# The 11th International Conference on Fracture Fatigue and Wear (FFW 2023)

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# The 6th International Conference on Numerical Modelling in Engineering (NME 2023)

## Conferences Programme

Venue: physically (NH Gent Belfort) and online (MS Teams)

NH Gent Belfort Hotel Address: Hoogpoort 63, 9000 Ghent - Belgium

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Videos NME: http://www.academicconf.com/video?confname=nme2023

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# The 11th International Conference on Fracture Fatigue and Wear (FFW 2023)
# August 29-31, 2023

## Chairman

**Prof. Magd Abdel Wahab**
Ghent University, Belgium

## International Scientific Committee

Prof. S Abdullah, Universiti Kebangsaan Malaysia, Malaysia
Dr. J Abenojar, Universidad Carlos III de Madrid, Spain
Dr. A H Ertas, Bursa Technical University, Turkey
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Prof. K Oda, Oita University, Japan
Prof. J Song, Ostwestfalen-Lippe University, Germany
Prof. J Toribio, University of Salamanca, Spain
Dr. Dagang Wang, China University of Mining and Technology, China
Prof. T Hattori, Shizuoka Institute of Science and Technology, Japan
Prof. Hung Nguyen-Xuan, HUTECH, Vietnam
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Prof. F Rezai-Aria, Ecole des Mines d'Albi, France
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Prof. Timon Rabczuk, Bauhaus University Weimar, Germany
Prof. X. Zhuang, Leibniz Unversität Hannover, Germany
Dr. C Le Thanh, Open University Ho Chi Minh City, Vietnam
Dr. Y.L. Zhou to Xi'an Jiaotong University, China

# The 6th International Conference on Numerical Modelling in Engineering (NME 2023)

## August 29-31, 2023

### Chairman

**Prof. Magd Abdel Wahab**
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### International Scientific Committee

Prof. L. Vanegas Useche, Universidad Tecnológica de Pereira, Colombia
Prof. J Toribio, University of Salamanca, Spain
Dr. Dagang Wang, China University of Mining and Technology, China
Prof. Hung Nguyen-Xuan, HUTECH, Vietnam
Dr. S Khatir, Ghent University, Belgium
Prof. Timon Rabczuk, Bauhaus University Weimar, Germany
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Dr. C Le Thanh, Open University Ho Chi Minh City, Vietnam
Dr. Y.L. Zhou to Xi'an Jiaotong University, China

## KEYNOTE LECTURE 1

### Wednesday 30 August 2023

**Time**: 10:10 am to 11:00 am
**Keynote speaker**: Prof. Dr. Jesús Toribio
**Affiliation**: Fracture and Structural Integrity Research Group (FSIRG), University of Salamanca (USAL), Spain
**Title**: Towards a New Concept of Structural Integrity: A Tribute to Leonardo da Vinci and Galileo Galilei

**Abstract**:

The present Keynote Lecture develops a novel and forward-looking approach of the author to the important concept of structural integrity, the keystone of fatigue & fracture mechanics, comprising and covering all length scales in the conceptual and theoretical framework of the innovative (con-conventional) concepts of giga- mega-, macro-, micro- and nano-structural integrity, thereby broadening the amplitude of the definition of the concept itself. Therefore, the science of fatigue & fracture mechanics (geared towards structural integrity) can be considered as a branch of material science & engineering, and thus the novel concept of material integrity can also be coined, since crack-like defects can affect material's behavior. Following this new way of thinking, any material can be considered as a structure (a quite more general concept with a broader meaning and comprising also, e.g., the structure of a Bach's fugue or of a Beethoven's symphony), such a structure being analyzable at different geometric levels or length scales, i.e., at the giga-, mega-, macro-, micro- and nano-levels. In addition, the concept of structural integrity is extended to fields such as the biology, or to the case of non-material structures, as well as to the area of human behaviour and psychology, developing the concept of personal structural integrity (or, simply, personal integrity). The Keynote Lecture is also a heartfelt tribute to the artist and engineer Leonardo da Vinci, as well as to the physicist and mathematician Galileo Galilei for their important pioneering works in the fields of material strength, fracture and structural integrity.

