

1st OLYMPIAD in ENGINEERING SCIENCE - OES2023
Olympia, May 23-27, 2023
Aldemar Olympian Village,
Greece



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US University
of Stavanger

ECIU

International Olympiad Committee in Engineering Science



Europe:

Prof. Dimitrios Pavlou,
University of Stavanger, Norway,
Chairman of the committee



Americas:

Prof. Hojjat Adeli,
Ohio State University, USA,
Honorary chairman of the committee



Asia:

Prof. Gui Yun Tian,
Newcastle University, UK, and University of
Electronic Science and Technology of China,



Africa:

Prof. Ahmed G. Radwan,
Nile University,
Egypt



Australia:

Prof. Priyan Mendis,
University of Melbourne,
Australia

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Prof. Nikolas Xiros, USA



Prof. Wim De Waele, Belgium



Prof. Kazuyuki Nakahata, Japan



Prof. Xiaoping Huang, China



Prof. Stefanos Zaoutsos, Greece

KEYNOTE SPEAKERS



Professor Hojjat Adeli, Ohio State University, USA

“Machine Learning: A Ubiquitous Transformative Technology in the 21st Century – Wonders and Pitfalls”



Professor Priyan Mendis, University of Melbourne, Australia

“Towards Net Zero: Decarbonizing the Construction Industry”



Professor Ahmed G. Radwan, Nile University, Egypt

"Journey from Fractional-Order Calculus to Portable Device for Food Quality"



Professor Gui Yun Tian, Newcastle University, UK,

“Electromagnetic nondestructive testing and structural health monitoring”



Professor Evangelos Hristoforou, National Technical University of Athens

“Residual Stress Monitoring and Rehabilitation in Steel Structures”



Professor Filippo Berto (online speech), Sapienza University of Rome and Norwegian University of Science and Technology

“Advanced local approaches for fatigue assessment”

About OLYMPIAD in ENGINEERING SCIENCE-OES2023

Olympiad in Engineering Science (OES 2023) is an international congress and contest aiming to disseminate and evaluate the recent advances in Engineering Science. Influential scientific minds and distinguished researchers meet in Olympia, the place of the origin of the Olympic Games, to share their knowledge and to assess the novelty of the research works presented in Olympiad.

Research Excellence

The International Olympiad Committee in Engineering Science will award the «Archimedes Medal for Outstanding Contributions in Engineering Science» and the “Olympiad Medals” to the five best papers of the conference.

Conference webpage: <https://www.uis.no/en/research/olympiad-in-engineering-science-oes-2023#/>

Topics:

Mechanics of Solids and Structures, including Computational Mechanics, Fracture Mechanics, Fatigue and Structural Integrity, Mechanics of Advanced Materials, Soil Mechanics, Nanomechanics and Nanotechnology, Tribology, Mechanics of Nonhomogeneous and Multi-Domain Media, Smart Materials and Structures, Hydrogen Storage and Transportation, Additively Manufactured Materials and Technology.

Mechanics of Fluids, including Computational Fluid Dynamics, Fluid-Structure Interaction, Viscous Fluid Flow, Turbulent Flow, Multi-Phase Flow.

Dynamics & Vibrations, including Structural Dynamics and Vibrations, Soil Dynamics and Earthquake Engineering, Robotics and Automatic Control.

Civil Engineering Structures, including Marine Structures, Pipelines, Building Information Technology (BIM), Bridges, Tunnels, Highrise Buildings.

Machine Learning, including Applications to Civil and Mechanical Engineering

Subsea Technology, including Offshore Field Development, Autonomous Submarines, Pipelines.

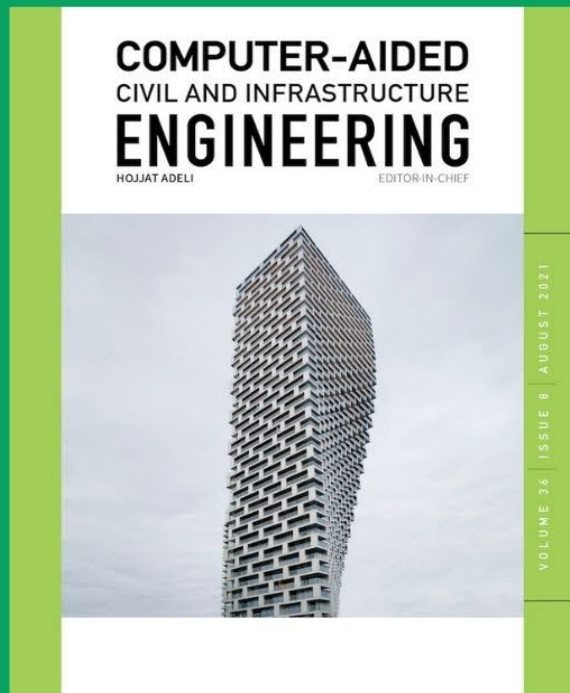
Structural Health Monitoring, including ML Algorithms and Sensors Technology.

