10th ECCOMAS Thematic Conference
on Smart Structures and Materials

https://www.smart2023.eu

SMART 2023

July 3-5, 2023 • Patras, Greece

Conference Program Book

SMART2023

10th ECCOMAS Thematic Conference on Smart Structures and Materials
July 3-5, 2023, Patras-Greece, https://www.smart2023.eu

D.A. Saravanos, A. Benjeddou,
N.A. Chrysochoidis, T.C. Theodosiou (Eds)

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Welcome

The Chairs of the SMART2023, the 10th ECCOMAS *Thematic Conference on Smart Structures and Materials*, and the Local Organizing Committee welcome you to this year's meeting. The SMART conference series takes place biennially during odd years and rotates between European countries. The conference initiated in 2003 and has progressed successfully over the years to become one of the leading international conferences in the field of intelligent, smart and adaptive structures and materials. Its earlier editions were located in Poland (2003, 2007), Portugal (2005, 2009, 2015), Germany (2011), Italy (2013), Spain (2017) and France (2019).

The SMART conference attracts a broad range of leading international scholars, scientists and engineers who actively contribute to the evolution of this exciting field. The meeting provides a comprehensive forum for presenting and discussing the current state of the art in the field of smart structures and materials, fosters the development of future ideas on a multidisciplinary level and promotes scientific and technical interactions and collaborations. The present edition of SMART has aimed to increase the number of participants, raise the quality of the contributions, increase and expand international participation, and provide a balanced social and cultural program. The conference offers over 200 oral and poster presentations, 6 Plenary Lectures (4 from academia and 2 from industry) and 2 Keynote Lectures (1 from academia and 1 from industry) and has attracted approximately 250 participants. SMART2023 offers a robust international content of presentations form 31 countries, as it includes a strong European participation with diverse contributions from almost all European countries (78%) together with balanced contributions from the Americas (11%) and Asia (11%).

As in previous editions, the conference is organized in mini-symposia (MS), special sessions (SS) and general sessions (GS). This year, the technical program contains 21 MS and SS, 3 GS and 1 poster session. Approximately 210 presentations cover all aspects of research and emerging technologies in the evolving multi-disciplinary fields of smart and multi-functional materials, sensor/actuator design for various smart systems at the micro- and macro-scales; smart and adaptive structures for applications in aeronautics, civil engineering, and wind energy; active/semi-active vibration control, active noise control, and energy harvesting; design tools and modelling methodologies, coupled-field mechanics, homogenization, numerical methods, and testing; and manufacturing technologies and systems. This series also includes numerous MS and SS in structural health monitoring (SHM) methods, SHM demonstrations and applications, detection of defects and damage, and life-cycle management.

In addition to a robust scientific and technical program, the conference offers a rich and balanced social and cultural program: a welcome reception at the conference venue during the evening of the first day, a trip to Ancient Olympia with visits to the archeological site and the museum, and a conference banquet dinner at Olympia during the afternoon and evening of the second day. In closing,

the conference offers a showcase of interdisciplinary research and provides a variety of opportunities to disseminate your research results and to network with peers from academia, government, and industry.

Welcome to SMART 2023,

Welcome to Patras!

Acknowledgements

Organizations

The conference organizers acknowledge the support of the following organizations:

University of Patras
Greece

ISAE-Supméca
France

Alliance Sorbonne Université
UTC-Roberval
France

Plenary and Keynote Speakers

We thank the Plenary and Keynote Speakers for their contribution in setting a high-quality Scientific Program.

Plenary Speakers:

Thanasis Barlas, Fu-Kuo Chang, Daniel J. Inman, Dimitris Lagoudas, Hans-Peter Monner, Kon-Well Wang

Keynote Speakers:

Farhan Gandhi, Shinnosuke Shimokawa

Mini-Symposia and Special Session Organizers

We thank the organizers of Mini-Symposia and Special-Sessions for their help and contributions in putting together a high level and robust Scientific Program.

Marta Berardengo, Jan Hogsberg, Boris Lossouarn, Stefano Manzoni, Onur Bilgen, Hans Peter Monner, Johannes Riemenschneider, Bartłomiej Błachowski, Nikos Pnevmatikos, George Hatzigeorgiou, Łukasz Jankowski, Aurélio Lima Araújo, Enrico Zappino, Malte von Scheven, Manfred Bischoff, Lucio Blandini, Oliver Sawodny, Carlos Moutinho, Álvaro Cunha, Yolanda Vidal, Thanasis Barlas, Helge Madsen, Vasilis Riziotis, Dimitrios Zarouchas, Theodoros Loutas, Annamaria Pau, Wieslaw Ostachowicz, John Sakellariou, Spilios Fassois, Luis David Avendaño-Valencia, Theodosios Theodosiou, Elpiniki Papageorgiou,

Weihua Li, Tarak Ben Zineb, Wael Zaki, Ha Duong Ngo, Lixiang Wu, Andrea Bergamini, Bart VanDamme, Rolf Lammering, Thomas Wallmersperger, Markus Henke, Karsten Stahl, Sven Kinkel, Roderick Melnik, José L. Pérez-Aparicio, Andreas Ricoeur, Nazih Mechbal, Konstantinos Tserpes, Christian Boller, Alexander Humer, Astrid Pechstein, Michael Krommer, Adrien Morel, David Gibus, and Adrien Badel

Special Issue Journals

SMART2023 is supported through devoted Special Issues of select papers by the three prestigious journals: *Journal of Intelligent Material Systems and Structures (JIMSS), Journal of Vibration and Control (JVC) and Structural Health Monitoring: An International Journal (IJSHM)*.

The organizers are very thankful to the respective Editors-in-chief (*Daniel J. Inman* of JIMSS, *Mehdi Ahmadian* of JVC and *Fu-Kuo Chang* of IJSHM), and to the special issues Editors (*Norman M. Wereley* of JIMSS and *Michael D. Todd* of IJSHM) for their valuable support.

Organizers and Committees

2023 Conference Chairs

Prof. Dimitris Saravanos
Conference Chair & Editor

Dept. of Mechanical Engineering & Aeronautics
University of Patras
Greece

Prof. Ayech Benjeddou
Conference Chair & Editor

ISAE-SUPMECA & SUA-UTC ROBERVAL
France

Local Organizing Committee

- Dr. N. Chrysohoidis, University of Patras, Greece
- Dr. T. Theodosiou, University of Thessaly, Greece
- Dr. T. Loutas, University of Patras, Greece
- Dr. J. Sakellariou, University of Patras, Greece
- Prof. G. Stavroulakis, Technical University of Crete, Greece
- Dr. D. Varelis, HAFA, Greece

Scientific Committee

- A. Araujo, IDMEC - Instituto Superior Tecnico, Portugal
- A. Benjeddou, ISAE-SUPMECA & SUA-UTC ROBERVAL, France
- T. Ben Zineb, Université de Lorraine, France
- C. Boller, Universität des Saarlandes, Germany
- E. Carrera, Politecnico di Torino, Italy
- A. Cunha, Universidade do Porto, Portugal
- J.-F. Deü, Conservatoire national des arts et métiers, France
- J.B. Høgsberg, Danmarks Tekneske Universitet, Denmark
- L. Jankowski, Institute of Fundamental Technological Research, Poland
- M. Krommer, Johannes Kepler University, Austria
- R. Lammering, Universität der Bundeswehr Hamburg, Germany
- N. Mechbal, Arts et Métiers - Ensam, France

- W. Ostachowicz, Polish Academy of Sciences, Poland
- O. Polit, Université Paris Nanterre, France
- J. L. Perez Aparicio, University of Valencia, Spain
- D. Saravanos, University of Patras, Greece

Invited Talks

Plenary Lecturers

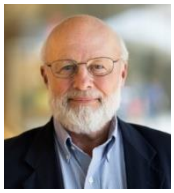
In alphabetical order

Dr. Thanasis Barlas
Senior Researcher
DTU Wind and Energy Systems, Roskilde, Denmark

Smart wind turbine rotors: 20 years of R&D from concept to industrial application

Prof. Fu-Kuo Chang
Professor of Aeronautics and Astronautics
Department of Aeronautics and Astronautics, Stanford University, USA

Multifunctional Energy Storage Composites (MESC) with Self-Diagnostic Capability for Air Mobility Design



Prof. Daniel J. Inman
Harm Buning Collegiate Professor and former Chair
Department of Aerospace Engineering, University of Michigan, USA

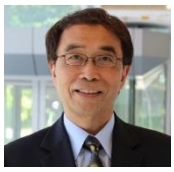
Bioinspired Morphing using Smart Materials and Brain Inspired Computing

Prof. Dimitris Lagoudas
Associate Vice Chancellor for Engineering, Senior Associate Dean for Research,
Professor of Aerospace Engineering, Texas A&M University, USA

Morphing Aerospace Structures with Shape Memory Alloy Actuators

Prof. Dr.-Ing. Hans Peter Monner
Head of Department of Adaptronics
Institute of Composite Structures and Adaptive Systems , German Aerospace Center (DLR), Braunschweig, Germany

Morphing for Aeronautical Applications – Recent Results of DLR‘s Activities



Prof. Kon-Well Wang
Stephen P. Timoshenko Collegiate Professor of Mechanical Engineering
University of Michigan, USA

Intelligent Metastructures – From Adaptive Phononic Crystals to Mechano-Intelligence

Keynote Speakers

In alphabetical order

Prof. Farhan Gandhi
Rosalind and John J. Redfern Jr Chair in Engineering
Mechanical, Aerospace & Nuclear Engineering, Rensselaer Polytechnic Institute, USA

Autonomous morphing in rotary-wing systems

Mr. Shinnosuke Shimokawa
Executive Engineer,
Toyota Research Institute North America, USA

Programmable Structure Development at Toyota Research Institute North America

Mini-Symposia and Special Sessions

MS01: Smart vibration control by electromechanical devices: modelling, tuning and applications

Organizers: Marta Berardengo, University of Genoa, Italy; Jan Hogsberg, Technical University of Denmark, Denmark; Boris Lossouarn, Conservatoire national des arts et métiers (Le CNAM), France; Stefano Manzoni, Politecnico di Milano, Italy.

MS02: Adaptive aerospace structures

Organizers: Onur Bilgen Rutgers, The State University of New Jersey, USA; Hans Peter Monner, DLR, Germany; Johannes Riemenschneider, DLR, Germany.

MS03: Smart structures: Methods and applications

Organizers: Bartłomiej Błachowski, IPPT PAN, Poland; Nikos Pnevmatikos, University of West Attica, Greece; George Hatzigeorgiou, Hellenic Open University, Greece; Łukasz Jankowski, IPPT PAN, Poland.

SS04: Numerical techniques for modelling and design of smart composite structures

Organizers: Aurélio Lima Araújo, Instituto Superior Técnico, Portugal; Enrico Zappino, Politecnico di Torino, Italy.

MS05: Adaptive civil engineering structures

Organizers: Malte von Scheven, Institute for Structural Mechanics, University of Stuttgart; Manfred Bischoff, Institute for Structural Mechanics, University of Stuttgart, Germany; Lucio Blandini, Institute for Lightweight Structures and Conceptual Design, University of Stuttgart, Germany; Oliver Sawodny, Institute for System Dynamics, University of Stuttgart, Germany.

SS06: Identification, control & structural health monitoring of civil structures

Organizers: Carlos Moutinho CONSTRUCT-ViBest, Faculty of Engineering, University of Porto, Portugal; Álvaro Cunha, CONSTRUCT-ViBest, Faculty of Engineering, University of Porto, Portugal.

SS07: Smart Wind Turbine Rotor Design and Health Monitoring

Organizers: Yolanda Vidal, Universitat Politecnica de Catalunya, Barcelona, Spain; Thanasis Barlas, DTU Wind and Energy Systems Roskilde, Denmark; Helge Madsen, DTU Wind and Energy Systems, Roskilde, Denmark; Vasilis Riziotis, National Technical University of Athens, Greece.

SS08: Machine Learning enabled diagnostics and prognostics of composite structures

Organizers: Dimitrios Zarouchas, Technical Univeristy of Delft; Theodoros Loutas, University of Patras, Greece.

MS09: Guided waves in structures: Applications to structural health monitoring and materials characterization

Organizers: Annamaria Pau, Department of Structural and Geotechnical Engineering, Sapienza University of Rome, Italy; Wieslaw Ostachowicz, Institute of Fluid Flow Machinery, Polish Academy of Science, Poland.

MS10: Vibration-based structural health monitoring

Organizers: John Sakellariou, University of Patras, Greece; Spilios Fassois, University of Patras, Greece; Luis David Avendaño-Valencia, University of Southern Denmark, Denmark.

MS11: Smart manufacturing technologies

Organizers: Theodosis Theodosiou, University of Thessaly, Greece; Elpiniki Papageorgiou, University of Thessaly, Greece.

MS12: Magnetorheological materials and applications

Organizer: Weihua Li, University of Wollongong, Australia

MS13: Functional materials with multiphysics coupling and their applications

Organizers: Tarak BEN ZINEB, Université de Lorraine, CNRS France; Wael ZAKI, Khalifa University, UAE.

