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MONDAY, 13 JULY - MORNING

9:30-11:00 | Invited Lectures / Plenary Session (Auditorium)
Chair: W. Ostachowicz

Radar-based measurement of deflections on bridges and large structures: advantages, limitations and possible applications
C. Gentile

Distributed sensing of strain and temperature under complex conditions
A. Güemes

Solid-state actuators with inherent sensory capabilities
H. Janocha & K. Kuhnen

11:30-13:00 | Papers / Parallel Session (Auditorium) - Topic 1
Chair: H. Janocha

Wireless sensor network design and performance validation for measurements in aircraft strength ground testing
J. Wu, S. Yuan, Z.L. Wang & Y Wang

Novel sensing head geometry based on smart composite with embedded FBGs for strain and temperature discrimination
O. Frazão, C. Frias, A. Vieira, L. Amaral, L. Dias, J. M. Baptista & A. T. Marques

Fiber Bragg Gratings application for strain measurements of Terfenol-D based composites
P. Gasior, J. Kaleta, D. Lewandowski & R. Mech

Ballistic impact monitoring of glass fibers composites by Fiber Bragg Grating Sensors
V. Antonucci, M. Giordano, A. Laudati & A. Cusano

Distributed fiber optical measurement system for localization of loss-induced perturbation
V. Spirin, S. Miridonov, E. Mitrani, S. Durazo & M. Castro

11:30-13:00 | Papers / Parallel Session (Room B032) - Topic 5
Chair: G. Feltrin

Research on structural control at VIBEST / FEUP
C. Moutinho, A. Cunha & E. Caetano

On the characterization of damping of tuned liquid column dampers
L. Ramos & A. Cunha
Performance of SISO active control strategies for floor vibrations
I. M. Díaz & P. Reynolds

Vibration control of cable-stayed bridges using shear type MR damper
G. Heo, J. Jeon & C. Kim

Vibration nonlinear control of beam systems acted upon by nonlinear devices
F. Bourquin, M. Debbabi & F. Maceri

11:30-13:00 | Papers / Parallel Session (Room B035) - Topic 4

Chairs: U. Gabbert, F. Claeyssen

Small impact drive motors based on amplified piezoelectric actuators
C. Belly, F. Claeyssen, T. Porchez & R. Le Letty

Semi-active control of magneto-rheological dampers with negative stiffness
S. Bhowmik & J. Høgsberg

Biologically-inspired morphing wing actuation

Optimization of location and size of piezoelectric actuators for manipulators with flexible non-prismatic links based on the maximization of dissipated control energy
V. Bottega, R. Pergher, A. Molter & J.S.O. Fonseca

Optimal Control for Musculoskeletal System
V. Bottega & R. Pergher

11:30-13:00 | Papers / Parallel Session (Room B029) - Topics 8, 9

Chair: C. Mota Soares

An autonomous surface vehicle insas for maintenance and surveillance applications
S. Silva, S. Cunha, A. Matos & N. Cruz

Computational framework for simulation and design of adaptive lightweight structures
M. Fischer, K.-U. Bletzinger & R. Wüchner

Combining FEM simulations and infrared thermography for optimising the activation system of shape-memory polymer based devices

Optimization design of composite steel-concrete structures under fire conditions
A. Landesmann, J. Câmara Neto & E. de Miranda Batista
Topology optimization of piezoelectric sensors arrays applied to modal filters design
Carlos C. Pagani Jr. & Marcelo A. Trindade

MONDAY, 13 JULY - AFTERNOON

14:30-16:00 | Invited Lectures / Plenary Session (Auditorium)
Chair: A. Preumont

Information extraction in structural health monitoring with wireless sensor networks
G. Feltrin, J. Meyer, R. Bischoff & O. Saukh

Wind turbine blade research at Risø DTU
M. McGugan & B.F. Sørensen

Morphing Aircraft: Materials, Mechanisms and Systems
J. Vale, L. Falcão, A. Gomes, F. Lau & A. Suleman

16:30-18:15 | Project ADVICE / Parallel Session (Auditorium)
Chair: F. Lani

Autonomous Damage and Vibration Control Systems: Overview of the ADVICE project and its interest for aeronautics
D. Dumas, F. Lani, A. Nawrocki, J. Loyer, S. Grand, T. Monnier & M. Lallart

Efficient piezoelectric energy harvesting and management for self-powered sensors
M. Lallart, T. Monnier, C. Richard, P. Delatte, A. Saib, T. Kezai & P. Gérard