Materials Science, including Corrosion and Corrosion Protection, Non-Destructive Evaluation, Magnetic Materials, Thermoelectric Materials, Nanomaterials

Thermodynamics & Heat Transfer, including Energy Production-Transformation-Saving

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Editor-in-Chief:
Hojjat Adeli,
Ohio State University, USA

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The program at a glance

DAY 1: Tuesday 23 May - Opening Ceremony

- 10.00-10.15** Room "Vasses" - Opening speech by **Dr. Øystein Lund Bø**, Dean of the faculty of Science and Technology, University of Stavanger, Norway
- 10.15-10.30** Room "Vasses" - Welcome by the **Dr. Mona Wettrhus Minde**, Institute Leader of Mechanical and Structural Engineering and Materials Science, University of Stavanger, Norway.
- 10.30-11.30** Room "Vasses" - Welcome by the members of the International Olympiad Committee:
Europe: **Prof. Dimitrios Pavlou**, University of Stavanger, Norway, (Chairman)
America: **Prof. Hojjat Adeli**, Ohio State University, USA, (Honorary chairman)
Asia: **Prof. Gui Yun Tian**, Newcastle University, UK, and University of Electronic Science and Technology of China, China
Africa: **Prof. Ahmed G. Radwan**, Nile University, Egypt
Australia: **Prof. Priyan Mendis**, University of Melbourne, Australia
- 11.30-12.00** Break
- 12.00-14.00** Welcome Reception: Restaurant "La Pergola". Standing cocktail including meal package and drinks package with beer, wine, soft drinks, and water.

DAY 2: Wednesday 24 May –

"Archimedes Medal Award", Keynote speeches 1 & 2 and Sessions 1-9

- 9.00-10.00** Room "Vasses" - "Archimedes Medal Award", Norwegian Academy of Technological Sciences Title, and Keynote speech 1:
Professor Hojjat Adeli: "Machine Learning: A Ubiquitous Transformative Technology in the 21st Century – Wonders and Pitfalls"
- 10.00-10.30** Room "Vasses" - Keynote Speech 2:
Professor Priyan Mendis: "Towards Net Zero: Decarbonizing the Construction Industry"
- 10.30-11.00** Coffee Break
- 11.00-12.40** Three parallel sessions 1-3 in rooms "Nestor", "Neda" and "Vasses"
- 12.40-13.40:** Time for lunch
- 13.40-15.00** Three parallel sessions 4-6 in rooms "Nestor", "Neda" and "Vasses"
- 15.00-15.20** Coffee Break
- 15.20-17.00** Three parallel sessions 7-9 in rooms "Nestor", "Neda" and "Vasses"

DAY 3: Thursday 25 May –

Keynote speech 3 & 4, “Olympiad Medals” award and Sessions 10-16

- 9.00-9.30** **Keynote speech 3, Room “Vasses”:** Professor Ahmed G. Radwan: "Journey from Fractional-Order Calculus to Portable Device for Food Quality"
- 9.30-10.00** **Keynote Speech 4, Room “Vasses”:** Professor Gui Yun Tian: “Electromagnetic nondestructive testing and structural health monitoring”
- 10.15-11.00** **Room “Vasses”:** “Olympiad Medals” award to the authors of the five best papers
- 11.00-11.20** **Coffee Break**
- 11.20-13.00** **Three parallel sessions 10-12 in rooms “Nestor”, “Neda” and “Vasses”**
- 13.00-14.00:** **Time for Lunch**
- 14.00-15.20** **Two parallel sessions 13-14 in rooms “Nestor”, “Neda” and “Vasses”**
- 15.20-16.00** **Coffee Break**
- 16.00-17.40** **Two parallel sessions 15-16 in rooms “Nestor”, “Neda” and “Vasses”**
- 19.00-21.00** **Conference Banquet: Restaurant “Thalassa”**