SS14: Microsensors for aerospace applications

Organizers: Ha Duong Ngo (Prof.) Microsystems Technologies/Microsensors (FBI) University of Applied Sciences Berlin; Lixiang Wu, Silicon Austria Labs GmbH.

SS15: Functional and non-linear metamaterials

Organizers: Andrea Bergamini, EMPA, Switzerland; Bart VanDamme, EMPA, Switzerland.

MS17: Smart materials as sensors or actuators for machine elements and robotics

Organizers: Prof. Dr.-Ing. Thomas Wallmersperger, Technical University of Dresden, Germany; Dr.-Ing. E.-F. Markus Henke, Technical University of Dresden, Germany; Prof. Dr.-Ing. Karsten Stahl, Technical University of Munich, Germany.

SS18: Multi-physical, multi-scale and multidisciplinary modeling of smart structures and materials

Organizers: Sven Kinkel, Aachen University, Germany; Roderick Melnik, Laurier University, Canada; José L. Pérez-Aparicio, Polythecnic University of Valencia, Spain; Andreas Ricoeur, Universität Kassel, Germany.

SS19: Embedded life cycle management of smart-multifunctional structures

Organizers: Nazih Mechbal, Ensam Paris, France; Konstantinos Tserpes, University of Patras, Greece.

SS20: SHM demonstrations, applications & obstacles

Organizer: Christian Boller, Saarland University, Saarbrücken, Germany

SS21: Recent advances in nonlinear modeling and numerical methods for smart materials and structures

Organizers: Alexander Humer, Institute of Technical Mechanics, Johannes Kepler University Linz, Austria; Astrid Pechstein,Institute of Technical Mechanics, Johannes Kepler University Linz, Austria; Michael Krommer, Institute of Technical Mechanics, Johannes Kepler University Linz, Austria.

SS22: Energy harvesting based on smart materials

Organizers: Adrien MOREL, Savoie Mont Blanc University, SYMME, 74940 Annecy, France; David GIBUS, Savoie Mont Blanc University, SYMME, 74940 Annecy, France; Adrien BADEL, Savoie Mont Blanc University, SYMME, 74940 Annecy, France.

General Sessions

GS01: Analysis and design of smart materials

GS02: Characterization and analysis of multifunctional materials

GS03: Ultrasonic monitoring of lightweight structures using integrated sensors

Conference Information

Conference Venue

SMART2023 will be hosted at the Conference and Cultural Center (CCC) of the University of Patras, located in the University Campus, Patras, Greece.

The CCC is conveniently accessible by car and local transport within 15min from the city center. There is a public bus stop just outside the CCC Building and plenty of free parking spaces available in the vicinity. Available public bus routes may be found on the conference web page (see also "Transportation" on pg. 25).

Free wireless internet connection is available at the conference venue. Username and password will be provided at the Reception Desk.

Program Format

The conference program is organized in 6 plenary sessions, 2 keynote sessions, parallel sessions encompassing 21 mini-symposia and special-sessions, 3 general sessions and 1 poster session.

Registration and Check-in

All attendees are required to check-in at the registration desk. Registration will be available during all conference days at the reception desk in the main hall of the Conference Center. Participants and companions are kindly requested to always wear their personal badges in the conference area and during the social events. Access to the technical sessions, coffee breaks, lunches and social events will be denied in the absence of a badge.

Presentations

The allocated time of each oral presentation is 20 minutes, including 5 mins for Q/As. Each meeting room is equipped with a laptop where the presenters should upload their presentations before the beginning of the session. Conference staff will be available to assist.

Coffee breaks and Lunches

Coffee breaks will be served at the main hall of the Conference Center. Lunches will be served at the Foyer of the first floor. Participants should wear and show their badge to get access.

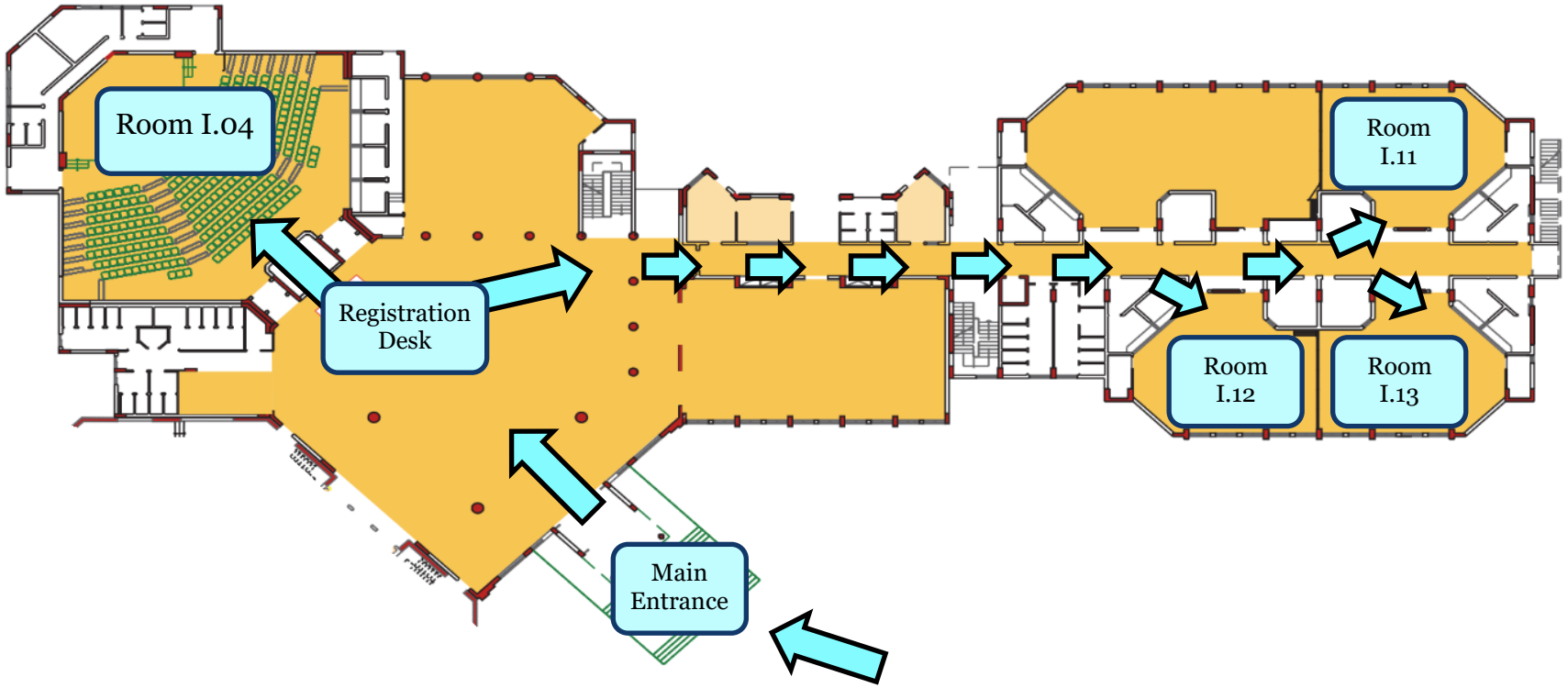
Location of Rooms

The presentations will take place in auditorium I.04 and in meeting rooms I.11, I.12, I.13 and II.6, II.8 located on the Ground and First floor of the Conference Center. All plenary and keynote lectures will be held in auditorium I.04.

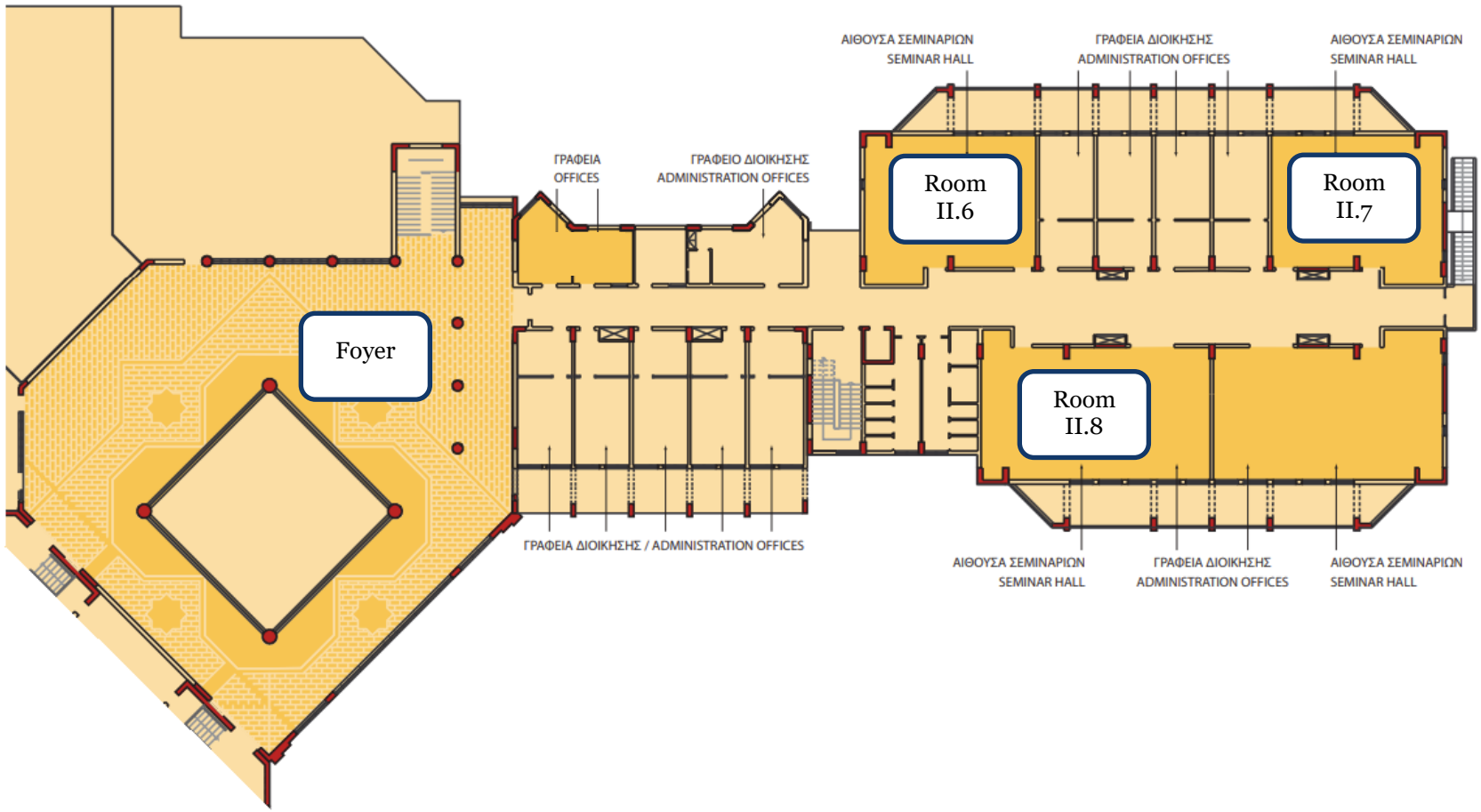
The Scientific Committee (SC) meeting will take place in room II.7.

Floor plans are provided in the following pages.

