2023 14th International Conference on Mechanical and Aerospace Engineering (ICMAE 2023)

With workshop of

2023 The 12th International Conference on Pure and Applied Mathematics (ICPAM 2023)

Porto, Portugal
July 18-21, 2023

Onsite & Virtual Conference

ISEP - Instituto Superior de Engenharia
P.Porto - Polytechnic University of Porto

Address: INSTITUTO SUPERIOR DE ENGENHARIA DO PORTO, Rua Dr. António Bernardino de Almeida, 431, 4249-015 Porto, Portugal

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Welcome Address

With great pleasure, we are welcoming you to 2023 14th International Conference on Mechanical and Aerospace Engineering (ICMAE 2023), with workshop of The 12th International Conference on Pure and Applied Mathematics (ICPAM 2023), be held in Polytechnic University of Porto, Porto, Portugal, during July 18-21, 2023. The conference is co-sponsored by IEEE, Science and Engineering Institute, Tongji University, and technically sponsored by Technical University of Kosice, hosted by University of Porto, patrons with Orleans University, Washington University in St. Louis, Capitol Technology University, University of Huddersfield, Istanbul Technical University, among others.

After several rounds of review procedure, the program committee accepted those abstracts to be presented on conference, and papers to be published in conference proceedings. We wish to express our sincere appreciation to all the individuals who have contributed to the conference in various ways. Special thanks to local organizing chair-Prof. Custódio Dias, for whose full local support, which make this conference to be able to happen in Porto! Thanks also extended to our committee members for their thorough review of all the submissions, which is vital to the success of the conference, and to the members in the organizing committee and the volunteers who had dedicated their time and efforts in planning, promoting, organizing and helping the conference.

The conference is high lightened by 4 Plenary Speakers and 1 invite speaker, they are:
Pasquale Daponte, University of Sannio, Italy;
Vitor Fernao Pires, Polytechnic Institute of Setúbal, Portugal;
Rodolfo Oliveira, Universidade Nova de Lisboa, Portugal;
Ramesh K. Agarwal, Washington University in St. Louis, USA;
Merab Svanadze, Ilia State University, Georgia.

The town that gave the country (and port wine) its very name, Porto, sometimes called Oporto, it's an age-old city that has one foot firmly in the industrial present. The old town, centered at Ribeira, was built on the hills overlooking the Douro River, and today is a UNESCO World Heritage Site. In Porto, the joy and gratitude for all we have and experienced in the most spontaneous way.

After online conferences for two years, finally this year ICMAE 2023 in-person participation comes true. It will be so amazing and exciting to welcome you in Porto face to face. Sincerely we hope you will enjoy this city and have a nice experience on this conference!

ICMAE 2023 Organizing Committee
18-21 July, 2023

CONFERENCE COMMITTEES

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*N*ik Mohd Asri Nik Long, *Universiti Putra Malaysia, Malaysia*
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CONFERENCE VENUE

FOR ONSITE PRESENTERS

❖ Conference Venue

- ISEP - Instituto Superior de Engenharia, P.Porto - Polytechnic University of Porto
- Address: Rua Dr. António Bernardino de Almeida, 431, 4249-015 Porto, Portugal

❖ Sign-in

- Spot: the 1st Floor Hall, Building E
- Time: 10:00-15:30, July 18, 2023

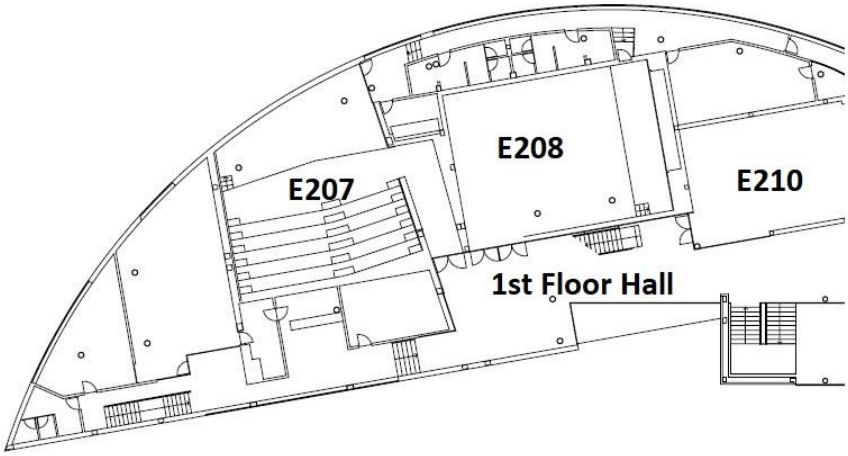
❖ Conference Rooms

Level	Meeting Room	July 18	July 19	July 20	July 21
1F	Room E207	----	❖	----	----
	Room E208	----	❖	❖	----
	Room E210	----	❖	❖	----