**Biographical Sketch**:

Professor Jesús Toribio graduated in Civil Engineering in 1982 and then in Mathematics in 1986. In 1987 he was awarded his PhD in the Polytechnic University of Madrid (UPM) and turned into Associate Professor in that Institution. In 1992 he became Full Professor and Head of the Materials Science Department of the University of La Coruña (at the age of 32, thus being the youngest Full Professor in the area of Materials Science in Spain). In 2000 he moved to the University of Salamanca (USAL) where is currently Full Professor of Materials Science and Head of the Fracture and Structural Integrity Research Group (FSIRG) of that Institution.

His research work is mainly concerned with fatigue and fracture mechanics, environmentally assisted cracking, stress corrosion cracking and hydrogen embrittlement/degradation/damage of metals and alloys (mainly cold drawn pearlitic steel wires for civil engineering and austenitic stainless steels for nuclear engineering and energy applications), covering theoretical, computational and experimental aspects. He actively participates in International Conferences, very often being member of the International Advisory Committee, organising Special Sessions/Symposia, being Session Chairman or delivering Plenary/Keynote/Invited Lectures. Professor Dr. Jesús Toribio has published more than 500 scientific papers, most of them in international books and journals.

He is the Chairman of the Technical Committee 10 (TC10): Environmentally Assisted Cracking of the European Structural Integrity Society (ESIS) and has been Director (2013-2017) of the International Congress of Fracture-The World Academy of Structural Integrity (ICF-WASI), being responsible of launching the Ibero-American Academy of Structural Integrity (IA2SI). Prof. Toribio has been awarded a variety of scientific research prizes and awards including: (i) UPM Young Scientist Award of the Polytechnic University of Madrid; (ii) METROTEC Award for the best Technological Research Project; (iii) Honour Medal of the Spanish Group of Fracture (GEF/SEIE) in recognition of his research achievements in the field of fracture mechanics; (iv) Fellow of the Wessex Institute of Technology (WIT) in recognition of leadership and outstanding work in engineering sciences; (v) Top Reviewer 2011 in recognition of an outstanding contribution to the quality of the Elsevier International Journal Engineering Fracture Mechanics; (vi) Fellow of the European Structural Society (ESIS Fellow) for his outstanding contributions to the art, science, teaching or practice of fracture mechanics and his service to the society; (vii) Honorary Member of the Italian Group of Fracture (IGF) in acknowledgement and appreciation of his outstanding achievements in the research field of fracture mechanics; (viii) Best Paper and Presentation Award in the International Conference on Energy Materials and Applications (ICEMA 2017) held in 2017 in Hiroshima, Japan, with a paper entitled: Numerical Simulation of Hydrogen Diffusion in the Pressure Vessel Wall of a WWER-440 Reactor; (ix) María de Maeztu Scientific Award of the University of Salamanca (800th anniversary during 2018) in recognition of academic trajectory and excellence in scientific and technological research; (x) Scientific Merit Award of the Portuguese Group of Fracture (PGF) in recognition of scientific contributions during his career.

## KEYNOTE LECTURE 2

### Wednesday 30 August 2023

**Time**: 2:00 pm to 2:50 pm
**Keynote speaker**: Professor Lihua Wang
**Affiliation**: School of Aerospace Engineering and Applied Mechanics, Tongji University, Shanghai, 200092, P.R. China
**Title**: Meshfree Stabilized Collocation Method (SCM): theory, algorithm and applications of solid, fluid and fluid-structure interaction problems

**Abstract**:

Meshfree methods made big progress in the past decades which have been applied to many areas. Roughly, these methods can be divided into two categories: Galerkin-type meshfree methods based on weak form and collocation-type meshfree methods based on strong form. On one hand, direct collocation method (DCM) suffers low accuracy and instability compared with Galerkin-based meshfree methods. On the other hand, since most approximation functions in meshfree methods are rational functions, it's quite hard to achieve high-accuracy integration with high efficiency in Galerkin-type meshfree methods. Therefore, to combine the advantages of Galerkin-type and collocation-type meshfree methods, we propose a new meshfree method - stabilized collocation method (SCM). The functions which can satisfy the high order consistency conditions such as reproducing kernel (RK) function and Lagrange interpolation function can be utilized as the approximation function. The presented method can satisfy the high order integration constraints which can conserves the high order consistency conditions in the integration form. This property leads to the high accuracy and optimal convergence for the proposed method. When RK approximation is introduced, gradient reproducing kernel (GRK) approximations can be utilized to promote the efficiency, especially for the problems governed by high order partial differential equations. When Lagrange interpolation function is introduced as the approximation function, since it has Kronecker delta property, the essential boundary conditions can be simply and exactly imposed like finite element method (FEM), which further improves the accuracy of this method. Numerical examples validate the high accuracy and convergence as well as good stability of the presented method, which can outperform DCM and Galerkin based meshfree method utilizing the same approximation function.