Ground Floor



First Floor


ΑΙΘΟΥΣΑ ΣΕΜΙΝΑΡΙΩΝ
SEMINAR HALL
ΓΡΑΦΕΙΑ ΔΙΟΙΚΗΣΗΣ
ADMINISTRATION OFFICES
ΑΙΘΟΥΣΑ ΣΕΜΙΝΑΡΙΩΝ
SEMINAR HALL
ΓΡΑΦΕΙΑ
OFFICES
ΓΡΑΦΕΙΟ ΔΙΟΙΚΗΣΗΣ
ADMINISTRATION OFFICES
Room
II.6
Room
II.7
Foyer
Room
II.8
ΓΡΑΦΕΙΑ ΔΙΟΙΚΗΣΗΣ / ADMINISTRATION OFFICES
ΑΙΘΟΥΣΑ ΣΕΜΙΝΑΡΙΩΝ
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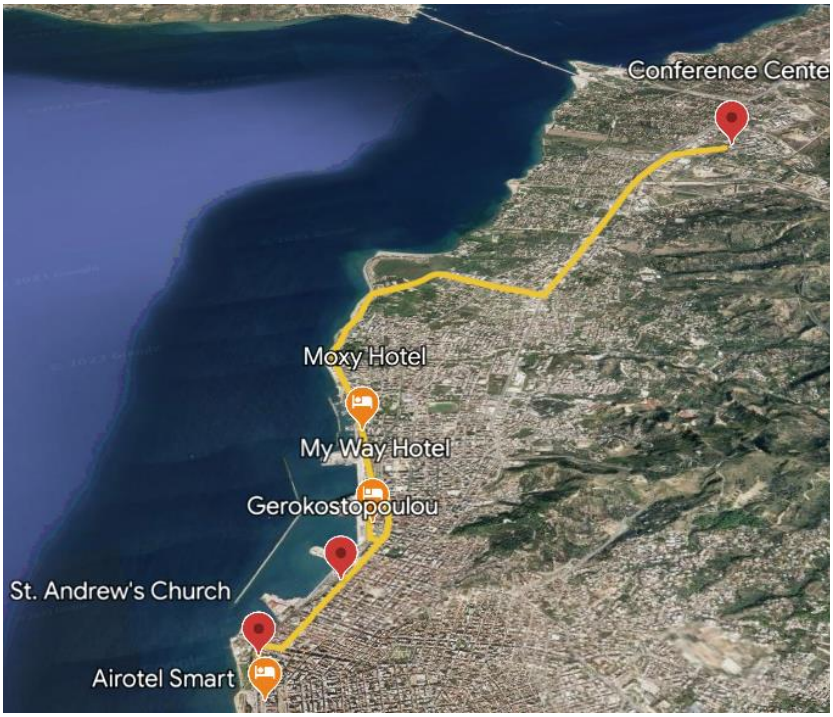
ΓΡΑΦΕΙΑ ΔΙΟΙΚΗΣΗΣ
ADMINISTRATION OFFICES
ΑΙΘΟΥΣΑ ΣΕΜΙΝΑΡΙΩΝ
SEMINAR HALL

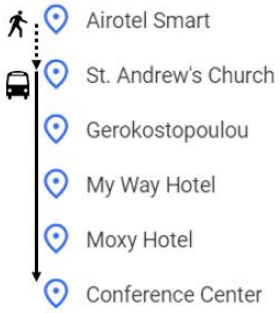
Conference Transportation

Conference Transportation from/to central Patras locations and Hotels to/from the Conference Center is provided every day.

Bus Route #1

St. Andrew's Church Plaza to Conference Center





The opposite direction will be followed at the end of each day.

The bus will depart from **St. Andrew's Church Plaza** according to the following schedule:

- Mon., July 3: 7:45
- Tue., July 4: 8:15, [15:00*]
- Wed., July 5: 8:15

** to pick up Companions who wish to participate in the Anc. Olympia Excursion*

Participants staying at the Airotel Patras Smart are kindly requested to take a 5min walk from their hotel to **St. Andrew's Church Plaza**.

Airotel Patras Smart

5 min walking distance to St. Andrew's Church Plaza

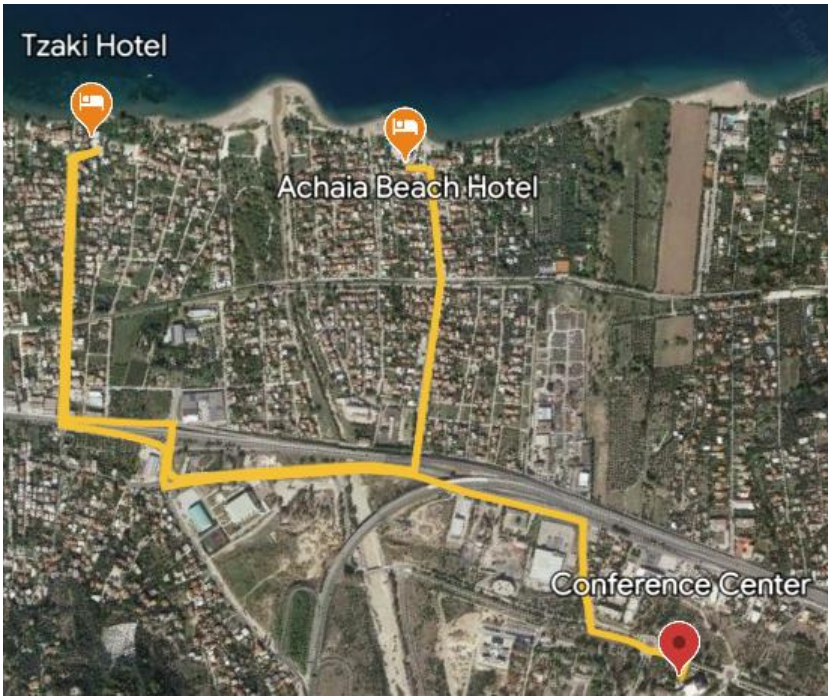
https://goo.gl/maps/RswQ6DT9CVS7t3i88

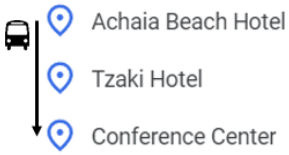
Participants staying at other hotels may be picked up at bus stops located at the following locations:

St. Andrews's Church Plaza Bus Stop at "Akti Dimeon Str." https://goo.gl/maps/d8F4CMgpHVDmFchv5	
Gerokostopoulou Bus stop at "Ag. Andreou & Gerokostopoulou Str." https://goo.gl/maps/ejZcmmscDBhcGDEw5	
My Way Hotel Bus stop outside the hotel https://goo.gl/maps/29ZzKmKSHuvLSJGt8	
Moxy Hotel Bus stop outside the hotel https://goo.gl/maps/Z8WYPWCv5YTCumPk8	

Bus Route #2

Achaia Beach / Tzaki Hotel to Conference Center





The opposite direction will be followed at the end of each day.

The bus will depart from **Achaia Beach** according to the following schedule:

- Mon., July 3: 7:45
- Tue., July 4: 8:15, [15:00*]
- Wed., July 5: 8:15

** to pick up Companions who wish to participate in the Anc. Olympia Excursion*

Achaia Beach Hotel Bus stop outside the hotel https://goo.gl/maps/bHYD65cWzFukBU3RA	
Hotel Tzaki Bus stop outside the hotel https://goo.gl/maps/WyoQvNiWQ1vbiCke6	

Conference Center to Patras/Hotels

Busses will take the participants to their hotels following the opposite direction, making stops at the outlined bus stops. **Departure from the Conference Center** is scheduled as follows:

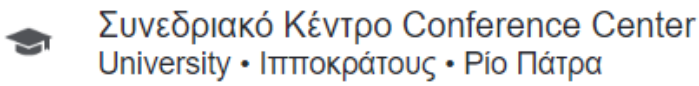
- Mon., July 3: 20:30
- Tue., July 4: 22:30 (From Olympia)
- Wed., July 5: 16:45

Public Transportation

Participants may also use public transportation to arrive at the Conference Center. Lines 601, 604, 605 and 901 depart from the City Center and have a bus stop outside the Conference Center. The journey lasts about 30 minutes depending on traffic conditions.

> Tickets may be purchased at King George Square.
>
> https://goo.gl/maps/yzQqSEgkKucyxbC19
>
> Purchasing tickets from the bus driver is also possible, but at an additional cost.

The routes from Patras to the Conference Center are well-mapped by Moovit. The Conference Center is registered as



You may use the following QR code to set destination directly:

Social Program

Welcome Reception

The **Welcome Reception** will take place on **Monday July 3 at 18:30**, at the main hall of the Conference Venue, concurrently with the poster session.

Excursion to Ancient Olympia

An **Excursion to Ancient Olympia** will take place on **Tuesday, July 4, afternoon and evening**. The excursion includes a visit to the archeological site of Ancient Olympia, the birthplace of the Olympic Games, and to the archeological museum. The glory and the history of the monuments and the exhibits, will be revealed to you through a guided tour. Don't miss the chance to visit the ancient stadium, the temple of Zeus, the Philippeion, the Palaestra and the famous sculpture of Hermes of Praxiteles.

Conference Banquet Dinner

The **Conference Banquet Dinner** will follow the tour to Anc. Olympia, at 19.30, at the Turis Club in the Village of Olympia.

Transportation

All buses to Olympia will depart from the Conference Center at **16:00**.
Especially for **Companions** who will not be present in the Conference Center, there will be a special bus transfer, departing at **15:00** to bring them to the Conference Center. The bus will follow the route / stops outlined in section "Conference Transportation" (see pg. 25).

Conference Program

Program Overview

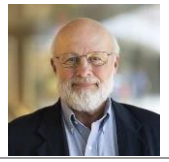
Program at a glance

TIME	Monday, July 3	TIME	Tuesday, July 4	TIME	Wednesday, July 5
8:30-9:00	Conference Opening & Welcome	8:30-9:00		8:30-9:00	
9:00-9:40	Plenary Lecture I Prof. Daniel Inman	9:00-9:40	Plenary Lecture III Prof. Kon-Well Wang	9:00-9:40	Plenary Lecture V Prof. Hans Peter Monner
9:40-10.20	Plenary Lecture II Dr. Thanasis Barlas	9:40-10.20	Plenary Lecture IV Mr. Shinnosuke Shimokawa	9:40-10.20	Plenary Lecture VI Prof. Dimitris Lagoudas
10:20-10:40	Coffee Break	10:20-10:40	Coffee Break	10:20-10:40	Coffee Break
10:40-12:40	I.04 MS13-1 | I.11 MS01-1 | I.12 MS17-1 | I.13 SS19 | II.6 MS02-1 | II.8 SS06	10:40-12:40	I.04 MS03-3 | I.11 SS21 | I.12 MS10-2 | I.13 GS03 | II.6 SS15 | II.8 MS11-1	10:40-12:40	I.04 SS20 | I.11 SS04 | I.12 MS17-2 | I.13 SS22 | II.6 MS12-2
12:40-14:10	Lunch	12:40-14:10	Lunch SC meeting	12:40-14:10	Lunch
14:10-14:40	Keynote Lecture I Prof. Farhan Ghandi	14:10-15:50	I.04 MS01-3 | I.11 MS09-1 | I.12 MS05-2 | I.13 SS14 | II.6 MS02-2 | II.8 MS11-2	14:10-15:50	I.04 MS13-2 | I.11 MS09-2 | I.12 MS17-3 | I.13 MS03-4 | II.6 SS07
14:40-16:20	I.04 MS03-1 | I.11 MS01-2 | I.12 MS10-1 | I.13 GS01 | II.6 MS12-1				
16.20-16:40	Coffee Break	15:50	EXCURSION TO OLYMPIA (WEATHER PERMITTING)	15:50-16:10	Conference Closing
16:40-18:20	I.04 MS03-2 | I.11 SS18 | I.12 MS05-1 | I.13 GS02 | II.6 SS08	17:30-19:30	VISIT TO ARCHEOLOGICAL SITE & MUSEUM		https://www.smart2023.eu
18:20 - 20:30	RECEPTION & POSTER SESSION	19.30-22:30	CONFERENCE BANQUET		
TIME	Monday, July 3	TIME	Tuesday, July 4	TIME	Wednesday, July 5

Each presentation should have a **maximum duration of 20mins** (including comments and questions)
Rooms I.04, I.11, I.12, and I.13 are located on the Ground Floor, while Rooms II.6 and II.8 on the First Floor.

Day 1: Monday, July 3, 2023

<table>
<tr><th>TIME</th><th colspan="3">EVENT</th></tr>
<tr><td>08:30-09:00</td><td colspan="3">Conference Opening and Welcome (Room I.04)</td></tr>
<tr><td>09:00-09:40</td><td colspan="3">Plenary Lecture I: Bioinspired Morphing using Smart Materials and Brain Inspired Computing
Room I.04
Chair: Dimitris Saravanos and Ayech Benjeddou

 
Prof. Daniel Inman
Harm Buning Collegiate Professor and former Chair,
Department of Aerospace Engineering, University of Michigan, USA</td></tr>
<tr><td>09:40-10:20</td><td colspan="3">Plenary Lecture II: Smart wind turbine rotors: 20 years of R&D from concept to industrial application
Room I.04
Chair: Ayech Benjeddou and Dimitris Saravanos

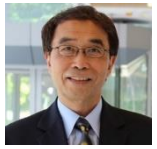
 
Dr. Thanasis Barlas
Senior Researcher,
DTU Wind and Energy Systems,
Roskilde, Denmark</td></tr>
<tr><td>10:20-10:40</td><td colspan="3">Coffee Break</td></tr>
<tr><td rowspan="2">10:40-12:40</td><td>MS02.1 - Adaptive aerospace structures
Room II.6
Chairs:
- Onur Bilgen, Rutgers University
- Hans Peter Monner, DLR</td><td>MS01.1 - Smart vibration control by electromechanical devices: modelling, tuning and applications
Room I.11
Chairs:
- Jan Hogsberg, Technical University of Denmark;
- Boris Lossouarn, Conservatoire National des Arts et Métiers</td><td>MS17.1 - Smart materials as sensors or actuators for machine elements and robotics
Room I.12
Chairs:
- Thomas Wallmersperger, Technical University of Dresden
- Johannes Menning, Technical University of Dresden</td></tr>
<tr><td>SS19 - Embedded life cycle management of smart-multifunctional structures
Room I.13
Chairs:
- Nazih Mechbal, Ensam
- Konstantinos Tserpes, University of Patras</td><td>SS06 - Identification, control & structural health monitoring of civil structures
Room II.8
Chairs:
- Carlos Moutinho, University of Porto
- John Sakellariou, University of Patras</td><td>MS13.1 - Functional materials with multiphysics coupling and their applications
Room I.04
Chairs:
- Tarak Ben Zineb, Université de Lorraine
- Darren Hartl, Texas A&M University</td></tr>
</table>