❖onsite meeting room available; ----onsite meeting room unavailable

Campus Map:

ISEP Building E: Sign-in Place (July 18); All Meeting Rooms (July 19+20)
ISEP Building H: Lunch Venue (July 19+20) & Dinner Venue (July 19)



1F, ISEP Building E Floor Map

- **1st Floor Hall**: Sign-in Place, Coffee Breaks, Poster Session
- **Room E207**: Opening Ceremony and 4 Plenary Speeches
- **Room E208**: Session 1, 3, 5, 7
- **Room E210**: 1 Invite Speech+ Session 2, 4, 6, 8.

Transportation

- **From Francisco Sá Carneiro Airport**
  - By Taxi: 14 KM, takes 15-20 Mins.
  - By Metro: 0.5 KM walk away from airport, take **Line E** from **Aeroporto** Station to **Trindade** Station (15 stops), transfer to **Line D**, get off at **IPO** Station (6 stops), 0.6 KM by walk. (6: 00 AM~01:00AM+1)

Time Zone

- **Porto Time: UTC +1**

Weather

- **July**

Average Low	Average High
18 ℃	26℃

Emergency Call

- **112**

(Information above from internet)

GUIDELINES

FOR ONSITE PRESENTERS

❖ Oral Presentation

- Each oral presentation is with 15 Mins time slot, including 10 Mins presentation and 5 Mins for questions from the audience.
- Your punctual arrival and active involvement in each session will be highly appreciated.
- Get your Presentation PPT slides, or PDF files prepared in advance and backed up.
- Laptop, projector & screen, laser sticks will be provided in the meeting room for presentation use.

❖ Poster Presentation

- Poster size: 0.6m width X 0.8m height
- Poster to be printed and brought to conference site by presenter self.
- At least 1 author to stand by the poster during the Poster session, which is not only to present your work, but also to answer questions from the audience.

❖ More Tips:

- Please take all your belongings when leaving meeting room.
- Conference Organizers do not provide accommodation, please reserve your hotel room in advance.
- Receipt will be emailed to you after the conference.
- Portugal citizens must circulate with an identification document (ID card or passport), so, it's wise that delegates take ID document all the time.

FOR ONLINE ORAL PRESENTERS

❖ Online Platform--Zoom

- Install Zoom tool on your device (https://zoom.us/download), join the meeting by click the Zoom link or insert the meeting ID, with audio and video on.
- For presenters: Rename yourself with “ID+Name”, such as “S1-1 +Name”.
- For Plenary Speaker or Session Chair, please rename as “PS/SC+Name”.
- Laptop with stable internet connection (wired connection preferred).
- Headsets or earphones are recommended to be used during presentation to avoid howling.
- Keep muted when the other presenters speaking until your turn to present, then you could unmute yourself.
- Only oral choice for online presentations.
- Certificate and receipt will be emailed to you after the conference.

❖ Time Zone

- Whole conference scheduled in **Porto Time**: **UTC+1**
- Please make sure your device time is set to correct time zone.

❖ Online Presentation

- Each online oral presentation is with 15 Mins time slot, including 10 Mins presentation and 5 Mins for questions from the audience.

❖ Recording

- Plenary session and online sessions will be recorded, your proper behavior and appearance will be appreciated. Only staff will record the video, presenters will not be allowed to record.

❖ Zoom Meeting ID

Zoom Online Room	Meeting ID	Zoom Link
Room A	848 8381 2780	https://us02web.zoom.us/j/84883812780
Room B	826 4522 8278	https://us02web.zoom.us/j/82645228278
Room C	842 3789 0054	https://us02web.zoom.us/j/84237890054

❖ Online Zoom Test

Time | July 18	Room A Zoom ID: 848 8381 2780	Room B Zoom ID: 826 4522 8278
09:00-11:00	Test	Test

AGENDA OVERVIEW

Day 1 | July 18, 2023

Porto Time	Activity	Venue	
09:00-11:00	Online Test	Zoom ID: 848 8381 2780	Zoom ID: 826 4522 8278
10:00-15:30	Sign in & Conference Materials Collection	1st Floor Hall	