DAY 4: Friday 26 May –

Keynote speech 5 & 6 and Sessions 17-18

- 09.00-09.30** **Keynote speech 5:** Room “Vasses”: Professor Evangelos Hristoforou: “Residual Stress Monitoring and Rehabilitation in Steel Structures”
- 09.30-10.00** **Keynote Speech 6:** Room “Vasses”: Professor Filippo Berto (online speech): “Advanced local approaches for fatigue assessment”
- 10.00-10.20** **Coffee Break**
- 10.20-12.00** **Two parallel sessions 17-18 in rooms “Nestor”, “Neda”**
- 12.10-12.30** **Closing Ceremony in room “Vasses”.**
- 15.30-20.30** **Conference Excursion to Ancient Olympia and Archaeological Museum**

DAY 5: Saturday 27 May

- 09.00-11.00** **Round Tables for Networking, Collaborations, and Synergies at the Restaurant**

Detailed Program

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Professor Priyan Mendis: “Towards Net Zero: Decarbonizing the Construction Industry”

10.30-11.00 Coffee Break

11.00-12.40 Three parallel sessions 1-3

Session 1-Room “Nestor”: Materials Science 1

Session Chairs	Andreas Delimitis and Cornelia Baera	
11.00-11.20	Paper# 26	Correlation of nanostructural features with phase transition in thermochromic VO ₂ thin films for smart windows applications <i>Ayushi Rai, Cosmin Istrate, Gabriel Socol, Nicusor Iacob, Vidar Hansen, Cristian N. Mihailescu, Victor Kuncser and Andreas Delimitis</i>
11.20-11.40	Paper# 78	Microstructural Observations and EBSD Analysis of the Blown-Powder Directed Laser Deposited Super Duplex Stainless Steel UNS S32750 <i>Navid Sayyar, Vidar Hansen, Wakshum Mekonnen Tucho, Mona Wetrhus Minde</i>
11.40-12.00	Paper# 83	Comparative studies of mechanical properties and microstructure of LPBF-fabricated virgin and reused 316L Stainless Steel <i>Wakshum Mekonnen Tucho, Ole Kristian Bjørge, Shushil Bista, Mette Lokna Ned-reberg, Vidar Hansen</i>
12.00-12.20	Paper# 41	Carbon Nanotubes: Applications in Medicine – targeted cancer therapy <i>Andreea Miroiu¹</i>
12.20-12.40	Paper# 67	Optimization of Thermochromic Coatings for Smart Windows Applications <i>Victor Kuncser, Cristian N. Mihailescu, Nicusor Iacob, Gabriel Schinteie, Claudiu Locovei, Mihaela Baibarac, Ion Smaranda, Gabriela Dorcioman, Gabriel Socol, Ayushi Rai and Andreas Delimitis</i>

Session 2-Room “Neda”: Marine Technology

Session Chairs	Chaminda Bandara and Tiago Ferradosa	
11.00-11.20	Paper# 42	Study on the model to determine riverbed scour and the influence of bridge construction on riverbed deformation <i>Ana Margarida Bento, Tran Quang Minh, Tiago Ferradosa, Hélder S. Sousa, Huan X.Nguyen, José Campos e Matos</i>
11.20-11.40	Paper# 60	Experimental study on scour around an oscillating wave surge converter at co-located with an offshore wind foundation <i>Ana Margarida Bento, Mr Filipe Miranda, João Chambel, Paulo Rosa Santos, Tiago Fazeres Ferradosa, Francisco Taveira Pinto</i>
11.40-12.00	Paper# 61	Investigation of wave reflection at different water heights in a wave-current flume <i>Filipe Miranda, Ana Margarida Bento, João Chambel, Tiago Fazeres Ferradosa, Paulo Jorge Rosa-Santos, Francisco Taveira Pinto</i>
12.00-12.20	Paper# 8	Effect of skirt structure on vibro-acoustic characteristics of engine piston <i>Anastasios Zavos, Pantelis G. Nikolakopoulos</i>
12.20-12.40	Paper# 106	Identification of unbalance in a rotating system using Artificial Neural Networks <i>Ioannis Tselios, Pantelis Nikolakopoulos</i>