Communication and networking strategies for autonomous actuators and sensors

Numerical simulations of a vibrating composite panel to predict its behavior for damage detection using Lamb Waves
D. Dumas, F. Lani, K. Alexiou & T. Monnier

Validation of an autonomous vibration and damage control system on a composite panel
Stéphane Ménio, Jérome Loyer, Sylvain Claimand, Jean-Michel Perrochat, Serge Grand, Kimon Alexiou & David Dumas

Semi-passive damping solutions for autonomous vibration control systems on aircrafts
E. Castro, F. Martin de la Escalera, M. Lallart, C. Richard, T. Monnier
16:30-18:15 | Papers / Parallel Session (Room B032) - Topics 2, 3

Chair: J.A. Güemes

Actuation modeling of ionic liquid-swollen ionic polymer transducers
N.C. Goulbourne & J.D. Davidson

Imaging analysis techniques for vibration monitoring in civil structures
S. Silva, J. Bateira & E. Caetano

Extraction of modal parameters through wavelet transform
C. Belmonte, E. Caetano, A. Cunha & P.P. Diotallevi

Design and installation of an electric based monitoring system applied to a centenary metallic bridge
Bruno J. A. Costa, C. Félix & J.A. Figueiras

Monitoring of an old metallic bridge by using of electric and optic technologies

Weighing of trains in motion as a part of health monitoring system for a railway bridge
P. Kołakowski, K. Sekula, D. Sala, A. Świercz & A. Orłowska

16:30-18:15 | Papers / Parallel Session (Room B035) - Topics 1, 4, 5

Chair: J. Holnicki-Szulc

Increasing dynamic stiffness of MIMO compliant structures by active control from auxiliary structure
M. Nečas & M. Valášek

Carbon fibre reinforced polymer as piezoresistive sensor
M.T. Silva, S. Jalali & R.M. Ferreira

Textile sensors for cardiac monitoring
A. Rente, R. Salvado & P. Araújo

Structural parameter estimation of two bridges from site data using Kalman filters and stochastic subspace algorithm
P. Banerji & S. Chikermane

Networked structural control with wireless sensing and actuation using $H_\infty$ output feedback
H.R. Karimi, M. Zapateiro & N. Luo

Semiactive suspension for aircraft landing vibration absorption
M. Zapateiro, N. Luo & H.R. Karimi
**16:30-18:15 | Papers / Parallel Session (Room B029) - Topic 7**

**Chair:** E. Carrera

*Experimental investigations of piezoelectric shear force actuated smart composites*

P. Berik, H. Rapp & R. Wörndle

*Piezoelectric laminated beam modelling including 3D effects. Application to control of vibrations and actuation*

A. Fernandes, C. Maurini & J. Pouget

*Design of piezoelectric actuator networks for framed structures utilizing Kirchhoff's plate theory with varying bending stiffness*

D. Huber, M. Zellhofer, M. Krommer & H. Irshik

*On-line identification of delamination - simulation and experiment*

A. Orłowska & P. Kolakowski

*Exact Elasticity Solution for the Density Functionally Gradient Beam with General Boundary Condition*

A.R. Daneshmehr, S. Momeni & S. Salimi

*Layerwise finite element analysis of laminated cylindrical shell with piezoelectric rings*

MR. Saviz & M. Shakeri

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**TUESDAY, 14 JULY - MORNING**

**9:00-11:00 | Invited Lectures / Plenary Session (Auditorium)**

**Chair:** M.I. Friswell

*Mechanical to electrical energy conversion enhancement and self-powered wireless applications*

D. Guyomar & M. Lallart

*Identification, monitoring and control of bridges and special structures*

A. Cunha, E. Caetano, F. Magalhães & C. Moutinho

*Ageing of multi-riveted metallic panels and their options for acoustic wave based condition monitoring*

C. Boller & M. R. Mofakhami

*Active optics for large segmented mirrors: scale effects*

A. Preumont, R. Bastaits & G. Rodrigues
11:30-13:00 | Papers / Parallel Session (Auditorium) - Topic 3

Chair: M. McGugan

Design strategies of energy harvesting devices with piezoelectric transducers  
W. Kaal, S. Herold & M. Kurch

An approach for structural health monitoring with smart sensor networks  
based on the random decrement method  
D. Mayer, M. Kauba & A. Friedmann

Structural health monitoring of thin-walled structures by optical measurement techniques  
R. Lammering & M. Neumann