Based on the SCM, a Lagrangian-Eulerian stabilized collocation method (LESCM) is further proposed for the fluid-structure interaction problems involving free surface flow, in which the structure is modelled by a rigid body. This method is an evolution of the material point method and particle-in-cell methods which are based on the hybrid Lagrangian-Eulerian description. The problem domain of the fluid and structures is discretized into the Lagrangian particles which carry the information, and the problem domain covering the entire movement space is discretized into the uniformly distributed Eulerian background nodes. The coupling governing equations of the fluid, structures and interfaces are solved by the meshfree SCM employing the RK approximation on the Eulerian nodes. The solution is very efficient since the Eulerian nodes are set to be the initial positions in each time step and it's no need to reconstruct the shape function. The information mappings between the Lagrangian particles and the Eulerian nodes are also conducted by the RK approximation which can keep the mass and momentum conservation of the solution. The cell-cut algorithm is introduced to couple the fluid and the structures which can solve the fluid pressure and the fluid-structure interactional force simultaneously and avoid the complicated iterations of the traditional interaction algorithms. Several numerical examples including the collapse of water

column with a rigid barrier, water entry of a half-buoyant circular cylinder and a rigid box rotating and sinking in water are simulated, which demonstrate the high accuracy, high efficiency and good stability of the proposed method. This method can be extensively applied to the engineering applications of fluid-rigid body interactions.

**Biographical Sketch**:
Dr. Lihua Wang is a professor at School of Aerospace Engineering and Applied Mechanics in Tongji University, Shanghai, China. She is currently a General Council Member of the International Association for Computational Mechanics (IACM) and the International Chinese Association for Computational Mechanics (ICACM). She is the recipient of several awards, including the APACM Award for Young Investigators in Computational Mechanics, the ICACM Young Investigator Award, and the Du Qing-Hua Medal & Young Researcher Award of Computational Methods in Engineering. She authored more than 60 journal publications, and has been invited to deliver more than 10 plenary and invited lectures at international conferences. She served as the Editorial Board Member of three journals and guest editor of two journals. Her research interests include development of meshfree methods and machine learning, fluid-structure interaction, inverse problems, functionally graded materials, and rigid-flexible coupling dynamics.

## KEYNOTE LECTURE 3

## Thursday 31 August 2023

**Time**: 9:00 am to 9:50 am
**Keynote speaker**: Professor Luca Susmel
**Affiliation**: Professor of Structural Integrity, the University of Sheffield, UK
**Title**: Theory of Critical Distances and notched unreinforced (cast & 3D-printed) concrete

**Abstract**:

The Theory of Critical Distances (TCD) is a powerful design tool capable of estimating the strength of notched/cracked materials, with this being done by directly post-processing the linear-elastic stress fields ahead of the stress raisers being assessed. The TCD groups together a number of design methodologies that all make use of specific material critical distances. According to the TCD's modus operandi, the critical distance is an intrinsic property which is related to the micro-/meso-/macro-structural features of the material being designed. Based on a comprehensive experimental work, it is proven that the TCD is successful in predicting the strength of cracked/notched unreinforced concrete subjected not only to Mode I but also to Mixed-Mode I-II static/dynamic loading. Further the TCD is seen to be capable of modelling also the detrimental effect of cracks and manufacturing defects in 3D-printed concrete subjected to static loading. In this setting, this presentation will summarise and review the research work we have supervised over the last decade to devise a robust TCD-based methodology suitable for performing the static/dynamic assessment of notched unreinforced (cast & 3D-printed) concrete.

**Biographical Sketch**:

Luca Susmel joined the University of Sheffield in 2011 as Professor of Structural Integrity. Since 1998 Luca has focused his attention mainly on problems related to the static, dynamic and fatigue assessment of engineering materials and components. In particular, by working both in Italy (University of Padova, University of Ferrara, University of Udine), in Ireland (Trinity College, Dublin), and in the UK (university of Sheffield), he has devised several novel engineering methods suitable for designing components (experiencing stress concentration phenomena of any kind) against static, dynamic and fatigue failures. According to his modus operandi, Luca has performed both theoretical and experimental investigations and all the design methods he has formalised so far have always been validated through a systematic experimental work. Luca has an outstanding and unique expertise in designing notched and welded components against constant and variable amplitude multiaxial fatigue.