Day 2 | July 19, 2023

Porto Time	Activity		Venue	Online
		Host: Katarina Monkova, Technical University of Kosice, Slovakia	Room E207	Zoom ID: 848 8381 2780
09:00-09:10	**Opening Ceremony**	**Opening Remarks:** Pasquale Daponte University of Sannio, Italy		
		Welcome Address: Custódio Dias Polytechnic University of Porto, Portugal		
		Host: Custódio Dias, Polytechnic University of Porto, Portugal		
09:10-09:50	**Plenary Session**	**Speech 1: Bipolar DC Distribution in the Aircraft Electrification: Infrastructure, Power Electronic Converters and Reliability** Vitor Fernao Pires Polytechnic Institute of Setúbal, Portugal		
09:50-10:30		**Speech 2: Accuracy in Autonomous Flight: Vision-Based Localization Measurements in UAV Navigation** Pasquale Daponte University of Sannio, Italy		
10:30-11:00	**Group Photo & Morning Break**			
		Host: Pasquale Daponte, University of Sannio, Italy	Room E207	Zoom ID: 848 8381 2780
11:00-11:40	**Plenary Session**	**Speech 3: The Role of Cognitive Radios in Aerospace Engineering Systems: From Fundamentals to Applications** Rodolfo Oliveira Universidade Nova de Lisboa, Portugal		
11:40-12:20		**Speech 4: Aerodynamics and Shock Buffet of a Transonic Airfoil in Ground Effect** Ramesh K. Agarwal Washington University in St. Louis, USA		
12:20-14:00	**Lunch**		Building H	
14:00-15:45	**Oral Session 1:** Additive Manufacturing		Room E208	----
	Invite Speech: Steady Vibration Problems in the Theory of Elastic Nanoporous Materials (14:00-14:25) Merab Svanadze Ilia State University, Georgia		Room E210	Zoom ID: 848 8381 2780
	Oral Session 2: (14:30-15:45) System Model and Mathematical Analysis			----

15:45-16:25	**Coffee Break + Poster Session**		
16:25-18:10	**Oral Session 3:** Space Power and Propulsion-A	Room E208	----
	Oral Session 4: Mechanical Design and Power Equipment Control	Room E210	----
18:10-20:00	**Dinner**	Building H	-----

Day 3 | July 20, 2023

Porto Time	Activity	Onsite Only
10:00-12:00	**Oral Session 5:** Intelligent Control and Electronic Systems in Aerospace Engineering	Room E208
	Oral Session 6: New Engine Design and Manufacturing Technology	Room E210
12:00-13:30	**Lunch**	Building H
13:30-15:15	**Oral Session 7:** Aircraft Design and Wing Aerodynamic Analysis	Room 208
	Oral Session 8: Material Performance Analysis and Experiment	Room 210
15:15-16:00	**Cocktail Closing** hosted by **Jorge Lino Alves**, Porto University, Portugal	1st Floor Hall

Day 4 | July 21, 2023

Porto Time	Activity	Online Only
10:00-12:00	**Oral Session 9:** Space Power and Propulsion-B	Zoom ID: 848 8381 2780
	Oral Session 10: Engine Performance Simulation and Numerical Analysis	Zoom ID: 826 4522 8278
	Oral Session 11: Materials Engineering & Mechanical Design	Zoom ID: 842 3789 0054
12:00-13:30	**Lunch Break**	
13:30-15:30	**Oral Session 12:** Aircraft Structural Design and Wing Aerodynamic Analysis	Zoom ID: 848 8381 2780
	Oral Session 13: Dynamic Modeling and Fluid Mechanics Analysis	Zoom ID: 826 4522 8278
	Oral Session 14: Advanced Electronics and Information Technology	Zoom ID: 842 3789 0054
	Activity	**Onsite Only**
	Optional Academic Visit	Lab 1/Lab 2

PLENARY SPEAKER

Porto Time	09:10-09:50, July 19, 2023	Onsite Room	Room E207
Zoom ID	848 8381 2780	Zoom Link	https://us02web.zoom.us/j/84883812780

Vitor Fernao Pires

Polytechnic Institute of Setúbal, Portugal

Speech Title: Bipolar DC Distribution in the Aircraft Electrification: Infrastructure, Power Electronic Converters and Reliability

Abstract: The bipolar dc distribution is becoming an attractive power supply scheme in more electric aircraft (MEA). This distribution system not only makes it possible to obtain various voltage levels, but also has the advantages of high reliability and simple fault detection. However, there are several specificities that must be considered in association with this distribution system. In this way, one of the critical aspects is the design and implementation of the power electronic converters. One of the aspects that should be considered is the design of topololies that interlinks to both poles. Another aspect that is critical is the reliability of these converters. Thus, the design of the converters specific for this kind of distribution system, but with fault-tolerant capability, is another aspect that should be taken into consideration.