Data management strategy for structural health monitoring system using smart sensors  
A. Mita, S. Ogawa, H. Kameda & H. Sato

Structural health assessment of a building with passive dampers using three-dimensional vibration modes  
Y. Nakamura & A. Mita

11:30-13:00 | Papers / Parallel Session (Room B032) - Topic 5

Chair: F. Weber

Passive control systems for the improvement of dynamical behaviour of tower cranes  
J. de Sebastián, C.M. Casado, A. Lorenzana & A.V. Poncela

Gust load reduction concept in wind turbines  
J. Grzędziński & A. Mróz

Passive vibration control with shunted modal piezoelectric transducers  
C. M. A. Vasques & J. Dias Rodrigues

Low-cost and light-weight deformable mirrors for high order adaptive optics  
G. Rodrigues, R. Bastaits & A. Preumont

Feasibility investigations for a decentralized vibration control concept with embedded control nodes using the Filtered-x-Least-Mean-Squares algorithm  
M. Kauba, S. Herold & D. Mayer
11:30-13:00 | Papers / Parallel Session (Room B035) - Topic 10
Chair: Y. Furuya

Development of New Iron-based Galfenol (Fe-Ga-X) magnetostrictive alloys and their applications for smart by-wire steering system for automobile technology
Y. Furuya, T. Takahashi, T. Okazaki, C. Saito & M. Shimada

Characterisation of NiTi Shape Memory Alloy coating for tribological applications
T. A. A. Bakar, J. Stokes, M. S. J. Hashmi, M. Rahman & D. P. Dowling

Relationships between compressive and tensile stresses of magnetorheological fluids
S. A. Mazlan, I. Ismail & A. G. Olabi

Conventional and contact-less triggering of shape memory polyalkenamers

Characterization of smart MARFOS NiTi shape memory alloys

11:30-13:00 | Papers / Parallel Session (Room B029) - Topics 11, 13
Chair: D. Guyomar

PCL/MWCNT nanocomposites as nanosensors
A. Grozdanov, A. Buzarowska, M. Avella, M. E. Errico & G. Gentile

Large field induced strain in carbon nano-filled composite polyurethane (PU)
M. Kanda, K. Yuse, B. Guiffard & D. Guyomar

Nanotube and nanocomposite mechanics: A guide to the perplexed
H. D. Wagner & X.-M. Sui

Quantitative guidelines for modifying periodic ordered nanostructures: shape-evolution and shape-control during precipitation of inorganic precursors and urea
S. Bakardjieva, V. Štengl & J. Šubrt

Rapid prototyping and rapid tooling technologies for developing shape memory polymer-based devices
TUESDAY, 14 JULY - AFTERNOON

14:30-16:00 | Invited Lectures / Plenary Session (Auditorium)

Chair: C. Boller

Guided wave propagation methods in composite structures for damage identification
W. Ostachowicz & P. Kudela

Cable damping with friction and combined viscous-friction dampers
F. Weber, C. Boston, G. Feltrin & M. Motavalli

The prospects for morphing aircraft
M.I. Friswell

16:30-18:00 | Papers / Parallel Session (Auditorium) - Topic 3

Chairs: C. Gentile, J. Rodellar

Modern remote structural health monitoring: an overview of available systems today
T. Spuler, G. Moor & R. Berger

Short-term Automated Monitoring of the Danube Bridge in Sinzing
T. Spuler, G. Moor & R. Berger

Structural health monitoring using wireless sensor networks
S. Deix, M. Ralbovsky, R. Stütz & S. M. Wittmann

Contribution plots on PCA based indices for damage identification on structures
L.E. Mujica, M. Ruiz, A. Güemes & J. Rodellar

Monitoring and sub-structuring of large massive structures
S. Casciati

16:30-18:00 | Papers / Parallel Session (Room B032) - Topic 5

Chair: A. Preumont

Vibration reduction of structural-acoustic coupled system by piezoelectric semi-passive techniques
W. Larbi, J.-F. Deü & R. Ohayon

Vibration control of a rotor by magnetic shape memory actuators
K. Majewska, A. Zak & W. Ostachowicz
Adaptive wing for small aircraft applications
M. Mieloszyk, T. Wadowski, A. Zak, M. Krawczuk & W. Ostachowicz

Stochastic modeling of active-passive piezoelectric networks for structural vibration control
H.F.L. Santos & M.A. Trindade

Bounded vibration controls of distributed-parameter systems with applications to a beam on viscoelastic supports
M. Mahinzaeim, D.C. Swailes & J.M. Hale