Session 3-Room “Vasses”: Automatic Control

Session Chairs	Erdem Aktosun and Kris Hectors	
11.00-11.20	Paper# 90	Distributed supervisor control for a large-scale waterway lock system <i>Fotis N. Koumboulis, Dimitrios G. Fragkoulis, Maria P. Tzamtzi and Panayotis G. Totomis</i>
11.20-11.40	Paper# 102	Supervisory control of multiple product flow for a Flexible Manufacturing System <i>Fotis N. Koumboulis, Dimitrios G. Fragkoulis, Maria P. Tzamtzi and Dimitrios Pa-padopoulos</i>
11.40-12.00	Paper# 81	A Physicomimetic Approach to Distributed Intelligence and Control of Autonomous Watercraft <i>Nikolaos I. Xiros, Erdem Aktosun</i>
12.00-12.20	Paper# 85	An Oscillator Model Applied to Power Take-Off and Tuned Control for Renewable Energy <i>Nikolaos I. Xiros, Erdem Aktosun</i>

12.40-13.40: Time for lunch

13.40-15.00 Three parallel sessions 4-6

Session 4-Room "Nestor": Mechanics of Fluids 1

Session Chairs	Pantelis Nikolakopoulos and Knut Erik Giljarhus	
13.40-14.00	Paper# 36	Simulation-based data-driven wind engineering - analyzing the influence of building proximity and skyways on pedestrian comfort. <i>Knut Erik Teigen Giljarhus and Trond-Ola Hågbo</i>
14.00-14.20	Paper# 33	Influence of viscosity on density-unstable fluid-fluid displacement in inclined eccentric annuli <i>Maryam Ghorbani, Knut Erik Teigen Giljarhus and Hans Joakim Skadsem</i>
14.20-14.40	Paper# 63	Aquabreak Project: A nature-based solution towards food demand and coastal protection <i>Filipe Miranda, Bárbara Proença, Diogo Fonseca, Piet Haerens, Ana Margarida Bento, Sudath Siriwardane, Dimitrios Pavlou, Paulo Rosa Santos, Francisco Taveira Pinto, Tiago Fazeres Ferradosa</i>
14.40-15.00	Paper# 66	A combined Machine Learning and Computational methodology for optimum Thrust Bearings' behavior in mixed lubrication regime <i>Konstantinos P. Katsaros and Pantelis G. Nikolakopoulos</i>

Session 5-Room "Neda": Materials Engineering 2 - Additive Manufacturing

Session Chairs	Hirpa Lemu and Yosef W Adugna	
13.40-14.00	Paper# 55	Anatomical model reconstruction (solid modeling) using a reverse engineering approach <i>Yosef W Adugna, Navaneethan S Kurukkal and Hirpa G Lemu</i>
14.00-14.20	Paper# 80	Study on optimization methods of 3D printer process parameters for use in Orthopedics fracture classification and surgical planning <i>Yosef W Adugna, Heinrich Brüggemann, Erik Hafnor, Ane Djuv, Aksel Paulsen, Hanne R. Hagland and Hirpa G Lemu</i>
14.20-14.40	Paper# 104	Experimental Study of Mechanical Properties and Numerical Simulation of 3D Printed Carbon Fiber Reinforced Polymer Composites <i>Adugna D. Akessa and Hirpa G. Lemu</i>
14.40-15.00	Paper# 34	Metaheuristic Optimization of Compressive Strength and Microstructures for Fused Deposition Modelling using PLA Material <i>Kedir Hussen, Hirpa G. Lemu, Amanuel Diriba Tura</i>

Session 6-Room “Vasses”: Mechanics of Solids and Structures 1 - Fatigue and fracture

Session Chairs	Wim De Waele and Gerhard Ersdal	
13.40-14.00	Paper# 100	Rapid determination of fatigue properties of as-built and machined wire+arc additively manufactured steel specimens <i>Wim De Waele, Kaveh Samadian and Hadi Pirgazi</i>
14.00-14.20	Paper# 37	Analysis of the Effects of Welding Induced Residual Stress on Fatigue Crack Growth of Welded Joints <i>Yahiya Ahmed Kedir and Hirpa G. Lemu</i>
14.20-14.40	Paper# 10	Damage Assessment of Crack Growth Through Numerical Modelling and Rain flow Counting Method <i>Yohannes Regassa and Hirpa G. Lemu</i>
14.40-15.00	Paper# 111	Effect of material properties in predicting the fatigue life of offshore pipelines subjected to VIV <i>Saravanan R, Bhattacharya S.K, Ramana Murthy M.V and Panneer Selvam R</i>

