
Modelling of Powder Sintering at Various Scales

12:20 P210
K. Wawrzyk and P. Kowalczyk
Macroscopic Constitutive Model of Sintering Processes and Its Numerical Implementation
Friday, 02.09, Room B

--------------- Session 1 ---------------

10:00 P150 keynote
R. Kačianauskas, A. Maknickas, J. Rojek and D. Vainorius
Numerical Simulation of Acoustic Wake Agglomeration of Microparticles in Aerosol

10:40 P110
P. Brzeski, M.Lazarek and P. Perlikowski
Dynamics of Inerter Based Vibration Absorber with Continuously Variable Inertia

11:00 P080
E. Postek, F. Dubois, R. Mozul and P. Cañadas
Modelling of a Collection of Non-Rigid Particles with Smooth Discrete Element Method

--------------- Session 2 ---------------

11:40 P139
V. Volkova
Hybrid Modeling of Nonlinear Dynamic System with Rigid Restoring Force Under Polyharmonic External Excitation

12:00 P116
M. Lazarek, P. Brzeski and P. Perlikowski
Novel Type of Inerter Based Vibration Absorber: Conceptual Design and Practical Realization

12:20 P192
B. Paprocki, A.Pręgowska and J. Szczepański
Information Processing in Brain-Inspired Networks: Size and Density Effects
10:00 P040 keynote
R. Matsui, K. Suzuki and A. Kato
Strain Distribution Analysis for Shape Memory Alloy with Functionally Graded Properties

10:40 P245
J. Ivanova, T. Petrova, Elisaveta Kirilova and W. Becker
Optimal Parameters of a Dynamically Loaded Patch/Layer Structure Against the Elastic-Brittle Interface Debonding

11:00 P226
Y. Chikahiro, I. Ario, M. Nakazawa, J. Holnicki-Szulc, P. Pawłowski and C. Graczykowski
Numerical Study on Reinforcement and Optimization of a Scissors Structure

11:40 P065
B. Szczucka-Lasota, Z. Stanik, W. Tarasiuk and D. Sieteski
Modern Hybrid Spraying Method for Obtaining High Quality Coatings

12:00 P194
Shape Memory Polymer - Influence of Temperature, Strain Rate and the Loading History on the Stress-Strain Curves

12:20 P189
M. Staszczak, E.A. Pieczyska and H. Tobushi
Thermomechanical Analysis of Polyurethane Shape Memory Polymer in Cyclic Loading - Shape Recovery and Shape Fixity
Friday, 02.09, Room D

Session 9

10:00 P035 keynote
A. Mleczek and P. Kłosowski
Numerical Analysis of the Carpentry Joints for Different Load Schemes

10:20 P143
A. Urbaś and M. Szczotka
Modelling Friction Phenomena in the Dynamics Analysis of Forest Cranes

10:40 P246
P. Ziółkowski, T. Kowalczyk, P. Ziółkowski and J. Badur
Advanced Thermal-FSI Conception and Application in Damage Assessment of Steam Turbine Caused by a Flood Wave

11:00 P247
J. Badur, P. Ziółkowski, S. Kornet, K. Banaś, T. Kowalczyk, M. Bryk, M. Stajnke and P. J. Ziółkowski
On the Advanced Thermal-FSI Approach to the Thermo-Elastic-Fragile Cracking Caused by Thermal Stresses Based on the Burzyński-Pęcherski Criterion
Session 3

10:00 P216 keynote
M. Ratajczak and R. Będziński
Biomechanical Aspects of Brain Tissue Dysfunctions

10:40 P157
G. Gaidulis, R. Kačianauskas, N. Kizilova and Yu. Romashov
A Mechanical Model of Heart Valves with Chords for in Silico Real Time Computations and Cardiosurgery Planning

11:00 P079
E. Stupak, A. Kaceniauskas, V. Starikovicius, A. Maknickas, R. Pacevic, M. Staskuniene, G. Davidavicius and A. Aidietis
Computational Analysis of Patient-Specific Aortic Valves

Session 4

11:40 P048
M. Ciesielski, B. Mochnacki and A. Piasecka-Belkhayat
Analysis of Temperature Distribution in the Heated Skin Tissue Under the Assumption of Thermal Parameters Uncertainty

12:00 P063
A. John and M. John
Numerical Modelling of Foam Metal and Honeycomb Structures for Application in Exoskeleton Devices

12:20 P117
D. Gawel, P.Główka, Sz. Rubczak, T. Kotwicki and M. Nowak
Robust Method for Extracting 3D Medical Objects From MRI Data
Thursday, 1.09: Short Presentations