16:30-18:00 | Papers / Parallel Session (Room B035) - Topic 10
Chair: J. Dias Rodrigues

Modeling the frequency and temperature dependent constitutive relation for damping materials
R.A.S. Moreira, J.D. Corte-Real & J. Dias Rodrigues

Micro material property measurement of nickel (99.9%) thin film using vision strain measuring module

Optimal location of piezoelectric patches and identification of material properties in laminated composite structures
A.L. Araújo, C.M. Mota Soares, H. Friedmann, J. Röhner & F.O. Henkel

An experimental study of the electro-thermomechanical behavior of linear NiTi shape memory actuators

Mechanical properties of magnetorheological elastomers
A. Boczkowska & S.F. Awietjan

16:30-18:00 | Papers / Parallel Session (Room B029) - Topic 14
Chair: H.H. Hilton

Temperature impact on MR devices behaviour
J. Bajkowski, M. Bajkowski, W. Grzesikiewicz & R. Zalewski

On the use of SMA for impact absorption: numerical implementation of RL model including thermal effects
M. Collet, M. Ouisse, E. Foltête & C. Lexcellent

Novel protocols of matching optimized designer aero-servocontrols with engineered viscoelastic material properties
One dimensional finite element implementation of a thermomechanics multimechanism constitutive equation for shape memory alloys
C. J. Gomes

A perfluorinated polyether-based magneto-rheological fluid in a prosthetic knee
K. H. Gudmundsson, F. Jonsdottir, F. Thorsteinsson & O. Gutfleisch

WEDNESDAY, 15 JULY- MORNING

9:00-10:30 | Invited Lectures / Plenary Session (Auditorium)

Chair: U. Gabbert

Dynamic architecture vs. structural control
F. Casciati, L. Faravelli & R. Al Saleh

Sensors and actuators for active structural acoustic and active vibration feedback control
P. Gardonio

Adaptive impact absorption - the concept, innovative solutions, applications
J. Holnicki-Szulc, C. Graczykowski, G. Mikulowski, A. Mróz & M. Ostrowski

11:00-13:00 | Papers / Parallel Session (Auditorium) - Topic 3

Chair: C. Boller, R. Lammering

The Uniovi Benchmark

A migration model for impact localization on carbon-fiber-reinforced plastic plates
A. Ungethuem & R. Lammering

Dynamic stress monitoring with ultrasonic technique
J. Szelązek, P. Guckiewicz & S. Mackiewicz

On development of PZT array based structural health monitoring scanning system and its experimental research on UAV wing box
L. Qiu, S. Yuan, Q. Wang, Y. Sun & W. Yang

Baseline-free damage imaging method for Lamb wave based structural health monitoring
Q. Wang & S. Yuan

Leak detection in a pipeline by cepstrum analysis of a pressure transient
J.D. Shucksmith, S.B.M. Beck, W.J. Staszewski, J.B. Boxall & A. Seth
Laboratory tests on damage detection in Unmanned Aerial Vehicles composite sheathing
M. Jurek, P. Nazarko & L. Ziemiański

11:00-13:00 | Papers / Parallel Session (Room B032) - Topic 5
Chair: P. Gardonio

On a pneumatic adaptive landing gear system for a small aerial vehicle
G. Mikulowski, P. Pawlowski, C. Graczykowski, R. Wiszowaty & J. Holnicki-Szulc

Electrical resistance measurements in shape memory alloy actuators for the position control of flexible systems - application to the case of an aluminum beam
W.M. Lima, C.J. de Araújo, W.A.V. Valenzuela & J.S. da Rocha Neto

PID controller project and analysis using shape memory alloys actuators

Noise control of plates featuring periodic arrays of shunted piezoelectric patches
F. Casadei, M. Ruzzene & L. Dozio

Improvement of dimensional accuracy and machine service life in sheet metal forming by control systems based on MR fluids
P. Regazzo & A. Ghiotti

Power controller for small-scale magnetorheological dampers
M. Rosół & B. Sapinski

Shunt damping of vibrating structures - design and implementation
T. Uhl & M. Rosiek

11:00-13:00 | Papers / Parallel Session (Room B035) - Topics 10, 12
Chair: W. Ostachowicz

Anisotropic solutions applied to a smart damper
T.A.N. Silva, C.R. Leal, A. Rodrigues, M.F. Bento & J.M.C. Travassos