15.00-15.20 Coffee Break

15.20-17.00 Three parallel sessions 7-9

Session 7- Room “Nestor”: Dynamics and Vibration 1

Session Chairs	Ranjith Dissanayake and Nirosha Adasooriya	
15.20-15.40	Paper# 11	Experimental Investigation on Characteristics of Combined Viscous and Coulomb Damped System <i>Dissanayake G. B., Dammika A. J., Siriwardane Sudath C., Bandara C. S. , Jayasinghe S. C. , Dissanayake P. B. R.</i>
15.40-16.00	Paper# 47	The Algebraic Frequency Equation of a Taut String Damped at a Fraction Location: Solution Structures and Properties <i>Zhang Xiaodong, Tang Chunxia, Zheng Gang, Wang Mengli, Sun Ceshi, Liao Wei and Gu Zhuangzhuang</i>
16.00-16.20	Paper# 48	Comparative study on frequency-based cable parameter identification algorithms <i>Ceshi SUN, Gang Zheng, Jigang Yu, Peng Chen and Chuan Zeng</i>
16.20-16.40	Paper# 51	Quantitative analysis of landslide and debris flow based on seismic signal <i>Jiaojiao Zhou, Yifei Cui, Yan Yan, Xin Tian, Li Li</i>
16.40-17.00	Paper# 73	Enhancing Medical Surveillance in Remote Areas with IoT-Based COVID-19 Biosensor System and LoRaWAN Network <i>Antonios Georgas, Elias Exouzidis and Spyridon Angelopoulos</i>

Session 8-Room “Neda”: Materials Engineering 3 - Construction/building materials

Session Chairs	Stefanos Zaoutsos and Ana Margarida Bento	
15.20-15.40	Paper# 22	A novel technique for strengthening Reinforced Concrete shear-deficient members using Fiber-Reinforced Polymer rope as Near Surface Mounted reinforcement <i>Violetta K. Kytinou, Viktor Gribniak, Emmanouil Golias, Adamantis G. Zaprís, George Sapidis, Constantin E. Chalióris</i>
15.40-16.00	Paper# 45	Recycled Glass and PET Waste as Aggregates Replacement in Eco-Innovative Concrete for Alveolar Concrete Blocks <i>Ofelia Corbu, Livia Anastasiu, Cornelia Baeră, Raluca Istoan and Mihai-Liviu Drago-mir</i>
16.00-16.20	Paper# 84	Experimental Approach Regarding the Potential of Spent Garnets Use as Mineral Addition in Cement-Based Construction Products <i>Baeră Cornelia, Aurelian Gruin, Bogdan Bolborea, Remus Chendeş, Dumitru-Doru Burduhos-Nergiş and Luiza Varga6</i>
16.20-16.40	Paper# 19	Investigation the Tribological Behavior of Enset/Sisal Hybrid Reinforced Polyester Composite <i>Abera E. Bekele, Mohera G. Jiru, Hirpa G. Lemu</i>
16.40-17.00	Paper# 50	Dynamic Properties of Carbon Fiber Reinforced Polymers: The Effect of Thermal Fatigue at Extreme Low Temperatures <i>S P Zaoutsos and D Zachos</i>

Session 9-Room “Vasses”: Structural Health Monitoring 2

Session Chairs	Maria P. Tzamtzi and Yanyan Sha	
15.20-15.40	Paper# 28	A finite element model of a steel truss bridge validated with controlled load test data <i>Kris Hectors, Lien Saelens, Jona Bracke, Hans De Backer, Wim De Waele</i>
15.40-16.00	Paper# 16	Multiaxial Fatigue life evaluation of rib-diaphragm joints in orthotropic steel bridge decks: A nodal force-based framework <i>Bruno Villoria, Sudath C Siriwardane and Jasna Jakobsen</i>
16.00-16.20	Paper# 64	A UAV and CNN-based bridge rivet inspection and diagnosis method <i>Tengjiao Jiang, Gunnstein Thomas Frøseth, Anders Rønquist</i>
16.20-16.40	Paper# 30	Prediction of remaining fatigue life of steel railway bridges using curve based sequential law <i>M.A.V.S.G. Meegalla, P.V.D.P.L. Saparamadu, I.M.U.I. Wijayarathna, T.M. Pallewatta, P.A.K. Karunananda</i>
16.40-17.00	Paper#71	Modulation of fluid streams by detonation, for cutting and penetration of metallic structures <i>Nicuser Iacob, Ioan-Alexandru Ivan, Gabriel Schinteie, Claudiu Locovei, Mihai Burdusel and Victor Kuncser</i>