The work done in the above research areas has led to more than 350 scientific papers in the period 1999-2022 (of which more than 135 articles in international peer-reviewed scientific journals) as well as to a book devoted to the multiaxial fatigue assessment (Susmel, L., Multiaxial Notch Fatigue: from nominal to local stress-strain quantities. Woodhead & CRC, Cambridge, UK, ISBN: 1 84569 582 8, March 2009). His scientific papers have attracted significant interest from the international scientific community, evidenced by an h-index of 38 with more than 5.65k citations in total according to Google Scholar. He is a member of the Editorial Boards of the two leading international journals in the fatigue and fracture field, namely "International Journal of Fatigue" and "Fatigue & Fracture of Engineering Materials & Structures". Luca is the Editor-in-Chief of "Theoretical and Applied Fracture Mechanics" (published by Elsevier) which is one of the top journals in the fracture mechanics field (Impact Factor=3.021).

Luca has developed a software specifically designed to perform the fatigue assessment of plain/notched/welded components subjected to both constant and variable amplitude uniaxial/multiaxial fatigue loading (Copyright document N. 007849-D007048).

As to the transfer of his research's outcomes into engineering practice, in recent years, and especially after the publication of his book, Luca's expertise has been sought on many occasions by several structural engineering (working in both European and non-European companies) successfully using the approaches developed by Luca himself to design real components and structures.

Since the end of the 90s, Luca has been involved both as primary investigator and as co-investigator in a very large number of research projects funded by national public funding bodies, European Community, Trusts, and private companies.

## CONFERENCE PROGRAM SUMMARY

### Tuesday 29 August 2023

| Time | Session |
|---|---|
| 5:00 pm to 7:00 pm | Early registration |

### Wednesday 30 August 2023

| Time | Session |
|---|---|
| 10:00 am to 10:10 am | Opening address |
| 10:10 am to 11:00 am | Keynote lecture 1 |
| 11:10 am to 1:00 pm | Session FFW1 |
| 1:00 pm to 2:00 pm | Lunch Break |
| 2:00 pm to 2:50 pm | Keynote lecture 2 |
| 2:50 pm to 5:50 pm | Session NME 1 |
| 5:50 pm to 7:00 pm | Conference reception |

### Thursday 31 August 2023

| Time | Session |
|---|---|
| 09:00 am to 9:50 pm | Keynote lecture 3 |
| 09:50 am to 1:10 pm | Session FFW 2 |
| 1:10 pm to 2:00 pm | Lunch Break |
| 2:00 pm to 2:50 pm | Keynote lecture 3 |
| 2:50 pm to 5:30 pm | Session NME 2 |
| 5:30 pm to 5:50 pm | Conference closing address |
| 7:00 pm to 9:00 pm | Conference Dinner |

| Tuesday 29 August 2023 | |
|---|---|
| 5:00 pm to 7:00 pm | **Early registration** |
| | |