Rheological model for special granular structures (SGS)
R. Zalewski

Numerical simulation of anisotropic magneto-rheological fluids
M. Barski

Characterization of the dynamic mechanical behavior of magnetoelastomers for vibration damping applications
Z. Major & B. Schrittesser
Phase transformation yield surfaces for anisotropic shape memory alloys and surfaces transport  
R.M. Laydi, K. Laverhne-Taillard, E. Gibeau & C. Lexcellent

Application of quartz made SAW devices as strain sensors: practical aspects  
G. Obieta & M. Martinez-Esnaola

11:00-13:00 | Papers / Parallel Session (Room B029) - Topic 14  
Chair: T. Kundu

Temporary repair of concrete beams by embedded shape memory alloy actuators  
F. Daghia, A. Giammarruto, R. Carli & G. Pascale

Discrepancy between test and FE analysis for dynamic characteristics of tall buildings  
S.H. Cho

Natural seismic protection peculiarities of historical “Walled Obelisk” structure in Istanbul: modeling and numerical approach  
A.A. Kasimzade, S. Tuhta & S. Bal

A linear-in-parameter modified Bouc-Wen model  
L. Acho & F. Pozo

Energy flow approach to analysis of progressive collapse  
S. Szymiszewski

Smart device for extracting environmental energy providing continuous control of sun light  
J. Cavalheiro

2-D approximation of multilayered composite structures with piezoelectric actuators - problems of optimal design  
P. Kędziora

WEDNESDAY, 15 JULY- AFTERNOON

14:30-16:00 | Invited Lectures / Plenary Session (Auditorium)  
Chair: F. Casciati

Classical and advanced computational plate/shell models for piezoelectric laminated structures  
E. Carrera, S. Brischetto & M. Cinefra
Active noise control of thin-walled structures  
U. Gabbert, J. Lefèvre & S. Ringwelski

Ultrasonic guided wave for structural health monitoring  
T. Kundu

16:30-17:45 | Papers / Parallel Session (Auditorium) - Topics 3, 6  
Chair: M.I. Friswell

Novelty detection and damage evaluation in laboratory models  
P. Nazarko & L. Ziemianski

An experimental study of damage propagation in smart structures  
V.R. Franco, A.A. Cavalini Junior, C.G. González & V. Lopes Junior

Wireless 3D magnetic field digitizer for inspection of parts constructed using smart magnetic materials  
J. Kaleta & P. Wiewiórski

Configurable thermal-induced triggers for crashworthiness applications  
D.M. Dimas, A. Alves, N. Peixinho, D. Soares & C. Vilarinho

16:30-17:45 | Papers / Parallel Session (Room B032) - Topic 5  
Chair: C. Moutinho

Advanced piezoelectric sensor for shape control  
M. Smrž & M. Valášek

Active vibration control of a clamped composite plate subjected to blast loading by using genetic algorithm  
H. Uyanık

Vibration characteristics of a steel frame using piezoelectric crystals as dampers  
M.S. Rakesh & Ashok Kumar

Theoretical analysis of cantilever box beam excited by patches of piezoelectric actuators  
M. Alhazmi & H. Ghulman
16:30-17:45 | Papers / Parallel Session (Room B035) - Topic 12

Chair: F. Magalhães

Vibration control of offshore platforms using magneto-rheological dampers
L.A. Lamont, L. El Chaar & M. Karkoub

Monitoring technologies: progressing from theory to application
T.B. Messervey, D. Zangani & S. Casciati

Use of magnetorheological elastomer materials in an adaptive vibration absorber for a propeller shaft
W.J. Choi, Y.P. Xiong & R.A. Shenoi

Die castings with integrated PZT-modules - fabrication and functionalities
M. Rübner, C. Körner & R.F. Singer

16:30-17:45 Papers / Parallel Session (Room B029) - Topic 14

Chair: C. Vasques

The Dipole Contouring Method as a tool for magnetic field distribution in premagnetization zone in SMART actuator
J. Kaleta & P. Wiewiórski

Three-dimensional elasticity solution of functionally graded piezoelectric cylindrical panel under dynamic loading
M. Shakeri & M.R. Sedighi

The effect of various boundary conditions on phase transformation in shape memory alloy cylindrical panels
M. Shakeri, R. Mirzaeifar & M. Sadighi

Static behavior of functionally graded cylindrical shell with piezoelectric ring
M.H. Yas, K. Garmirsiri, M. Shakeri & M. Khanjani

17:45 Closing Session (Auditorium)