DAY 3: Thursday 25 May – Keynote speech 3 & 4, “Olympiad Medals” award and Sessions 10-16

9.00-9.30 Keynote speech 3, Room “Vasses”: Professor Ahmed G. Radwan: "Journey from Fractional-Order Calculus to Portable Device for Food Quality"

9.30-10.00 Keynote Speech 4, Room “Vasses”: Professor Gui Yun Tian: “Electromagnetic nondestructive testing and structural health monitoring”

10.15-11.00 Room “Vasses”: “Olympiad Medals” award to the authors of the five best papers

11.00-11.20 Coffee Break

11.20-13.00 Three parallel sessions 10-12

Session 10-Room “Nestor”: “Structural Integrity 1” - Session dedicated to Professor Ivar Langen

Session Chairs	Gerhard Ersdal and Mona Wetrhus Minde	
11.20-11.40	Special speech	Speech dedicated to Professor Ivar Langen Speaker: Ove T. Gudmestad
11.40-12.00	Paper# 112	Design of facilities to account for climate changes <i>Ove T. Gudmestad</i>
12.00-12.20	Paper# 13	Lateral-Torsional Buckling Capacity of Beams: An Analytical Formula for Beams with Patch Corrosion <i>Sudath C. Siriwardane and Dimitrios Pavlou</i>
12.20-12.40	Paper# 21	Nonlinear Fatigue Life Prediction Based on a Plastic Strain Amplitude Assumption <i>Fredrik Bjørheim</i>
12.40-13.00	Paper# 89	Analytical Estimation of Natural Frequencies of Offshore Monopile Wind Turbines <i>Hadi Pezeshki, Dimitrios Pavlou and Sudath C. Siriwardane</i>

Session 11-Room “Neda”: Mechanics of Solids and Structures 2

Session Chairs	Kazuyuki Nakahata and Stefanos Zaoutsos	
11.20-11.40	Paper# 59	Simulation of Photoacoustic Wave Generation and Propagation in Fluid-solid Coupled Media Using Finite Integration Technique <i>Kazuyuki Nakahata, Akihiro Miki and Taizo Maruyama</i>
11.40-12.00	Paper# 82	Determination of the presence or absence of defect for laser ultrasonic visualization testing using transfer learning <i>Takahiro Saitoh, Yuto Kuwabara and Tsuyoshi Kato</i>
12.00-12.20	Paper# 40	Numerical Simulation of Stress in a Rotational Autofrettaged Thick Walled Tube using the actual Material Stress-strain Curve <i>Xiaoping Huang, Dimitrios Pavlou</i>
12.20-12.40	Paper# 97	A Multi-objective Optimization Design Framework for Thin-walled Tubular Deployable Composite Boom for Space Applications <i>Tian-Wei Liu, Jiang-Bo Ba, Nicholas Fantuzzi</i>
12.40-13.00	Paper#25	Electron channeling / ALCHEMI: a long-established structure refinement electron microscopy technique for innovative nanomaterials <i>Andreas Delimitis</i>

Session 12-Room “Vasses”: Structural Engineering 1: Concrete structures

Session Chairs	Cornelia Baera and Aurelian Guin	
11.20-11.40	Paper# 6	Mechanical properties of minibar reinforced concrete with low-heat cement <i>Yanyan Sha and Shenyi Shen</i>
11.40-12.00	Paper# 93	Development of Nanomodified Graphene Concrete using Machine Learning Methods <i>Thusitha Ginigaddara, Thushara Jayasinghe and Priyan Mendis</i>
12.00-12.20	Paper# 4	Developing an Adaptive Design Concept for Structural Composites <i>Viktor Gribniak and Mantas Garnevičius</i>
12.20-12.40	Paper# 7	Experimental and numerical investigations on the impact response of minibar reinforced concrete columns <i>Yanyan Sha and Einar Mesloe</i>
12.40-13.00	Paper# 9	Quantifying Residual Strength of Cement-Based Reinforced Composites under Repeated Loads <i>Viktor Gribniak, Haji Akbar Sultani, Arvydas Rimkus and Aleksandr Sokolov</i>