| Wednesday 30 August 2023 | |
|---|---|
| 10:00 am to 10:10 am | **Opening address**: **Professor Magd Abdel Wahab**, Ghent University, Belgium |
| 10:10 am to 11:00 am | **Keynote lecture 1**: Towards a New Concept of Structural Integrity: A Tribute to Leonardo da Vinci and Galileo Galilei, **Prof. Dr. Jesús Toribio**, Fracture and Structural Integrity Research Group (FSIRG), University of Salamanca (USAL), Spain |
| | |
| | **Session FFW 1**<br>**Chair: Prof. Dr. Jesús Toribio** |
| 11:00 pm to 11:20 pm | FFW1361: Modeling and Simulating Method for Dynamic Crack Propagation in Chemically Tempered Glass Sheets, **Kenji Oguni** |
| 11:20 am to 11:40 am | FFW1343: Assessing Fatigue Life Cycles of Material X10CrMoVNb9-1 through a Combination of Experimental and Finite Element Analysis, **Mohammad Ridzwan bin Abd Rahim** |
| 11:40 am to 12:00 am | **Coffee Break** |
| 12:00 pm to 12:20 pm | FFW1336, Simulation of edge chipping of glass under dynamic load using PDS-FEM, **Sayako Hirobe** |
| 12:20 pm to 12:40 pm | FFW1297: Rectangular piezoelectric plane weakened by several cracks under transient electromechanical loads, **Mojtaba Ayatollahi** |
| 12:40 pm to 1:00 pm | FFW1318: Stress intensity factors of interface cracks in orthotropic dissimilar materials based on material combination parameters, **Kazuki Takahashi** |
| 1:00 pm to 2:00 pm | **Lunch Break** |
| | |
| | **Keynote lecture 2**<br>**Chair: Professor Magd Abdel Wahab** |
| 2:00 pm to 2:50 pm | Meshfree Stabilized Collocation Method (SCM): theory, algorithm and applications of solid, fluid and fluid-structure interaction problems, **Professor Lihua Wang**, School of Aerospace Engineering and Applied Mechanics, Tongji University, China |
| | **Session NME 1**<br>**Chair: Professor Lihua Wang** |
| 2:50 pm to 3:10 pm | NME1481: Section's In-Plane Warping of Thin-Walled Straight Pipes under Large Bending, **Christian Iandiorio** |
| 3:10 pm to 3:30 pm | NME1458: Bio-inspired algorithms for engineering problems, **Usama Hamid** |
| 3:30 pm to 3:50 pm | NME1447: Human breathing fluid dynamics research based on schlieren, **Zhang Hang** |
| 3:50 pm to 4:10 pm | **Coffee Break** |
| 4:10 pm to 4:30 pm | NME1445: A computational model of custom 3d printed hand orthosis, **Andrea Avanzini** |
| 4:30 pm to 4:50 pm | NME1453: An enhanced golden jackal optimization algorithm, **Jianfu Bai** |
| 4:50 pm to 5:10 pm | NME1456: Physics-informed neural networks for corrosion analysis, **Zhikun Zhou** |
| 5:10 pm to 5:30 pm | NME1452: A study on the influencing factors on natural frequencies of bolted joints, **Mingpo** |
| 5:30 pm to 5:50 pm | NME1464: A novel objective function for damage identification of ill-conditioned beam-like structures, **Ngoc Lan Nguyen** |
| 5:50 pm to 7:00 pm | **Conference reception** |
| | |

| Thursday 31 August 2023 | |
|---|---|
| | **Keynote lecture 3**<br>**Chair: Professor Magd Abdel Wahab** |
| 09:00 am to 09:50 am | Theory of Critical Distances and notched unreinforced (cast & 3D-printed) concrete, **Professor Luca Susmel**, Professor of Structural Integrity, the University of Sheffield, UK |
| | **Session FFW 2**<br>**Chair: Professor Luca Susmel** |
| 09:50 am to 10:10 am | FFW1327: Strength Parameters of Inclined Sharp Notched Plate by Elastic-Plastic FEM Analysis, **Hiroki Oda** |
| 10:10 am to 10:30 am | FFW1325: Determining the low cycle fatigue endurance of EUROFER97 in irradiated and unirradiated states using monotonic tensile test results, **Hussein Zahran** |
| 10:30 am to 10:50 am | FFW1317: Effect of Circumferential Notch on Adhesive Strength of Butt Cylindrical Joints, **Marika Takeo** |
| 10:50 am to 11:10 am | **Coffee Break** |
| 11:10 am to 11:30 am | FFW1319: Effects of Hydrogen on Crystal Orientation of a Low Carbon Steel SS400 in Tensile Tests, **Hayato Shintani** |
| 11:30 am to 11:50 am | FFW1368: Cracking Resistance of Slightly Reinforced Concrete Structures Subjected to Geotechnical Effects, **Marta Słowik** |
| 11:50 am to 12:10 pm | FFW1298: U-notch sensitivity for additively manufactured Nylon-based polymer, **Jorge G. Diaz** |
| 12:10 pm to 12:30 pm | FFW1337: Fatigue behavior in stainless steel 316L due to electric arc welding process in welded joints, **Oscar Bohorquez** |
| 12:30 pm to 12:50 pm | FFW1303: Transient response of a cracked rectangular magnetoelectroelastic plane under magneto-electro-elastic impacts, **Hossein Reyahi** |
| 12:50 pm to 1:10 pm | FFW1310: Effect of unsupported sleepers on rail fatigue breakage in ballasted track sections of railway track, **Mitsuru Hosoda** |
| 1:10 pm to 2:00 pm | **Lunch Break** |