12:40-14:10	***Lunch***		
14:10-14:40	**Keynote Lecture I:** Autonomous morphing in rotary-wing systems *Room I.04* *Chair: Łukasz Jankowski and Dimitris Saravanos*  **Prof. Farhan Gandhi** Rosalind and John J. Redfern Jr Chair in Engineering Director, Center for Mobility with Vertical Lift (MOVE) Mechanical, Aerospace and Nuclear Engineering, Rensselaer Polytechnic Institute, USA		
14:40-16:20	**MS03.1 - Smart structures: Methods and applications** Room I.04 Chairs: - *Łukasz Jankowski, IPPT PAN* - *Bartłomiej Błachowski, IPPT PAN*	**MS01.2 - Smart vibration control by electromechanical devices: modelling, tuning and applications** Room I.11 Chairs: - *Stefano Manzoni, Politecnico di Milano* - *Marta Berardengo, University of Genoa*	**MS10.1 - Vibration based structural health monitoring** Room I.12 Chairs: - *John Sakellariou, University of Patras* - *Luis David Avendaño-Valencia, University of Southern Denmark*
	GS01 - Analysis and design of smart materials Room I.13 Chairs: - *José L. Pérez-Aparicio, Polytechnic University of Valencia* - *Michael Krommer, Johannes Kepler University*	**MS12.1 - Magnteorheological materials and applications** Room II.6 Chairs: - *Xufeng Dong, Dalian University of Technology* - *Sedaghati Ramin, Concordia University*	
16:20-16:40	***Coffee Break***		
16:40-18:20	**MS03.2 - Smart structures: Methods and applications** Room I.04 Chairs: - *Łukasz Jankowski, IPPT PAN* - *Bartłomiej Błachowski, IPPT PAN*	**SS18 - Multi-physical, multi-scale and multidisciplinary modeling of smart structures and materials** Room I.11 Chair: - *José L. Pérez-Aparicio, Polytechnic University of Valencia* - *Aurélio Lima Araújo, Instituto Superior Técnico*	**MS05.1 - Adaptive civil engineering structures** Room I.12 Chairs: - *Malte von Scheven, University of Stuttgart* - *Lisa-Marie Krauß, University of Stuttgart*

	GS02 - Characterization and Analysis of Multi-Functional Materials Room I.13 Chairs: - *J.-F. Deü, Conservatoire national des arts et métiers* - *Tarak Ben Zineb, Université de Lorrain*	**SS08 - Machine learning enabled diagnostics and prognostics of composite structures** Room II.6 Chairs: - *Theodore Loutas, University of Patras* - *Nikos Chrysohoidis, University of Patras*	
18:20-20:30	**Poster Session** *(Main Hall)*		**Reception** *(Main Hall)*

Day 2: Tuesday, July 4, 2023

<table>
<tr><th>TIME</th><th colspan="3">EVENT</th></tr>
<tr><td>09:00-09:40</td><td colspan="3">Plenary Lecture III: Intelligent Metastructures – From Adaptive Phononic Crystals to Mechano-Intelligence
Room I.04
Chair: Jean-François Deü and Ayech Benjeddou

 
Prof. Kon-Well Wang
Stephen P. Timoshenko Collegiate
Professor of Mechanical Engineering
University of Michigan, USA</td></tr>
<tr><td>09:40-10:20</td><td colspan="3">Plenary Lecture IV: Programmable Structure Development at Toyota Research Institute North America
Room I.04
Chair: Christian Boller and Dimitris Saravanos

 
Mr. Shinnosuke Shimokawa
Executive Engineer
Toyota Research Institute North America, USA</td></tr>
<tr><td>10:20-10:40</td><td colspan="3">Coffee Break</td></tr>
<tr><td rowspan="2">10:40-12:40</td><td>MS03.3 - Smart structures: Methods and applications
Room I.04

Chairs:
- Bartłomiej Błachowski, IPPT PAN
- Łukasz Jankowski, IPPT PAN</td><td>MS10.2 - Vibration based structural health monitoring
Room I.12

Chairs:
- Spilios Fassois, University of Patras
- John Sakellariou, University of Patras</td><td>SS21 - Recent advances in nonlinear modeling and numerical methods for smart materials and structures
Room I.11

Chairs:
- Alexander Humer, Johannes Kepler University
- Astrid Pechstein, Johannes Kepler University</td></tr>
<tr><td>GS03 - Ultrasonic monitoring of lightweight structures using integrated sensors
Room I.13
Chairs:
- Rauter Natalie, Helmut Schmidt University
- Nikos Chrysohoidis, University of Patras</td><td>SS15 - Functional and non-linear metamaterials
Room II.6
hairs:
- Andrea Bergamini, EMPA
- Bart Van Damme, EMPA</td><td>MS11.1 - Smart manufacturing technologies
Room II.08
Chairs:
- Theodosis Theodosiou, University of Thessaly
- George Margietis, Foundation for Research and Technology - Hellas</td></tr>
<tr><td>12:40-14:10</td><td colspan="2">Lunch</td><td>SC Meeting (Room II.07)</td></tr>
</table>

14:10-15:50	**MS01.3 - Smart vibration control by electromechanical devices: modelling, tuning and applications** Room I.04 Chairs: - *Marta Berardengo, University of Genoa* - *Boris Lossouarn, Conservatoire National des Arts et Métiers*	**MS09.1 - Guided waves in structures: Applications to Structural Health Monitoring and Materials Characterization** Room I.11 Chairs: - *Annamaria Pau, Sapienza University of Rome* - *Christian Boller, Saarland University*	**SS14 - Microsensors for aerospace applications** Room I.13 Chairs: - *Ha Duong Ngo, University of Applied Sciences Berlin* - *Adina Neacsu, USOUND*
	MS05.2 - Adaptive civil engineering structures Room I.12 Chairs: - *Malte von Scheven, University of Stuttgart* - *Axel Trautwein, University of Stuttgart*	**MS02.2 - Adaptive aerospace structures** Room II.6 Chairs: - *Hans Peter Monner, DLR* - *Onur Bilgen, Rutgers University*	**MS11.2 - Smart manufacturing technologies** Room II.8 Chairs: - *Theodosis Theodosiou, University of Thessaly* - *George Margietis, Foundation for Research and Technology - Hellas*
15:50	**Excursion to Olympia**		
17:30-19:30	**Tour in Ancient Olympia, Visit in the Archeological Site and Museum**		
19:30-22:30	**Conference Banquet**		

Day 3: Wednesday, July 5, 2023

<table>
<tr><th>TIME</th><th colspan="3">EVENT</th></tr>
<tr><td>09:00-09:40</td><td colspan="3">Plenary Lecture V: Morphing for Aeronautical Applications – Recent Results of DLR‘s Activities
Room I.04
Chair: Ayech Benjeddou and Dimitris Saravanos

 
Prof. Dr.-Ing. Hans Peter Monner
Associate Vice Chancellor for Engineering, Head of Department of Adaptronics
Institute of Composite Structures and Adaptive Systems, German Aerospace Center (DLR)
Braunschweig, Germany</td></tr>
<tr><td>09:40-10:20</td><td colspan="3">Plenary Lecture VI: Morphing Aerospace Structures with Shape Memory Alloy Actuators
Room I.04
Chair: Tarak Ben Zineb and Dimitris Saravanos

 
Prof. Dimitris Lagoudas
Associate Vice Chancellor for Engineering
Senior Associate Dean for Research
Professor of Aerospace Engineering, Texas A&M University, USA</td></tr>
<tr><td>10:20-10:40</td><td colspan="3">Coffee Break</td></tr>
<tr><td rowspan="2">10:40-12:40</td><td>SS20 - SHM demonstrations, applications & obstacles
Room I.04
Chairs:
- Christian Boller, Saarland University
- Wieslaw Staszewski, AGH University of Science & Technology</td><td>MS12.2 - Magnteorheological materials and applications
Room II.6
Chairs:
- Turin Weihua Li, University of Wollongong
- Antonio J. F. Bombard, Federal University of Itajubá</td><td>MS17.2 - Smart materials as sensors or actuators for machine elements and robotics
Room I.12
Chairs:
- Steffen Puchtler, Technical University of Darmstadt
- Stephanie Seltmann, Chemnitz University of Technology</td></tr>
<tr><td>SS22 - Energy harvesting based on smart materials
Room I.13
Chairs:
- David Gibus, Savoie Mont Blanc University
- Adrien Morel, Savoie Mont Blanc University</td><td>SS04 - Numerical techniques for modelling and design of smart composite structures
Room II.8
Chairs:
- Aurélio Lima Araújo, Instituto Superior Técnico
- Enrico Zappino, Politecnico di Torino</td><td></td></tr>
</table>

12:40-14:10	***Lunch***		
14:10-15:50	**MS03.4 - Smart structures: Methods and applications** Room I.13 Chairs: - *Bartłomiej Błachowski, IPPT PAN* - *Łukasz Jankowski, IPPT PAN*	**MS09.2 - Guided waves in structures: Applications to Structural Health Monitoring and Materials Characterization** Room I.11 Chairs: - *Annamaria Pau, Sapienza University of Rome* - *Nazih Mechbal, Ensam*	**MS13.2 - Functional materials with multiphysics coupling and their applications** Room I.04 Chairs: - *Wael Zaki, Khalifa University* - *Tarak Ben Zineb, Université de Lorraine*
	SS07 - Smart Wind Turbine Rotor Design and Health Monitoring Room II.6 Chairs: - *Thanasis Barlas, DTU Wind and Energy Systems, Denmark* - *Christian Tutivén, Universitat Politècnica de Catalunya*	**MS17.3 - Smart materials as sensors or actuators for machine elements and robotics** Room I.12 Chairs: - *Thomas Wallmersperger, Technical University of Dresden* - *Adrian Ehrenhofer, Technical University of Dresden*	
15:50-16:10	***Conference Closing*** *(Room I.04)*		

Detailed Program

Day 1: Monday, July 3, 2023

TIME	EVENT
08:30 - 09:00	**Conference opening - Welcome event.**
09:00 - 09:40	**Plenary Lecture I:** Bioinspired Morphing using Smart Materials and Brain Inspired Computing (Room I.04) - Prof. Daniel Inman, University of Michigan, USA
09:40 - 10:20	**Plenary Lecture II:** Smart wind turbine rotors: 20 years of R&D from concept to industrial application (Room I.04) - Dr. Thanasis Barlas, DTU Wind and Energy Systems, Denmark
10:20 - 10:40	Coffee break
MS02.1 - Adaptive aerospace structures (10:40 - 12:40 – Room II.6) *Chairs: Onur Bilgen, Rutgers University; Hans Peter Monner, DLR*	
10:40 - 11:00	Concept of a morphing shock control bump spoiler with two actuators - *Sven Christian Künnecke, Michael Schäfer, Andreas Goerttler, Andreas Waldmann, Srinivas Vasista, Johannes Riemenschneider*
11:00 - 11:20	Aerostructural investigation of shape adaptive rotor blading for the reduction of BLI induced losses in the distorted flow regimes of a transonic fan rotor - *Marcel Seidler, Jonas Voigt, Zhuzhell Montano Rejas, Jens Friedrichs, Hans Peter Monner, Johannes Riemenschneider*
11:20 - 11:40	Multi-physics modeling of induced-strain actuated wings for mechanism-free ornithopters - *Xin Shan, Onur Bilgen*
11:40 - 12:00	Demonstration of an SMA-based adaptive structure for overland low boom supersonic vehicles - *James Mabe, Darren Hartl, Dimitris Lagoudas, Benjamin McAdams, Trout Ryan*
12:00 - 12:20	Optimization framework of a ram air inlet composite morphing flap - *Xavier Carrillo Córcoles, Jurij Sodja, Roeland De Breuker*
12:20 - 12:40	Development of a morphing concept based on fiber-reinforced thermoplastics - *Hans Van Goozen, Wouter Van der Eijk, Hermen Pijlman, Jan Docter*
MS01.1 - Smart vibration control by electromechanical devices: modelling, tuning and applications (10:40 - 12:40 – Room I.11) *Chairs: Jan Hogsberg, Technical University of Denmark; Boris Lossouarn, Conservatoire National des Arts et Métiers*	
10:40 - 11:00	Shunted piezoelectric patch adaptive vibration absorber set to maximise electric power absorption - *Paolo Gardonio, Gabriel Konda Rodrigues*
11:00 - 11:20	Vibration suppression of large flexible structures subjected to multiple tonal excitations via a semi-active shunted piezoelectric tuned mass damper - *Grigorios M. Chatziathanasiou, Nikolaos A. Chrysochoidis, Dimitris A. Saravanos*
11:20 - 11:40	Strategies for reducing operational amplifier outputs in piezoelectric shunt with negative capacitance - *Marta Berardengo, Stefano Manzoni, Olivier THOMAS, Christophe Giraud-Audine, Marcello Vanali*
11:40 - 12:00	Programmable hardening, softening, and essentially nonlinear synthetic inductance-based piezoelectric shunt circuits - *Obaidullah Alfahmi, Alper Erturk*