13.00-14.00: Time for Lunch

14.00-15.20 Two parallel sessions 13-14**Session 13-Room “Nestor”: “Structural Integrity 2”**

Session Chairs	Sudath Siriwardane and Ofelia Corbu	
14.00-14.20	Paper# 88	Risk-informed decision-making for assessment of existing structures <i>Gerhard Ersdal</i>
14.20-14.40	Paper# 17	Fatigue Life Assessment of a Road Bridge: An Approach based on Measured Corrosion, Actual Traffic Loading and Non-linear Damage Model <i>Mehari Tsadik Gebremeskel, Arve Tuvera Cruz and Nirosha D. Adasooriya</i>
14.40-15.00	Paper# 92	On the use of Hybrid Contextual Decision Solutions (HCDS) for ensuring Resilience in Complex engineering assets and systems <i>Mohammad Bakhshandeh and Jayantha P Liyanage</i>
15.00-15.20	Paper# 14	Lateral-Torsional Buckling of I-Beams: Experimental Investigation <i>Mikael Ruud, Samdar Kakay and Sudath C. Siriwardane</i>

Session 14-Room “Neda”: Mathematical Physics

Session Chairs	Tor Hemmingsen and Fredrik Bjørheim	
14.00-14.20	Paper# 56	A Mathematical Approach for Recreation Non-Symmetric 2D Railway Alignments <i>Gerardo Casal, Alberte Castro, Duarte Santamarina, and Miguel E. Vázquez-Méndez</i>
14.20-14.40	Paper# 91	The Singular Function Boundary Integral Method for solving three-dimensional Laplacian problems with conical vertex singularities <i>Hind Lamsikine, Otmane Souhar and Georgios C. Georgiou</i>
14.40-15.00	Paper# 52	Heat Exchanger Optimization for Thermoelectric Generating Power System <i>Kyeong-ho Shin, Yunho Jung and Joo-Hyung Kim</i>
15.00-15.20	Paper# 5	Analytical solutions of axial annular Newtonian flows with dynamic wall slip <i>Meryieme EL Farragui, Otmane Souhar and Georgios C. Georgiou</i>

15.20-16.00 Coffee Break

16.00-17.40 Two parallel sessions 15-16**Session 15-Room “Neda”: Electronic sensors and Intelligent Systems**

Session Chairs	Georgios Georgiou and Knut Erik Giljarhus	
16.00-16.20	Paper# 72	3D Electric field simulation and proper shielding consideration under overhead high voltage transmission lines in the presence of human body <i>Tatiana Damatopoulou, Christos Christodoulou, Ioannis Gonos, Antonios Kladas, Evangelos Hristoforou</i>
16.20-16.40	Paper# 75	Synthesis of BaxSr(1-x)TiO3 by sintering and sol-gel methods <i>Nefeli Motsi, Nikolaos Siafakas and Evangelos Hristoforou</i>
16.40-17.00	Paper# 76	Antenna Catheter Modeling for Acute Ischemic stroke therapy <i>Maria Revythi, Vassilios Sideris, Angelo Ferraro and Evangelos Hristoforou</i>
17.00-17.20	Paper# 107	Intelligent automated solar shading system based on Internet of Things technologies <i>Spyridon Angelopoulos, Georgia Stamou and Nikolaos Stefanakis</i>
17.20-17.40	Paper#110	Implementation of a Communication Framework for an Automatic Solar Shading System <i>Georgia Stamou, Spyridon Angelopoulos, Nikolaos Stefanakis and Evangelos Hristoforou</i>