| Thursday 31 August 2023 | |
|---|---|
| | **Keynote lecture 4**<br>**Chair: Professor Mojtaba Ayatollahi** |
| 2:00 pm to 2:50 pm | Numerical modelling of fretting fatigue, **Professor Magd Abdel Wahab**, Ghent University, Belgium |
| | **Session NME 2**<br>**Chair: Professor Mojtaba Ayatollahi** |
| 2:50 pm to 3:10 pm | NME1457: Semi-analytical Lower-Bound Limit Analysis of duble curvature shell structures, **Renato Zona** |
| 3:10 pm to 3:30 pm | NME1437: Structural Health Monitoring of composite structures, **Irfan Shirazi** |
| 3:30 pm to 3:50 pm | FFW1342: Translational application in the healing of femoral neck fracture, Dewei Zhao and **Weidan Wang** |
| 3:50 pm to 4:10 pm | **Coffee Break** |
| 4:10 pm to 4:30 pm | NME1468: Synthesis and elaboration of Polydimethylsiloxane/Titanium Dioxide Nanocomposite Films, **Nadir Belgroune** |
| 4:30 pm to 4:50 pm | NME1444: Fretting fatigue cracl propagation analysis, **Can Wang** |
| 4:50 pm to 5:10 pm | FFW1335: Fretting wear behavior of steel wires used in coal mines of the hoisting system, **Muhammad Imran** |
| 5:10 pm to 5:30 pm | FFW1370: Mesh methodology analyses for a fretting fatigue cylindrical contact case, **Nicolás Díez Molina** |
| 5:30 pm to 5:50 pm | FFW1308: Adopting Finite Element Method to Master S-N Curve for Fatigue Life Prediction of a Railroad Bogie Based on Mesh Insensitive Structural Stress Method, **Süleyman Türe** |
| 5:50 pm to 6:00 pm | **Conference closing address – Prof. M Abdel Wahab** |
| 7:00 pm to 9:00 pm | **Conference Dinner** |

| Online presentations | |
|---|---|
| | **http://www.academicconf.com/video?confname=ffw2023**<br>**http://www.academicconf.com/video?confname=nme2023** |
| | FFW1362: Effect of Tool Shoulder Diameter and Pin Geometry on the Mechanical Properties and the Microstructure in Friction Stir Spot Welding of Aluminum, **Amir Shaheed Alkhafaji** |
| | FFW1357: Simulation of the local CoF development in dynamically loaded contact surfaces (fretting), **Silvano Oehme** |
| | FFW1352: Effect of bolt preload on fretting fatigue behaviour of double lap bolted joints with class b surface finish in high-cycle fatigue, **Alireza Zangouie** |
| | FFW1331: A new approach to detecting damage in structures that uses global search techniques and machine learning with vectorized data, **Hoa Tran** |
| | FFW1314: Effect of Laser Shock Peening Without Coating on Duplex Aged Ti-15-3 To Increase the Fatigue Life, **Anushree Kirthika** |
| | FFW1304: Fracture toughness investigation of Al-Mg-Mn-Si alloy under corrosive environmental conditions, **Ibrahim Alqahtani** |
| | NME1482: Geometrically Nonlinear Finite Element Analysis of Three-Dimensional Beams Using Tait-Bryan Angles, **Ahmed Elerian** |
| | NME1480: Flight Simulation of a Hybrid Electric Propulsion VTOL UAV For Mission Performance Assessment, **Amine benmoussa** |
| | NME1438: An improved tie force method for progressive collapse resistance, **Mosleh Tohidi** |
| | FFW1348: Investigation of fatigue life by four point bending test of recycled asphalt pavements, **Atakan Aksoy** |
| | FFW1369: Characteristics of surface topography originated from manufacturing and operation processes based on multi-sensor measurements, **Magdalena Niemczewska-Wójcik** |
| | NME1493: Forecasting Ships' Movement, **Maria Filomena Teodoro** |
| | NME1494: Kalman Filtering Applied to Some Navigation Systems, **Maria Filomena Teodoro** |

## FFW & NME 2023

## INSTRUCTIONS TO SPEAKERS

- Your oral presentation should not exceed 15 minutes. If your presentation stretches over 15 minutes, you must end your presentation to ensure strict adherence to the programme.
- Your presentation will be followed by a Question and Answer (Q/A) session not exceeding 5 minutes.
- Please submit your presentation file(s) as PDF or Microsoft Powerpoint to the section helper at the end of the preceding session, or at least 5 minutes before the start of your session at the respective venue.
- Please also meet up with the Chairperson of your session to inform him of your presence.
- All presentation will be streamed through the MS link: Click here to join the meeting