TIME	EVENT
12:00 - 12:20	A 1:1 tunable piezoelectric resonant shunt using a non smooth voltage - *Christophe Giraud-Audine, Olivier Thomas, Zein Aladeen Shami*
12:20 - 12:40	Resonance capture cascade in a nonlinear piezoelectrical shunt and a vibrating frame: Experimental verification - *Kevin Dekemele, Christophe Giraud-Audine, Olivier Thomas*
MS17.1 - Smart materials as sensors or actuators for machine elements and robotics (10:40 - 12:40 – Room I.12) *Chairs: Thomas Wallmersperger, Technical University of Dresden; Johannes Menning, Technical University of Dresden*	
10:40 - 11:00	Modeling and simulation of deformation and capacitance of a substitue system of a sensor-integrated jaw coupling - *Johannes D. M. Menning, Artem Prokopchuk, Arthur Ewert, Berthold Schlecht, E.-F. Markus Henke, Thomas Wallmersperger*
11:00 - 11:20	Experimental analysis of the influence of thermoplastic veils doped with nanofillers on the thermal properties of fibre-reinforced composites - *Rafal Stanik, Anja Winkler, Kamil Dydek, Szymon Demski, Anna Boczkowska, Paweł Durałek, Albert Langkamp, Maik Gude, Paulina Latko-Durałek*
11:20 - 11:40	Multi-layer capacitive strain sensor based on dielectric elastomers - *Artem Prokopchuk, Arthur Ewert, Johannes Menning, Berthold Schlecht, Thomas Wallmersperger, Markus Henke, Andreas Richter*
11:40 - 12:00	Towards white-box modeling of sensory-utilized rolling bearings - *Steffen Puchtler, Julius Van der Kuip, Eckhard Kirchner*
12:00 - 12:20	Advancements in monitoring of tribological stress in bearings using thin-film strain gauges - *Dennis Konopka, Tobias Steppeler, Rico Ottermann, Florian Pape, Folke Dencker, Gerhard Poll, Marc Wurz*
12:20 - 12:40	Topology optimization-based design of a sensor-integrating feather key - *Stephanie Seltmann, Benjamin Muhammedi, Alexander Hasse*
SS19 - Embedded life cycle management of smart-multifunctional structures (10:40 - 12:40 – Room I.13) *Chairs: Chairs: Nazih Mechbal, Ensam; Konstantinos Tserpes, University of Patras*	
10:40 - 11:00	Hybrid twin applied to structural health monitoring - *Sebastian Rodriguez, Daniele Di Lorenzo, Francisco Chinesta, Eric Monteiro, Marc Rebbilat, Nazih Mechbal*
11:00 - 11:20	Integration of printed sensors for the functionalization of composite components - *Ingo Wirth, Marc Rebillat, Frederic Letellier, Mario Kohl, Jan Conen, Marc-Oliver Becker, Tim Rusch*
11:20 - 11:40	Numerical simulation of the symmetric laser-shock disassembly process for adhesively bonded Ti/CFRP parts - *Panagiotis Kormpos, Konstantinos Tserpes, Selen Unaldi, Laurent Berthe*
11:40 - 12:00	Methods for FBG sensor integration for RTM process monitoring and SHM of the final CFRP component - *Andreas Krenz, Jan Koch, Vladislav Reimer, Alexander Doering, P Guehlke, C Waltermann, Mareike Schlag, Kai Brune, M Waris, A Touze*
12:00 - 12:20	Monitoring of controlled fatigue-corrosion damage on steel plates using Lamb Waves for SHM purposes - *Julie Liegey, Mohamed El May, Marc Rebillat, Olivier Devos, Nazih Mechbal*
12:20 - 12:40	A digital twin of a Fiber Bragg Grating network in the leading edge of a rotating composite fan blade subjected to bird strike - *Giannis Floros, Dimitris Sotiropoulos, Konstantinos Tserpes, Dimitrios Tsourounis*

TIME	EVENT
SS06 - Identification, control & structural health monitoring of civil structures (10:40 - 12:40 – Room II.8) *Chairs: Carlos Moutinho, University of Porto; John Sakellariou, University of Patras*	
10:40 - 11:00	Analysis of the temperature effects on a long-span reinforced concrete arch bridge measured by a monitoring system - *Isabelle Ietka, Carlos Moutinho, Sérgio Pereira, Álvaro Cunha*
11:00 - 11:20	Bridge health monitoring using acceleration measurements and the concept of equivalent fixed-point deflection - *Eugene OBrien, Shuo Wang, Farhad Huseynov, McCrum Daniel, Miguel Casero Florez*
11:20 - 11:40	Displacement-ratio-based probabilistic damage detection of bridges using FE model update - *Yoshiyuki Yajima, Murtuza Petladwala, Takahiro Kumura, Chul-Woo Kim*
11:40 - 12:00	Long-term monitoring of a reinforced concrete half-joint - *Nikolaos Tziavos, Haris Alexakis, Cedric Kechavarzi, Jennifer Schooling*
12:00 - 12:20	Optimal sensors position for Structural Health Monitoring of steel jacket offshore platforms - *Giacomo Zini, Michele Betti, Ostilio Spadaccini, Luciano Galano, Paolo Castelli*
12:20 - 12:40	Static and dynamic structural monitoring of civil infrastructure objects with GNSS - *Caroline Schönberger, Werner Lienhart, Benjamin Kaden*
MS13.1 - Functional materials with multiphysics coupling and their applications (10:40 - 12:40 – Room I.04) *Chairs: Tarak Ben Zineb, Université de Lorraine; Darren Hartl, Texas A&M University*	
10:40 - 11:00	Dynamical behavior of a shape memory alloy holed plate and investigation of the damping effect - *Frédéric Thiébaud, Tarak Ben Zineb*
11:00 - 11:20	Tribological study of a new self-expanding nitinol stent dedicated to the treatment of venous stenosis - *Achref Sallami, Pierrick Malécot, Fabrice Richard, Michaël Fontaine, Arnaud Lejeune, Sébastien David, Paul Vescovo, Christophe Moureaux, Philippe Stempflé*
11:20 - 11:40	Effect of microcapsule stability on self-healing ability of polyurethane dispersions - *Efterpi Avdeliodi, Georgios Bokias, Joannis Kallitsis*
11:40 - 12:00	Performance analysis and modeling of bio-inspired 3D-arrays for thermal management - *Nikolaos Athanasopoulos, Grigorios Chatziathanasiou, Nikolaos Siakavellas*
12:00 - 12:20	Advantages of thermomechanical coupling in shape memory alloy components applied to spacecraft thermal control - *Collette Gillaspie, Darren Hartl*
12:20 - 12:40	Actively responsive anisotropic multilayer materials as actuators - *Grigorios M. Chatziathanasiou, Nikolaos Athanasopoulos*
12:40 - 14:10	Lunch
14:10 - 14:40	**Keynote Lecture I:** Autonomous morphing in rotary-wing systems (Room I.04) - Prof. Farhan Gandhi, Rensselaer Polytechnic Institute, USA
MS03.1 - Smart structures: Methods and applications (14:40 - 16:20 – Room I.04) *Chairs: Łukasz Jankowski, IPPT PAN; Bartłomiej Błachowski, IPPT PAN*	
14:40 - 15:00	A finite element and experimental study on novel 2D chiral metamaterials - *Luke Mizzi, Arrigo Simonetti, Andrea Spaggiari*
15:00 - 15:20	Advanced numerical models for capacitance variation of embedded piezoelectrical transducers under monotonic tensile test - *Jamal Najd, Enrico Zappino, Erasmo Carrera, Walid Harizi, Zoheir Aboura*

TIME	EVENT
15:20 - 15:40	Thermal monitoring of braking systems using metal AM calipers with integrated sensors - *Giorgio De Pasquale*
15:40 - 16:00	Data-driven inverse design of resonant structures for locally resonant metamaterials - *Sander Dedoncker, Christian Donner, Bart Van Damme*
16:00 - 16:20	Design and optimization of a self-expandable NiTi braided stent using MOPSO algorithm - *Seyedeh Farzaneh Hoseini, Andrea Spaggiari*
MS01.2 - Smart vibration control by electromechanical devices: modelling, tuning and applications (14:40 - 16:20 – Room I.11) *Chairs: Stefano Manzoni, Politecnico di Milano; Marta Berardengo, University of Genoa*	
14:40 - 15:00	Effect of a resonant piezoelectric shunt on the structural vibrations of a truncated hydrofoil - *Yann Watine, Jacques André Astolfi, Jean-François Deü, Céline Gabillet, Boris Lossouarn*
15:00 - 15:20	Analysis and tuning of multiple shunted piezoelectric transducers - *Jens Damholt Richardt, Jan Høgsberg, Boris Lossouarn, Jean-François Deü*
15:20 - 15:40	Auxetic enhancement of the shunted piezoelectric effect for vibration suppression. - *Maria-Styliani Daraki, Konstantinos Marakakis, Georgia Foutsitzi, Georgios Stavroulakis*
15:40 - 16:00	Multimodal vibration damping of a thin circular ring coupled to an analogous piezoelectric network - *Alan Luo, Boris Lossouarn, Alper Erturk*
16:00 - 16:20	In-vacuo structured fabric tuneable vibration absorber - *Sofia Baldini, Paolo Gardonio, Emiliano Rustighi, Ciro Malacarne, Matteo Perini*
MS10.1 - Vibration based structural health monitoring (14:40 - 16:20 – Room I.12) *Chairs: John Sakellariou, University of Patras; Luis David Avendaño-Valencia, University of Southern Denmark*	
14:40 - 15:00	Dynamic strain vs vibration acceleration based robust structural health monitoring for a population of composite aerostructures under uncertainty - *Fation Fera, Ioannis E. Saramantas, Panayotis E. Spiliotopoulos, Yoav Ofir, Iddo Kressel, Spilios D. Fassois, John S. Sakellariou, Christos Spandonidis*
15:00 - 15:20	Dynamic strain versus acceleration based robust Structural Health Monitoring for a group of Composite Aerostructures: experimental assessment - *Fation T. Fera, Panayotis E. Spiliotopoulos, Ioannis E. Saramantas, Yoav Ofir, Iddo Kressel, Spilios D. Fassois, John S. Sakellariou, Tur Moshe, Christos Spandonidis*
15:20 - 15:40	Towards the assessment and performance quantification of the inverse problem for vibration-based SHM - *Peiyuan Zhou, Fotis Kopsaftopoulos*
15:40 - 16:00	Data generation using digital twins for the development of condition monitoring algorithms – Application on rolling element bearings - *Shubham Sharma, Marcel Wiemann, Peter Kraemer*
16:00 - 16:20	Tools wear monitoring during the turning process with computational intelligence approaches - *Amir Nemati, Robert Pardoe, Miguel Panesso, Steffen F Bocklisch, Welf-Guntram Drossel*
GS01 - Analysis and design of smart materials (14:40 - 16:20 – Room I.13) *Chairs: José L. Pérez-Aparicio, Polythecnic University of Valencia; Michael Krommer, Johannes Kepler University*	
14:40 - 15:00	Calculation of the switching field for magnetic shape memory alloys using finite element analysis - *Aleksandr Nemov, Andrey Saren, Marko Matikainen, Kari Ullakko, Aki Mikkola*
15:00 - 15:20	Implications of crack face conditions in fracture mechanics of dielectrics emanating from closed form solutions - *Lennart Behlen, Daniel Wallenta, Andreas Ricoeur*