11:40 P003  
W. Ryżyński  
Some Aspects of Analysis Structure Built by Robots

11:40 P016  
J.B. Kim  
The Effects of a Micro Hole in the Bellows Convolution with Positive Rotation Movement on the Stress Behavior

11:40 P022  
J. García Sanz-Calcedo, D.R. Salgado, A. González, O. Lopez, I. Cambero and J.M. Herrera  
Drilling Projects by Tool Condition Monitoring System (TCMS)

11:40 P029  
I.K Senchenkov, O.P. Chervinko, E. Turyk and I.A. Rybatsev  
Numerical Method of Calculation of Thermomechanical State of Cylindrical Bodies Under Growing and Subsequent Cyclic Loading

11:40 P065  
B. Szczucka-Lasota, Z. Stanik, W. Tarasiuk and D. Sieteski  
Modern Hybrid Spraying Method for Obtaining High Quality Coatings

11:40 P067  
Ch.F. Markides, E.D. Pasiou, S.K. Kourkoulis  
The Multi-Layered Ring Under Parabolic Pressure

11:40 P068  
D. Miedzińska  
Numerical Investigation of Pores Statistic Distribution Influence on Porous Material Mechanical Behaviour

11:40 P093  
K. Kamiński and T. Krzyżański  
Thermal Efficiency Investigation of Flat-Plate Solar Collector with Different Type of Geometry
Thursday, 1.09: Short Presentations

11:40 P107
T. Moldovan and A.M. Ioani
Effect of the Infill Walls on the Structural Response of a 13-Story RC Framed Building Subjected to the Removal of a Corner Column

11:40 P115
R. Grzejda
Modelling Nonlinear Preloaded Multi-Bolted Systems on the Operational State

11:40 P120
K. Augustynek and K. Warwas
Modeling of Closed Kinematic Chains with Flexible Links Using Modification of RFE Method

11:40 P124
B. Tomczyk and P. Szczera
A New Asymptotic-Tolerance Model of Dynamic Problems for Thin Transversally Graded Cylindrical Shells

11:40 P125
B. Tomczyk and B. Ślężowski
A New Tolerance Model of Thermodynamic Problems for Thin Uniperiodic Cylindrical Shells

11:40 P140
L. Obrezkov
Equilibrium and Stability of Nonlinearly Elastic Cylinder From Blatz-Ko Material

11:40 P142
M. Ryś and H. Egner
Damage Evolution in the Elastic Plastic Material Reinforced by Brittle Inclusion

11:40 P148
K. Talaśka
Searching for the Material Parameters of the Constitutive Models of the Blood Vessel Walls
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<th>Time</th>
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<td>11:40</td>
<td>P149</td>
<td>Identification of Thermo-Mechanical Properties of Natural Polymers with a Hybrid Method</td>
<td>I. Malujda and K. Talaśka</td>
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<td>11:40</td>
<td>P170</td>
<td>Strength Estimation of Teeth Reinforced with Different Types of Post Systems</td>
<td>W. Ryniewicz, A. M. Ryniewicz, T. Madej, G. Wiśniewska and M. Nocoń</td>
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<td>11:40</td>
<td>P171</td>
<td>Design and Multibody Dynamics Analysis of High Mobility Miners Rescue Robot</td>
<td>G. Mura, M. Adamczyk, M. Nocoń</td>
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<td>11:40</td>
<td>P176</td>
<td>Multiscale Analysis of Piezoelectric Ceramics by Using Boundary Element Method</td>
<td>M. Biglar, F. Stachowicz, T. Trzepieciński and M. Gromada</td>
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<td>P183</td>
<td>The Influence of Wind Loading on Stability of the Truss</td>
<td>M. Krajewski and P. Iwicki</td>
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<td>P200</td>
<td>Stability of Innovative Cold-Formed Geb Section</td>
<td>A. Łukowicz and M. Krajewski</td>
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<td>P201</td>
<td>Composite Sandwich Footbridge - Numerical ESL FEM Calculations vs. in Situ Measurements</td>
<td>M. Miśkiewicz, J. Chróścielewski, B. Sobczyk and Ł. Pyrzowski</td>
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<td>P206</td>
<td>An Alternative Approach for the Interpretation of Data From Three Point Bending of Long Bones</td>
<td>S. Kourkoulis, A. Kouvaka, Ch. Andriakopoulou and I. Donatas</td>
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Thursday, 1.09: Short Presentations

11:40 P220
A. Candelario, J. García Sanz-Calcedo, D.R. Salgado, A. González and O. Lopez
Planning, Monitoring and Control of Mechanics Projects by BIM in Collaborative Environments

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