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Design

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Experiments of

Advanced

Structures and

Systems

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University

21-24 May 2017

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Programme

Sunday, 21 May 2017

12:00–19:00 Registration (hotel lobby)

19:00–21:00 Welcome dinner (Vega restaurant)

Monday, 22 May 2017

07:00–09:00 Breakfast (Vega restaurant)

Opening ceremony (Kandinsky hall)

09:00–09:15 *G. M. Kulikov, E. Carrera*

Welcome notes

Session 1 (Kandinsky hall). Chair: *Olivier Polit*, Université Paris Nanterre, France

09:15–09:40 *E. Carrera, S. Valvano, G. M. Kulikov*

Node-Dependent Kinematic Shell Elements for the Analysis of Smart Structures

09:40–10:05 *A. V. Nasedkin, A. B. Kudimova*

Finite Element Analysis of Effective Properties of Ceramic Piezocomposites by Using Different Homogenization Approaches

10:05–10:30 *E. Zappino, E. Carrera, G. Li*

Free Vibration Analysis of Beams with Piezo-Patches Using a One-Dimensional Model with Node-Dependent Kinematic

10:30–10:55 *S. V. Plotnikova, G. M. Kulikov, E. Carrera*

Hybrid-Mixed Finite Element Method for Piezoelectric Shells through a Sampling Surfaces Formulation

10:55–11:20 Coffee break (Kandinsky hall)

Session 2 (Kandinsky hall). Chair: *Erasmus Carrera*, Politecnico di Torino, Italy

11:20–11:45 *G. M. Kulikov, S. V. Plotnikova*

Strong and Weak Sampling Surfaces Formulations for 3D Stress and Vibration Analyses of Layered Piezoelectric Plates

11:45–12:10 *T. H. C. Le, M. D'Ottavio, P. Vidal, O. Polit*

Robust CUF-Based Four-Node and Eight-Node Quadrilateral Plate Elements

12:10–12:35 *Y. Hui, G. Giunta, S. Belouettar, E. Carrera, H. Hu*

A Hygro-Thermal Stress Finite Element Analysis of Laminated Beam Structures by Hierarchical One-Dimensional Modelling

12:35–13:00 *Yu. Vetyukov, M. Krommer*

Mixed Eulerian-Lagrangian Description in the Finite Element Modelling of an Endless Metal Belt System

13:00–14:00 Lunch (Vega restaurant)

Session 3 (Kandinsky hall). Chair: *Salim Belouettar*, Luxembourg Institute of Science and Technology, Luxembourg

14:00–14:40 N. F. Luis, *J. F. A. Madeira*, *A. L. Araújo*, A. J. M. Ferreira (*keynote lecture*)

Multiobjective Optimization for Active Vibration Attenuation in Laminated Composite Panels

14:40–15:05 *J. Maruani*, I. Bruant, F. Pablo, L. Gallimard

Active Vibration Control for a FGPM Smart Structure

15:05–15:30 *G. Mikhasev*, E. Korobko, S. Maevskaya, I. Mlechka

Effect of Magnetic Field on Free and Forced Vibrations of Laminated Cylindrical Shells Containing Magnetorheological Elastomers

15:30–15:55 *H. Elahi*, P. Gaudenzi, V. Cardini, M. Eugeni, G. G. Nisi, M. Pasquali, L. Pollice

Analytical, Experimental and Numerical Analysis of Stability and Degradation of Smart Structure for Cubic Reconnaissance Satellites

15:55–16:20 Coffee break (Kandinsky hall)

Session 4 (Kandinsky hall). Chair: *Gennadi Mikhasev*, Belarusian State University, Minsk, Belarus

16:20–16:45 *D. V. Georgievskii*

Tensor Nonlinear Materials: Potentiality and Establishing Experiments

16:45–17:10 *H. Altenbach*, V. A. Eremeyev

Bending of a Three-Layered Plate with Surface Stresses

17:10–17:35 M. I. Savenkova, *S. V. Sheshenin*

Application of Asymptotic Averaging Method for Numerical Analysis of Functionally Gradient Plate