TIME	EVENT
15:20 - 15:40	A probabilistic reduced order modeling framework for the design of composite scaffolds in bone tissue engineering - *George Drakoulas, Theodore Gortsas, Demosthenes Polyzos*
15:40 - 16:00	A constitutive theory and FE implementation for photosensitive hydrogel - *Yang Qingsheng, Liu Xinyu, Rao Wei*
16:00 - 16:20	High-throughput analysis and morphing design space decomposition for mission-adaptive air vehicles - *Jared Lilly, Walker Buckle, Allen Davis, Darren Hartl*
MS12.1 - Magnteorheological materials and applications (14:40 - 16:20 – Room II.6) *Chairs: Xufeng Dong, Dalian University of Technology; Sedaghati Ramin, Concordia University*	
14:40 - 15:00	Development of a field-dependent Prandtl-Ishlinskii model for a large capacity by-pass magneto-rheological fluid damper - *Hossein Vatandoost, Moustafa AbdalAziz, Ramin Sedaghati, Subhash Rakheja*
15:00 - 15:20	Sensing capabilities of liquid metal magnetorheological composites - *Weihua Li*
15:20 - 15:40	Design of a magnetorheological elastomeric actuator: analytical and numerical model with experimental validation - *Antonio Vairo, Andrea Spaggiari*
15:40 - 16:00	Experimental evaluation of a magneto-rheological fluid-based pulse simulator for generating radial pulse waveforms - *Miranda Eaton, Jeong-Hoi Koo, Tae-Heon Yang, Young-Min Kim*
16:00 - 16:20	Preparation and application of high-performance magneto/electro-rheological composites - *Xufeng Dong, Ning Ma, Qi Wang, Chenguang Niu, Yu Tong, Min Qi*
16:20 - 16:40	Coffee break
MS03.2 - Smart structures: Methods and applications (16:40 - 18:20 – Room I.04) *Chairs: Łukasz Jankowski, IPPT PAN; Bartłomiej Błachowski, IPPT PAN*	
16:40 - 17:00	Implementation of multi-type sensor placement strategy for large-scale engineering structures - *Bartlomiej Blachowski, Andrzej Swiercz, Piotr Olaszek, Lukasz Jankowski*
17:00 - 17:40	Nature-inspired pillar-type smart multipurpose coatings - *Natalya Kizilova*
17:40 - 18:00	On influence of delayed adaptation of inflatable structure for evacuation of people at heights - *Blazej Poplawski, Rami Faraj, Dorian Gabryel*
18:00 - 18:20	Active SHM and impact sensing for composite aerospace structures based on the TEmSAL technology – Demonstration on a generic aircraft engine containment segment - *Tim Bätzel, Holger Böhm, Andreas Hornig, Maik Gude*
SS18 - Multi-physical, multi-scale and multidisciplinary modeling of smart structures and materials (16:40 - 18:20 – Room I.11) *Chairs: José L. Pérez-Aparicio, Polythecnic University of Valencia; Aurélio Lima Araújo, Instituto Superior Técnico*	
16:40 - 17:00	Parameter identification and modeling of superelastic shape memory alloy wires subjected to dynamic loads - *Niklas Lenzen, Sven Klinkel, Okyay Altay*
17:00 - 17:20	Three-dimensional auxetic mechanical metamaterials based on triangular prism architecture - *Andrea Sorrentino, Castagnetti Davide*
17:20 - 17:40	Non-linear finite element formulation of RAM memories based on phase-change thermoelectric materials - *Jose L. Perez-Aparicio, Roberto Palma*

TIME	EVENT
17:40 - 18:00	FEM modeling of smart self-biased magnetoelectric composites for energy transducer applications - *Tianwen HUANG, Hakeim Talleb, Aurélie Gensbittel, loic Becerra, Yunlin Zheng, Massimiliano Marangolo, Zhuoxiang Ren*
18:00 - 18:20	Comparison between linear and non-linear performance of vibration-based piezoelectric energy harvesters - *Roberto Palma, María Macías, Esther Puertas, Rafael Castro, Rafael Gallego*
MS05.1 - Adaptive civil engineering structures (16:40 - 18:20 – Room I.12) *Chairs: Malte von Scheven, University of Stuttgart; Lisa-Marie Krauß, University of Stuttgart*	
16:40 - 17:00	Benchmark of optimization strategies for actuator placement in adaptive structures - *Francesco Virgili, Gennaro Senatore, Lucio Blandini*
17:00 - 17:20	Shape control of adaptive funicular structures - *Andres Felipe Guerra Riaño, Péter L. Várkonyi*
17:20 - 17:40	A case study on tailoring stiffness for the design of adaptive rib-stiffened slabs - *Axel Trautwein, Tamara Prokosch, Manfred Bischoff*
17:40 - 18:00	Parametric model order reduction for parameter identification of adaptive high-rise structures - *Manuel Vierneisel, Amelie Zeller, Spasena Dakova, Michael Böhm, Oliver Sawodny, Peter Eberhard*
18:00 - 18:20	Evaluation of combined usage of laser scanner and thermal imaging camera for monitoring thermal expansions of Bibi-Khanum Mosque in Samarkand (Uzbekistan): First Steps - *Shakhzod Takhirov, Davron Matrasulov, Ilyas Aripov, Sultan Kudratov, Mirzokhid Akhmedov, Kobeysin Mukhammedinov*
GS02 - Characterization and Analysis of Multi-Functional Materials (16:40 - 18:20 – Room I.13) *Chairs: J.-F. Deü, Conservatoire national des arts et métiers; Tarak Ben Zineb, Université de Lorrain*	
16:40 - 17:00	Additive manufacturing of functional rubber based structures for soft robot grippers - *Malte Grube, Doran Nettig, Roman Thiel, Benjamin Klie, Ulrich Giese, Robert Seifried*
17:00 - 17:20	Smart actuators based on electroactive fluorinated polymers: Relationship between molecular organization and electroactive response - *Sara Zanchi, Sébastien Roland, Lena Le Goff, Damien Thuau, Pierre Margerit, Marc Rebillat, Ilias Iliopoulos, Sylvie Tencé-Girault*
17:20 - 17:40	Functional fatigue analysis of SMA-based actuators - *Marcos Lopes Leal Junior, Laurent Pino, Mahmoud Barati, Luc Saint-Sulpice, Laurent Daniel, Shabnam Arbab Chirani*
17:40 – 18:00	Programmable electroacoustic boundaries in acoustic waveguides: enhanced attenuation and non-reciprocal sound propagation. - *Emanuele De Bono, Morvan Ouisse, Manuel Collet, Edouard Salze, Hervé Lissek, Maxime Volery, Jacky Mardjono*
18:00 - 18:20	Shifting correction of integrated DIC method for measurement of residual stress - *Ming-Hsiang Shih, Wen-Pei Sung, Shih-Heng Tung*
SS08 - Machine learning enabled diagnostics and prognostics of composite structures (16:40 - 18:20 – Room II.6) *Chairs: Theodore Loutas, University of Patras; Nikos Chrysohoidis, University of Patras*	
16:40 - 17:00	Developing health indicators for composite structures based on a two-stage semi-supervised machine learning model using acoustic emission data - *Morteza Moradi, Juan Chiachío, Dimitrios Zarouchas*
17:00 - 17:20	Machine-learning-driven health monitoring diagnostics focused on composite structures utilizing smart layerwise spectral elements - *Christoforos Rekatsinas, George Giannakopoulos, Evangelos Karkaletsis*

TIME	EVENT
17:20 - 17:40	Right-first-time manufacture of sustainable composite laminates using statistical and machine learning modelling - *Antigoni Barouni, Moschos Papananias, Abu Saifullah, Khaled Giasin, Zhongyi Zhang, Hom Dhakal*
17:40 - 18:00	From single- to multi-stiffened panels : Upscaling a data-driven methodology for remaining useful life prediction - *Georgios Galanopoulos, Efthymios Fytsilis, Nan Yue, Agnes Broer, Dimitrios Milanoski, Dimitrios Zarouchas, Theodoros Loutas*
18:00 - 18:20	Digital twin-based damage quantification on composite structures - *Milanoski Dimitrios, Georgios Galanopoulos, Dimitrios Zarouchas, Theodoros Loutas*
Reception & Poster Session (18:20 - 20:30) (Main Hall)	
	Dynamic response mitigation adopting multi-damping technological strategy - *Mohammad Shamim Miah, Werner Lienhart*
	Hand gesture recognition using recurrent neural networks and synthetic data generation - *Francesco Sabbarese, Luciano Magliulo, Pietro Carratù, Marco Romano*
	Investigation of energy harvesting cycles exploiting domain switching based on a multiscale modeling approach - *Andreas Warkentin, Lennart Behlen, Andreas Ricoeur*
	Vibration suppression of large flexible structures subjected to multiple tonal excitations via a semi-active shunted piezoelectric tuned mass damper - *Grigorios M. Chatziathanasiou, Nikolaos A. Chrysochoidis, Dimitris A. Saravanos*
	Guided wave based damage identification in composite strips using inverse multiresolution wavelet methods - *Dimitris Dimitriou, Dimitris Saravanos*
	Tribological study of a new self-expanding nitinol stent dedicated to the treatment of venous stenosis - *Achref Sallami, Pierrick Malécot, Fabrice Richard, Michaël Fontaine, Arnaud Lejeune, Sébastien David, Paul Vescovo, Christophe Moureaux, Philippe Stempflé*
	Experimental and numerical investigation of 3D printed elastomeric composite with integrated SMA actuator - *Zhenbi Wang, Achyuth Ram Annadata, Anja Winkler, Rainer Barth, Anett Endesfelder, Chokri Cherif, Zimmermann Martina, Niels Modler*
	Multimodal vibration damping of a thin circular ring coupled to an analogous piezoelectric network - *Alan Luo, Boris Lossouarn, Alper Erturk*
	Effect of a resonant piezoelectric shunt on the structural vibrations of a truncated hydrofoil - *Yann Watine, Jacques André Astolfi, Jean-François Deü, Céline Gabillet, Boris Lossouarn*
	A constitutive theory and FE implementation for photosensitive hydrogel - *Yang Qingsheng, Liu Xinyu, Rao Wei*
	Enhanced finite-element model for optimized nonlinear piezoelectric energy harvesting – *Grigorios Kardarakos, Nikolaos A. Chrysochoidis, Dimitris Varelis, Dimitris A. Saravanos*

Day 2: Tuesday, July 4, 2023

TIME	EVENT
09:00 - 09:40	**Plenary Lecture III:** Intelligent Metastructures – From Adaptive Phononic Crystals to Mechano-Intelligence (Room I.04) - Prof. Kon-Well Wang, University of Michigan, USA
09:40 - 10:20	**Plenary Lecture IV:** Programmable Structure Development at Toyota Research Institute North America (Room I.04) - Mr. Shinnosuke Shimokawa, Toyota Research Institute North America, USA
10:20 - 10:40	Coffee break
MS03.3 - Smart structures: Methods and applications (10:40 - 12:40 – Room I.04) *Chairs: Bartłomiej Błachowski, IPPT PAN; Łukasz Jankowski, IPPT PAN*	
10:40 - 11:00	Semi-active sliding-mode control for local mitigation of structural vibrations by means of on/off nodes - *Mariusz Ostrowski, Aleksandra Jedlinska, Blazej Poplawski, Bartlomiej Blachowski, Grzegorz Mikułowski, Dominik Pisarski, Łukasz Jankowski*
11:00 - 11:20	Active stiffness tailoring of hybrid SMP-carbon epoxy bi-stable tape springs - *Aghna Mukherjee, Severin Huber, Paolo Ermanni*
11:20 - 11:40	A comparison between two different layouts of adaptive tuned mass dampers based on shape memory alloys - *Stefano Manzoni, Antonio Argentino, Marta Berardengo, Francescantonio Lucà, Marcello Vanali*
11:40 - 12:00	Semi-active modal control based on the energy transfer between structural vibration modes - *Mariusz Ostrowski, Bartlomiej Blachowski, Grzegorz Mikułowski, Łukasz Jankowski*
12:00 - 12:20	Experimental verification of a semi-active modal control algorithm for structures with lockable joints - *Grzegorz Mikułowski, Mariusz Ostrowski, Bartlomiej Blachowski, Łukasz Jankowski*
12:20 - 12:40	Novel active structural vibration control strategy based on deep reinforcement learning - *Yiang Zhang, Songye Zhu*
MS10.2 - Vibration based structural health monitoring (10:40 - 12:40 – Room I.12) *Chairs: Spilios Fassois, University of Patras; John Sakellariou, University of Patras*	
10:40 - 11:00	A fast identification algorithm for linear parameter varying vector AR models of short-term drivetrain vibration - *Luis David Avendaño-Valencia, Andriana S. Georgantopoulou*
11:00 - 11:20	Eigenvector assignement for damage localization with invariant eigenvalues - *Mathias B. Dahl, Martin D. Ulriksen, Morten E. Nielsen*
11:20 - 11:40	Modal shape reconstruction and damage identification of vibrating plates using inverse finite element method - *Adnan Kefal, M. Amin Abdollahzadeh, M. Yavuz Belur*
11:40 - 12:00	Interpreting environmental variability from damage sensitive features - *Josep Font-Moré, Luis David Avendaño-Valencia, David Garcia Cava, Marco Antonio Pérez*
12:00 - 12:20	Removal of effects from periodic excitation on operational modal analysis using spectral kurtosis and Fourier series - *Marcel Wiemann, Lukas Bonekemper, Peter Kraemer*
12:20 - 12:40	Real-time condition monitoring of mechanical systems using CNNs trained by multibody simulations - *Josef Koutsoupakis, Dimitrios Giagopoulos*