Session 16-Room “Vasses”: Structural Health Monitoring 1

Session Chairs	Yanyan Sha and Spyridon Angelopoulos	
16.00-16.20	Paper# 77	Stress monitoring in magnetostrictive steels of cylindrical shape <i>E. Mangiorou</i>
16.20-16.40	Paper# 35	Fast non-contact measurement and alignment method for rail profile using a 3D scanner <i>Zhicheng Hu, Albert Lau, Gunnstein T. Froseth</i>
16.40-17.00	Paper# 23	An innovative health-monitoring approach for Fiber-Reinforced Polymer debonding diagnosis through pullout and shear tests <i>Violetta K. Kytinou, Viktor Gribniak, Adamantis G. Zapris, Constantin E. Chalioris</i>
17.00-17.20	Paper# 54	Highly efficient multi-resolution topology optimization based on the Kriging-Interpolation network <i>Wenliang Qian and Hui Li</i>
17.20-17.40	Paper# 44	Further investigations regarding a new approach on estimating concrete compressive strength via ultrasonic pulse velocity <i>Bogdan Bolborea, Cornelia Baeră, Aurelian Gruin, Dumitru-Doru Burduhos-Nergiş</i>

19.00-21.00 Conference Banquet, Restaurant “Thalassa”

DAY 4: Friday 26 May – Keynote speech 5 & 6 and Sessions 17-18

09.00-09.30 Keynote speech 5, Room “Vasses”: Professor Evangelos Hristoforou: “Residual Stress Monitoring and Rehabilitation in Steel Structures”

09.30-10.00 Keynote Speech 6, Room “Vasses”: Professor Filippo Berto (online speech): “Advanced local approaches for fatigue assessment”

10.00-10.20 Coffee Break

10.20-12.00 Two parallel sessions 17-18

Session 17-Room “Nestor”: Machine Learning

Session Chairs	Hirpa Lemu and Tor Hemmingsen	
10.20-10.40	Paper# 94	A Numerical Study on the Early-Stage Performance of 3D Composite PLA/316L Scaffolds in Tissue Engineering <i>George Drakoulas, Theodore Gortsas, Stephanos Tsinopoulos, and Demosthenes Polyzos</i>
10.40-11.00	Paper# 3	Ensembled multi-classification generative adversarial network for condition monitoring in streaming data with emerging new classes <i>Yu Wang, Qingbo Wang and Alexey Vinogradov</i>
11.00-11.20	Paper# 49	Ultrasonic-based stress identification of a reinforced concrete beam via USR-Net <i>Zheng Gang, Yu Jigang, Gu Zhuangzhuang and Zhang Benniu</i>
11.20-11.40	Paper# 53	Limited-Data-Driven Machine Learning in Structural Health Diagnosis <i>Yang Xu, Yuequan Bao and Hui Li</i>
11.40-12.00	Paper# 29	Revisiting of three bridge failures in Sri Lanka <i>A.S.Munasinghe, M.W.P.Chathurika, E.G.A.N.Ravindra, P.A.K. Karunananda</i>

Session 18-Room “Neda”: Structural Engineering 2: Asset integrity

Session Chairs	Andreas Delimitis and Ofelia Corbu	
10.20-10.40	Paper# 15	Buckling of Aluminum Columns: Analytical and Experimental Analysis <i>Raguvvarman Uthayamoorthy, Sudath C. Siriwardane and Jarle Berge</i>
10.40-11.00	Paper# 98	<i>Environment-Assisted Corrosion of Offshore Wind Turbine structures: A Framework and Fatigue Curves</i> <i>Nirosha D. Adasooriya and Tor Hemmingsen</i>
11.00-11.20	Paper# 46	Non-Linear Buckling Analysis of Ship Hull Stiffened Panels <i>Enes Hacıhamud, Kjetil Dahl, Ole Gabrielsen, Hirpa G. Lemu and Sudath C. Siriwardane</i>
11.20-11.40	Paper# 39	Modern Materials Used for Strengthening of Existing Masonry Structures <i>Sorin Dan, Corneliu Bob, Aurelian Gruin and Catalin Badea</i>
11.40-12.00	Paper# 27	Innovative finishes obtained by integrating agro-industrial waste into the circular economy and their impact on indoor air quality <i>Vasilica Vasile, Irina Popa, Cristian Petcu, Alina Dima, Mihaela Ion</i>

12.10-12.30 Closing Ceremony, Room “Vasses”

12.30-13.30: Time for Lunch

15.30-20.30 Conference Excursion to Ancient Olympia and Archaeological Museum

DAY 5: Saturday 27 May

09.00-12.00 Round Tables for Networking, Collaborations, and Synergies at the Restaurant