17:35–18:00 Yu. A. Rossikhin, *M. V. Shitikova*, M. S. K. J. M. Saleh

Influence of Impactor's Mass on Internal Resonances in Nonlinear Elastic Doubly Curved Shells during Impact Interaction

19:00–21:00 Dinner (Vega restaurant)

Tuesday, 23 May 2017

07:00–09:00 Breakfast (Vega restaurant)

Session 5 (Kandinsky hall). Chair: *Thomas Wallmersperger*, Technische Universität Dresden, Germany

09:00–09:25 *U. Gabbert*, S. Duczec

Structural Health Monitoring (SHM) of Safety-Relevant Lightweight Structures Using Ultrasonic Guided Waves

09:25–09:50 *A. Soloviev*, V. Chebanenko

Mathematical Modelling of Stack Piezoelectric Generator

09:50–10:15 *F. Duvigneau*, S. Perekopskiy, R. Kasper, U. Gabbert

A Holistic Simulation Workflow to Design an Acoustically Optimized Electric Wheel Hub Motor

10:15–10:40 *S. Duczec*, M. Würkner, A. Abedian, H. Köppe, H. Berger, A. Düster, U. Gabbert

An Abaqus Implementation of the Finite Cell Method to Analyse the Influence of Pores on the Strengths of Aluminum Die Cast Components

10:40–11:00 Coffee break (Kandinsky hall)

Session 6 (Kandinsky hall). Chair: *Ulrich Gabbert*, Otto-von-Guericke-Universität Magdeburg, Germany

11:00–11:25 *A. Ehrenhofer*, T. Wallmersperger

Deformation Behavior of Hydrogel-Layered PET Membranes

11:25–11:50 *P. Nardinocchi*, *E. Puntel*

Flexure and Buckling Actuation in Bilayer Gel Beams

11:50–12:15 *P. Leichsenring*, T. Wallmersperger

Chemically Induced Swelling Behavior of Polyelectrolyte Gels: Modeling and Numerical Simulation

12:15–12:40 *M. Rossi*, T. Wallmersperger

Numerical Investigation on Polarization Effects within Electrochemical Cells

12:40–13:30 Lunch (Vega restaurant)

13:30–18:30 Excursion to Red Square and the Kremlin

19:00–21:00 Dinner (Vega restaurant)

Wednesday, 24 May 2017

07:00–09:00 Breakfast (Vega restaurant)

Session 7 (Kandinsky hall). Chair: *Holm Altenbach*, Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany

09:00–09:40 *F. Trochu*, L1. Gascon, J. A. Garcia (*keynote lecture*)

Transport of Saturation in Liquid Composite Molding Based on a Two-Phase Porous Flow Model

09:40–10:05 *A. M. R. Ribeiro*, M. Leite, A. Carvalho

A Case Study of Smart Structure Design Using Additive Manufacturing to Emulate a Functionally Graded Material

10:05–10:30 *M. Kleo*, T. Wallmersperger

Investigation of the Production and Dissipation of Heat on Dynamically Driven Dielectric Elastomer Actuators

10:30–10:55 *S. Belouettar*, G. Giunta, A. Daouadji

Multi-Scale Composite Material Selection and Design with a Seamless Integration of Materials Models and Multidisciplinary Design Optimisation

10:55–11:20 Coffee break (Kandinsky hall)

Session 8 (Kandinsky hall). Chair: *Marina Shitikova*, Voronezh State Technical University, Russia

11:20–11:45 *E. Staudigl*, M. Krommer

Modelling of Dielectric Elastomers Accounting for Electrostriction by Means of a Multiplicative Decomposition of the Deformation Gradient Tensor

11:45–12:10 *D. Ruch*, A. Martin, G. Mertz, P. Dubois

Functional Interfaces and Interphases in Thermoplastic Composites

12:10–12:35 *N. Aslanyan*, S. Sargsyan

Model of Thermoelasticity of Micropolar Plates and Beams with Constrained Rotation

12:35–13:00 *A. A. Sandulyak*, A. V. Sandulyak, M. N. Polismakova, V. A. Ershova

About Magnetic Field inside the Structure of Magnetized Granulated Material

Closing ceremony (Kandinsky hall)

13:00–13:15 *G. M. Kulikov*

13:15–15:00 Lunch (Vega restaurant)