TIME	EVENT
SS21 - Recent advances in nonlinear modeling and numerical methods for smart materials and structures (10:40 - 12:40 – Room I.11) *Chairs: Alexander Humer, Johannes Kepler University; Astrid Pechstein, Johannes Kepler University*	
10:40 - 11:00	Bouncing balls and inflating balloons - Soft materials for soft actuators - *Rene Preuer, Carina Emminger, Umut Cakmak, Ingrid Graz*
11:00 - 11:20	Frequency- and field-dependent non-linearities of the shear strain piezoelectric coupling coefficient (d15) of a poled soft piezoceramic material (PZT PIC255) - *Ayech Benjeddou*
11:20 - 11:40	Thermodynamically consistent modelling of dielectric viscoelastic solids under finite strain - *Mario Kunzemann, Astrid Pechstein, Alexander Humer*
11:40 - 12:00	Dissipative response in ferroic materials: Continuum modeling and simulation of electro-magneto-mechanical coupling - *Alexander Humer, Astrid Pechstein, Michael Krommer*
12:00 - 12:20	Nonlinear modeling of ferroelectric plates as electro-elastic material surfaces - *Michael Krommer, Astrid Pechstein*
12:20 - 12:40	Efficient simulation of electromechanical coupling effects in thin shells at large deformations - *Astrid Pechstein, Yury Vetyukov, Michael Krommer*
GS03 - Ultrasonic monitoring of lightweight structures using integrated sensors (10:40 - 12:40 – Room I.13) *Chairs: Rauter Natalie, Helmut Schmidt University; Nikos Chrysohoidis, University of Patras*	
10:40 - 11:00	Probabilistic residual strength assessment of smart composite aircraft panels using guided waves - *Ilias Giannakeas, Fatemeh Mazaheri, Omar Bacarreza, Zahra Sharif Khodaei, M.H. Ferri Aliabadi*
11:00 - 11:20	Finite element analysis of guided waves in fiber metal laminates with delaminations - *Wendwoga Fulgence Nikiema, Natalie Rauter, Rolf Lammering*
11:20 - 11:40	Multi-objective SHM sensor path optimisation for damage detection in large composite stiffened panels - *Llewellyn Morse, Ilias Giannakeas, Vincenzo Mallardo, Zahra Sharif Khodaei, M.H. Ferri Aliabadi*
11:40 - 12:00	Numerical investigation on the relationship between the acoustoelastic effect and the modal properties of Lamb waves in aluminum - *Natalie Rauter, Tilmann Barth, Rolf Lammering*
12:00 - 12:20	Towards smart composites for structural health monitoring via highly sensitive capacitive wireless sensors - *Gilles Lubineau, Hassan Mahmoud, Hussein Nesser*
12:20 - 12:40	Revisiting multidisciplinary Time-of-Arrival estimation methods for impact detection on plates - *Lukas Grasboeck, Alexander Humer, Ayech Benjeddou*
SS15 - Functional and non-linear metamaterials (10:40 - 12:40 – Room II.6) *Chairs: Andrea Bergamini, EMPA; Bart Van Damme, EMPA*	
10:40 - 11:00	A nonlinear metamaterial induced by nonlinear damping effect with inertia amplifiers - *Bao Zhao, Henrik Thomsen, Xingbo Pu, Bart Van Damme, Andrea Bergamini, Eleni Chatzi, Andrea Colombi*
11:00 - 11:20	Nonlinear behaviour and homogenization of metaplates - *David Faraci, Comi Claudia*
11:20 - 11:40	Programming shape morphing in metamaterials - *Franziska Wenz, Tobias Lichti, Angela Schwarz, Alexander Leichner, Heiko Andrae, Christof Hübner, Christoph Eberl*
11:40 - 12:00	Single versus double phase response of polymer-based architected composite materials - *Nikolaos Karathanasopoulos, Agyapal Singh, Al-ketan Oraib*

TIME	EVENT
12:00 - 12:20	Smart materials and metamaterials for MEMS: a growing trend in Microsystems technology - *Omer M.O. Abdalla, Raffaele Ardito, Valentina Zega, Alberto Corigliano*
12:20 - 12:40	Enhanced energy harvesting using localized vibration modes in plates with an aperiodic array of scatterers - *Bart Van Damme, Bao Zhao, Domenico Tallarico, Sander Dedoncker, Andrea Bergamini*
MS11.1 - Smart manufacturing technologies (10:40 - 12:40 – Room II.8) *Chairs: Theodosis Theodosiou, University of Thessaly; George Margietis, Foundation for Research and Technology - Hellas*	
10:40 - 11:00	An elevator calibration recommender system for effective defect detection and prevention - *George Margetis, Nikolaos Dimitriou, Elpiniki Papageorgiou, Theodosios Theodosiou, Despoina Gavgiotaki, Konstantinos C. Apostolakis, Stavroula Ntoa, Dimitrios Tzovaras, Constantine Stephanidis*
11:00 - 11:20	Enhancing defect traceability and data integrity in Industry 4.0 using blockchain technology - *Andreana Mitsiaki, Nikolaos Dimitriou, George Margetis, Konstantinos Votis, Dimitrios Tzovaras*
11:20 - 11:40	Inspection of surface defects in metal processing industry using UNet-based architectures - *Lampros Leontaris, Nikolaos Dimitriou, Apostolos Nikolousis, Dimitrios Tzovaras, Elpiniki Papageorgiou*
11:40 - 12:00	CenterNet-based models for the detection of defects in an industrial antenna assembly process - *Theodosios Theodosiou, Theodoros Tziolas, Konstantinos Papageorgiou, Aikaterini Rapti, Elpiniki Papageorgiou, Sebastian Pantoja, Paschalis Charalampous, Nikolaos Dimitriou, Dimitrios Tzovaras, A Cuinas, J Mourelle, Andreas Boettinger, George Margetis*
12:00 - 12:20	Automated defect detection in battery line assembly via deep learning analysis - *Anastasios Tzelepakis, Lampros Leontaris, Nikolaos Dimitriou, Evangelia Koukidou, Dimitrios Bollas, Aristoklis Karamanidis, Dimitrios Tzovaras*
12:20 - 12:40	AI for detecting variations in the OEE data reception rate in the manufacturing industry - *Clara I. Valero, Fernando Boronat, Manuel Esteve, Carlos E. Palau*
12:40 - 14:10	Lunch — SC Meeting *(Room II.7)*
MS01.3 - Smart vibration control by electromechanical devices: modelling, tuning and applications (14:10 - 15:50 – Room I.04) *Chairs: Marta Berardengo, University of Genoa; Boris Lossouarn, Conservatoire National des Arts et Métiers*	
14:10 - 14:30	Feasibility study on a novel active control concept for vertical axis wind turbine blades vibration attenuation involving blade morphing - *Fred Nitzsche*
14:30 - 14:50	Self-contained velocity feedback unit with a seismic flywheel electromagnetic actuator - *Aleksander Kras, Paolo Gardonio*
14:50 - 15:10	Experimental identification of electromechanical coupling matrices for active vibration control - *Prabakaran Balasubramanian, Giovanni Ferrai, Celia Hameury, Tarcisio M. P. Silva, Abdulaziz Buabdulla, Giulio Franchini, Marco Amabili*
15:10 - 15:30	On the functionalization of composite structures using piezoelectric transducers for transportation applications: vibration control and energy harvesting - *Jonathan Rodriguez, Linjuan YAN, Kevin Billon, Mickaël Lallart, Manuel Collet, Claire Jean-Mistral, Simon Chesne*
15:30 - 15:50	Active vibration control and energy harvesting using an electromagnetic damper - *Jiayang Shen, Songye Zhu*

TIME	EVENT
MS09.1 - Guided waves in structures: Applications to Structural Health Monitoring and Materials Characterization (14:10 - 15:50 – Room I.11) *Chairs: Annamaria Pau, Sapienza University of Rome; Christian Boller, Saarland University*	
14:10 - 14:30	Acousto-ultrasonic composite transducers integration into thermoplastic composite structures via ultrasonic welding - *Shankar Galiana, Morteza Moradi, Peter Wierach, Dimitrios Zarouchas*
14:30 - 14:50	Wave propagation based damage detection in structural elements for civil engineering structures - *Tamara Nestorović, Alaa Diab*
14:50 - 15:10	Piezoceramic transducers for ultrasonic shear wave excitation – Modelling and numerical simulations - *Emil Aleksiewicz-Drab, Aleksandra Ziaja-Sujdak, Rafal Radecki, Mariusz Osika, Wiesław Staszewski*
15:10 - 15:30	Topological data analysis for Lamb waves based SHM of aeronautic composite materials under varying temperature - *Arthur Lejeune, Nicolas Hascoët, Marc Rebillat, Eric Monteiro, Nazih Mechbal*
15:30 - 15:50	Guided wave based damage identification in composite strips using inverse multiresolution wavelet methods - *Dimitris Dimitriou, Dimitris Saravanos*
SS14 - Microsensors for aerospace applications (14:10 - 15:50 – Room I.13) *Chairs: Ha Duong Ngo, University of Applied Sciences Berlin; Adina Neacsu, USOUND*	
14:10 - 14:30	Electronics for piezoelectric MEMS microphone arrays applied to aero-acoustic characterization of structures in wind tunnel tests - *Cindy A. Baez-Rivera, Jose A. Garcia Souto, Paula Cavarischia-Rega, Pablo Acedo*
14:30 - 14:50	PVDF sensor array for applications in aerospace - *Ha Duong Ngo, Julien Weiss, Cosimo Corsi, Lixiang Wu, Bei Wang, Zirui Pang*
14:50 - 15:10	MEMS speaker technology, modelling and application - *Ioana-Adina Neacsu, Andrea Rusconi, Christian Novotny, Paul Heyes*
15:10 - 15:30	Reactive sputtered aluminum nitride (AIN) films with preferred 002 plane of c-axis orientation - *Xuyuan Chen, Shashikant Pathak, Lixiang Wu*
15:30 – 15:50	A flush mount packaging concept for a microphone array for MEMS based aero-acoustic measurements - *KoljaErbacher*
MS05.2 - Adaptive civil engineering structures (14:10 - 15:50 – Room I.12) *Chairs: Malte von Scheven, University of Stuttgart; Axel Trautwein, University of Stuttgart*	
14:10 - 14:30	Advancing solar control and energy harvesting through the use of pneumatically actuated elastic adaptive facades - *Edith Anahi Gonzalez San Martin, Stephan Moser, Axel Koerner, Larissa Born, Götz Gresser, Robert Weitlaner, Jan Knippers*
14:30 - 14:50	Detection and identification of structural failure using the redundancy matrix - *Tamara Prokosch, Jonas Stiefelmaier, Manfred Bischoff*
14:50 - 15:10	Combining the redundancy concept and vibration control for actuator placement in adaptive structures - *Lisa-Marie Krauß, Malte Von Scheven, Manfred Bischoff*
15:30 - 15:50	Conceptual development and kinematics investigation of an adaptive building envelope photovoltaics system - *Panayiota Dimitriou, Marios C. Phocas, Eftychios G. Christoforou, Maria Matheou*
MS02.2 - Adaptive aerospace structures (14:10 - 15:50 – Room II.6) *Chairs: Hans Peter Monner, DLR; Onur Bilgen, Rutgers University*	
14:10 - 14:30	Flight demonstration of an active helicopter seat system for aircrew whole body vibration mitigation - *Yong (Eric) Chen*

TIME	EVENT
14:30 - 14:50	Design methodology of a deformable structure based hinge meant for a morphing structure. - *Laurent Warnet, Sam Benou, Maureen Materman, Ramona Sitohang, Hans Van Goozen, Wouter Van der Eijk*
14:50 - 15:10	Actuation fatigue and lifetime cycling of NiTiHf high temperature shape memory alloys - *James Mabe, Ibrahim Karaman, Alexander Demblon*
15:10 - 15:30	Shape adaptive metastructures using bistable laminates - *Ayan Haldar, Abhijeet Kumar, Paul Weaver*
15:30 - 15:50	Fabrication and characterization of a shape memory alloy driven composite morphing radiator prototype - *Priscilla Nizio, Darren Hartl*
MS11.2 - Smart manufacturing technologies (14:10 - 15:50 – Room II.8) *Chairs: Theodosis Theodosiou, University of Thessaly; George Margietis, Foundation for Research and Technology - Hellas*	
14:10 - 14:30	Ethical compliance of AI tools in industrial manufacturing - *Christopher Fischer, Trilateral Research*
14:30 - 14:50	EfficientDet application for detection of incorrect assemblies in the antenna manufacturing process - *Theodoros Tziolas, University of Thessaly*
14:50 - 15:10	Novel procedure for bonding piezoelectric transducers to thermoplastic composite structures by induction heating - *Tasdeeq Sofi, Institut für Polymerwerkstoffe und Kunststofftechnik, TU Clausthal*
15:10 - 15:30	Development of a cartesian robot with image processing and grasp detection - *Mohammad Saadeh, Southeastern Louisiana University*
15:30 - 15:50	The role of the carrier gas flow in the directed energy deposition process - *Adriano Pilagatti, Politecnico di Torino*
15:50 - 19:30	**Excursion to Olympia** Trip to Ancient Olympia, Tour in Anc. Olympia, Visit to Archaeological Site and Museum
19:30 - 22:30	**Conference Banquet**

Day 3: Wednesday, July 5, 2023

TIME	EVENT
09:00 - 09:40	**Plenary Lecture V:** Morphing for Aeronautical Applications – Recent Results of DLR's Activities (Room I.04) - Prof. Dr.-Ing. Hans Peter Monner, German Aerospace Center (DLR)
09:40 - 10:20	**Plenary Lecture VI:** Morphing Aerospace Structures with Shape Memory Alloy Actuators (Room I.04) - Prof. Dimitris Lagoudas and James Mabe, Texas A&M University, USA
10:20 - 10:40	Coffee break
SS20 - SHM demonstrations, applications & obstacles (10:40 - 12:40 – Room I.04) *Chairs: Christian Boller, Saarland University; Wieslaw Staszewski, AGH University of Science & Technology*	
10:40 - 11:00	Challenges to overcome obstacles in the application of structural health monitoring - *Christian Boller*
11:00 - 11:20	Fatigue crack detection in aerospace structures revisited – Some lessons learnt from ultrasonic guided wave applications - *Wiesław Staszewski, Christian Boller*
11:20 - 11:40	Structural health monitoring (SHM) of polymer-matrix composites (PMC) with the insertion of piezoelectric transducers and data fusion approach - *Loan Dolbachian, Walid Harizi, Zoheir Aboura*
11:40 - 12:00	An optimized strategy for estimating the rate of hydration of concrete using pzt sensors. - *Parida Lukesh, Sumedha Moharana*
12:00 - 12:20	Displacement monitoring based on image tracking with random irregular and special regular patterns: An application for testing of pipelines - *Shakhzod Takhirov, Kenichi Soga, Shih-Hung Chiu, Qinglai Zhang*
12:20 - 12:40	Effect of bonding material on survivability of surface-attached eddy current sensors - *Razvan Rusovici, Catalin Mandache, Georgios Anagnostopoulos*
SS04 - Numerical techniques for modelling and design of smart composite structures (10:40 - 12:40 – Room I.11) *Chairs: Aurélio Lima Araújo, Instituto Superior Técnico, Lisbon; Enrico Zappino, Politecnico di Torino, Turin*	
10:40 - 11:00	A refined one-dimensional model for the non-linear analysis of smart structures - *Enrico Zappino, Alfonso Pagani, Fangzhou Zhu, Erasmo Carrera, Weiqiu Chen*
11:00 - 11:20	Active layered composites: A variable kinematics approach with Stimulus Expansion Model - *Adrian Ehrenhofer, Michele D'Ottavio, Olivier POLIT, Thomas Wallmersperger*
11:20 - 11:40	Modelling of smart structures using peridynamics - *Francisco Vieira, Aurélio Araújo*
11:40 - 12:00	Optimization of passive shunted damping configurations for vibration attenuation - *Beatriz Luis, José Madeira, Aurélio Araújo*
12:00 - 12:20	Efficient layerwise theory-based time-domain spectral element for composite strips with piezo patches applying hybrid point-least squares continuity at patch fronts - *Mayank Jain, Santosh Kapuria*
12:20 - 12:40	Adaptive segmentation approach to handle material and loading discontinuities in the analytical solutions of structural problems - *Agyapal Singh, Nikolaos Karathanasopoulos*

TIME	EVENT
MS17.2 - Smart materials as sensors or actuators for machine elements and robotics (10:40 - 12:40 – Room I.12) *Chairs: Steffen Puchtler, Technical University of Darmstadt; Stephanie Seltmann, Chemnitz University of Technology*	
10:40 - 11:00	Experimental and numerical investigation of 3D printed elastomeric composite with integrated SMA actuator - *Zhenbi Wang, Achyuth Ram Annadata, Anja Winkler, Rainer Barth, Anett Endesfelder, Chokri Cherif, Zimmermann Martina, Niels Modler*
11:00 - 11:20	Fast return and full elastic recovery in self-healing elastomers for soft robotic actuation - *Jakob Langenbach, Camille bakkali-hassani, François Tournilhac, Sophie Norvez*
11:20 - 11:40	Simulation model for a low-power piezoelectric energy harvesting application - *Chen Chen, Dennis Bäcker, Welf-Guntram Drossel*
11:40 - 12:00	Smart machine elements – sensor-integrated elastomer couplings - *Arthur Ewert, Johannes D. M. Menning, Artem Prokopchuk, Thomas Rosenlöcher, E.-F. Markus Henke, Thomas Wallmersperger, Berthold Schlecht*
12:20 - 12:40	A soft free shape casted piezoelectric elastomer - *Lorenzo Nicolini, Andrea Sorrentino, Davide Castagnetti*
SS22 - Energy harvesting based on smart materials (10:40 - 12:40 – Room I.13) *Chairs: David Gibus, Savoie Mont Blanc University; Adrien Morel, Savoie Mont Blanc University*	
10:40 - 11:00	Power limits of electrodynamic wireless power transfer using piezoelectric materials - *Adrien Morel, David Gibus, Guillaume De Sainte Maresville, Michael Dosol, Ludovic Charleux, Émile Roux, pierre gasnier, Nicolas Garraud, Adrien Badel*
11:00 - 11:20	A non-linear piezoelectric energy harvesting setup for the continuous power supply of a wind turbine monitoring system - *T Plagianakos, Nikolaos Chrysochoidis, Grigoris Kardarakos, N Leventakis, N Margelis, G Bolonakis, N Sotiropoulos, F Giannopoulos, C Spandonidis, E Papadopoulos, Dimitris Saravanos*
11:20 - 11:40	An impact-based piezoelectric energy harvester utilizing spherical mass collision phenomenon - *Milad Hasani, Majid Khazaee, Sam Riahi, Alireza Rezania*
11:40 - 12:00	Enhanced electromechanical coupling of piezoelectric beams through an innovative design - *David Gibus, Pierre Gasnier, Adrien Morel, Olivier Freychet, Adrien Badel*
12:00 - 12:20	Broad-banded frequency-up piezoelectric-based energy harvester from heartbeats' cyclic kinetic motion for leadless pacemakers - *Majid Khazaee, Sam Riahi, Lasse Rosendahl, Alireza Rezaniakolaei*
12:20 - 12:40	Integration of PZT thick films on additively manufactured substrates for vibrational energy harvesting applications - *Hélène Debéda, Nabil Alaid, Shuo He, Bernard Plano, Eihab Abdel-Rahman, Armaghan Salehian*
MS12.2 - Magnteorheological materials and applications (10:40 - 12:40 – Room II.6) *Chairs: Weihua Li, University of Wollongong; Antonio J. F. Bombard, Federal University of Itajubá*	
10:40 - 11:00	Synthetic oil gels with organoclays in the formulation of magnetorheological fluids - *José Henrique Rodrigues Da Rocha, Júlio Gabriel De Falco Manuel, Antonio José Faria Bombard*
11:00 - 11:20	Pinch mode magnetorheological flow bench: Fluid flow analysis - *Janusz Goldasz, Bogdan Sapiński, Michal Kubik, Machacek Ondrej, Wojciech Bankosz*
11:20 - 11:40	Coupled FEM/CFD analysis of magnetorheological fluid journal bearings - *Athanasios K. Michalos, Pantelis G. Nikolakopoulos*

TIME	EVENT
11:40 - 12:00	Development of an innovative magnetorheological gearbox with variable damping for advanced positioning control - *Jian Yang, Yuyang Zhang, Weihua Li, Shuaishuai Sun*
12:00 - 12:20	Development of a hand exoskeleton with tunable stiffness and efficient energy for enhancement of grip endurance and strength - *Shuaishuai Sun, Xianlong Mai, Jian Yang, Weihua Li*
12:20 - 12:40	A controllable inerter based on magnetorheological dampers - *Cao Jing, Ning Donghong, Sun Shuaishuai, Liu Guijie, Du Haiping*
12:40 - 14:10	Lunch
MS03.4 - Smart structures: Methods and applications (14:40 - 16:20 – Room I.13) *Chairs: Bartłomiej Błachowski, IPPT PAN; Łukasz Jankowski, IPPT PAN*	
14:10 - 14:30	Semi-active structural control using viscous dampers and reinforcement learning - *Aleksandra Jedlinska, Dominik Pisarski, Grzegorz Mikułowski, Bartłomiej Błachowski, Łukasz Jankowski*
14:30 - 14:50	Comparison of material models of shape memory alloys applied to meso-scale interactive fibre rubber composites - *Achyuth Ram Annadata, Lucas A. Woodworth, Johannes Mersch, Thomas Gereke, Michael Kaliske, Chokri Cherif*
14:50 - 15:10	Self-adaptive impact absorption with a use of smart pneumatic absorber with piezo-electric valve - *Rami Faraj, Grzegorz Mikułowski, Rafał Wiszowaty, Cezary Graczykowski*
MS09.2 - Guided waves in structures: Applications to Structural Health Monitoring and Materials Characterization (14:40 - 16:20 – Room I.11) *Chairs: Annamaria Pau, Sapienza University of Rome; Nazih Mechbal, Ensam*	
14:10 - 14:30	Acoustic wave propagation to locate and evaluate obstructions in drains of dam - *André Taras, Mathieu Soares, Mariela Rodriguez, Matthieu Argouges*
14:30 - 14:50	Ultrasonic propagation in fractal porous material having rigid frame - *Zine El Abiddine Fellah, Abdellah Bouchendouka, Lou Marchand, Penelope Martin, Camille Perrot, Nicholas O. Ongwen, Tierry Scotti, Erick Ogam*
14:50 - 15:10	Design of mechanical metamaterials based on biphasic periodic microstructures - *Meng Wang, Annamaria Pau, Marco Lepidi*
15:10 - 15:30	New quasi-phase-matching techniques enhancing the second harmonic intensity in Lamb waves - *Xiaoqiang Sun*
MS13.2 - Functional materials with multiphysics coupling and their applications (14:40 - 16:20 – Room I.04) *Chairs: Wael Zaki, Khalifa University; Tarak Ben Zineb, Université de Lorraine*	
14:10 - 14:30	Novel smart material development with MXene/aacterial cellulose nanocomposite - *Shreyas Srivatsa, Wojciech Guziewicz, Agata Kolodziejczyk, Tadeusz Uhl*
14:30 - 14:50	Surface roughness characterization of nitinol samples fabricated using laser powder bed fusion - *Wael Zaki, Adriano Cebrian Carcavilla*
14:50 - 15:10	Control over the shape memory effect by tuning the 3D printing parameters and strategy - *Apostolos Argyros, Andreas Lianos, Alnto Koualiarella, Apostolos Arvanitidis, Anargyros Karakalas, Dimitris Lagoudas, Satish Bukkapatnam, Nikolaos Michailidis*
15:10 - 15:30	A numerical tool for the analysis of the thermomechanical behavior of cavity metamaterials based on the boundary element method - *Dimitrios C. Rodopoulos, Nikolaos Karathanasopoulos*

TIME	EVENT
SS07 - Smart Wind Turbine Rotor Design and Health Monitoring (14:40 - 16:20 – Room II.6) *Chairs: Thanasis Barlas, DTU Wind and Energy Systems, Denmark; Christian Tutivén, Universitat Politècnica de Catalunya*	
14:10 - 14:30	A data stream online structural damage classification methodology applied to an offshore wind turbine foundation - *Jersson Xavier Leon Medina, Núria Parés, Francesc Pozo*
14:30 - 14:50	Operational experience during a four year test program of active flaps on a wind turbine blade - *Alejandro Gomez Gonzalez, Peder Enevoldsen, Andrea Gamberini, Athanasios Barlas, Helge Aagaard Madsen*
14:50 - 15:10	Damage detection of offshore jacket-type wind turbine supports based on PCA data transformation and Mahalanobis distance - *Yolanda Vidal, Rhandall Valdez, Christian Tutiven*
15:10 - 15:30	Advanced clustering of environmental and operational conditions of an offshore wind turbine using Self-Organizing Maps - *Lukas Bonekemper, Marcel Wiemann, Holger Huhn, Peter Kraemer*
15:30 – 15:50	The Berlin research turbine – A testrig for active flow control of fatigue and extreme loads - *Sirko Bartholomay, Sascha Krumbein, Christian Navid Nayeri, Christian Oliver Paschereit, Kilian Oberleithner*
MS17.3 - Smart materials as sensors or actuators for machine elements and robotics (14:40 - 16:20 – Room I.12) *Chairs: Thomas Wallmersperger, Technical University of Dresden; Adrian Ehrenhofer, Technical University of Dresden*	
14:10 – 14:30	Spatially resolved strain measurement at meter scale using a carbon fiber based strain sensor and artificial neural networks - *Nils Wieja, Philip Johannes Steinbild, Tom Ehrig, Anja Winkler, Pawel Kostka, Jan Condé-Wolter, Niels Modler*
14:30 – 14:50	Large stroke pre-twisted sheath-run carbon nanotube artificial muscle fiber and the actuation mechanism under weak current - *Zenghui Zhao, Sufeng Zhu, Xufeng Dong, Min Qi, Hao Huang*
15:50 - 16:10	**Conference Closing**