This talk will start with the advantages of the bipolar dc distribution, as well as, their specificities and associated challenges. It will then be presented the criteria to design the power electronic converters associated to this distribution system. The specificities of the electronic power converters taking into consideration the system that should be interlinked to this distribution system will be described. Reliability aspects associated to the power electronic converters will also be discussed.

Bio.: Vitor Fernão Pires *received the B.S. degree in Electrical Engineering from Institute Superior of Engineering of Lisbon, Portugal, in 1988 and the M.S. and Ph.D. Degrees in Electrical and Computer Engineering from Technical University of Lisbon, Portugal, in 1995 and 2000, respectively. Since 1991, he has been a member of the teaching staff with the Electrical Engineering Department, Superior Technical School of Setúbal (ESTSetúbal), Polytechnic Institute of Setúbal (IPS). He is currently a Coordinator Professor teaching power electronics and control of power converters. He is also a senior Researcher at Instituto de Engenharia de Sistemas e Computadores—Investigação e Desenvolvimento em Lisboa (INESC-ID). It is also a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE). He is an IEEE member since 1996 and member of the Industrial Electronics Society. Besides that, he is chair of the IEEE Portuguese Joint Chapter, Industry Applications, Industrial Electronics and Power Electronics.*

Vitor Fernão Pires is the author and coauthor of over 300 journal and refereed conference publications. He has collaborated in several national and European projects. He was also invited to be a reviewer of research founded projects from Polish National Science Center, Chilean National Commission for Scientific and Technological Research (CONICYT) and Kazakhstan National Center of Science and Technology Evaluation (NCSTE). He was the general chair of the international conference icSmartGrids 2021 and general co-chair of the IEEE CPE-POWERENG 2020. He was also one of the founders of the IEEE POWERENG conference series. He has been Program Committee and/or Track Chair member of several international conferences.

PLENARY SPEAKER

Porto Time	09:50-10:30, July 19, 2023	Onsite Room	Room E207
Zoom ID	848 8381 2780	Zoom Link	https://us02web.zoom.us/j/84883812780

Pasquale Daponte

University of Sannio, Italy

Speech Title: Accuracy in Autonomous Flight: Vision-Based Localization Measurements in UAV Navigation

Abstract: The application of Unmanned Aerial Vehicles (UAVs) is rapidly expanding across a myriad of sectors, including defense, disaster management, and commerce, necessitating innovative navigation solutions that are not reliant on the Global Navigation Satellite System (GNSS).

In the literature, several solutions based on computer vision have been proposed to estimate the UAV's position, including relative and absolute visual localization methods. The main relative localization methods are visual odometry and simultaneous localization and mapping, while the absolute approaches are based on previously collected data, such as aerial or satellite images. The keynote will introduce vision-based localization systems for both methods and highlight the open research challenges in reducing measurement accuracy. Several real-time data fusion and machine learning algorithms for localization will be presented, and their applicability in dense urban or indoor environments will be discussed. Furthermore, the importance of localizing UAVs for digital twins in the field of structural health monitoring will be emphasized.

Bio.: PASQUALE DAPONTE *was born in Minori (SA), Italy, on March 7, 1957. He obtained his bachelor's degree and master's degree "cum laude" in Electrical Engineering in 1981 from University of Naples, Italy. He is a Full Professor of Electronic Measurements at University of Sannio - Benevento. From 2016 he is Chair of the Italian Association on Electrical and Electronic Measurements. He is Past President of IMEKO. He is member of: I2MTC Board, Working Group of the IEEE Instrumentation and Measurement Technical Committee Subcommittee of the Waveform Measurements and Analysis Committee, IMEKO Technical Committee TC-4 measurements of Electrical Quantities. Editorial Board of Measurement Journal, Acta IMEKO and of Sensors. He is Associate Editor of IET Science Measurement & Technology Journal. He has organised some national or international meetings in the field of Electronic Measurements and European co-operation and he was General Chairman of the IEEE Instrumentation and Measurement Technical Conference for 2006, Technical Programme Co-Chair for I2MTC 2015. He was a co-founder of the IEEE Symposium on Measurement for Medical Applications MeMeA, now, he is the Chair of the MeMeA Steering Committee, memea2018.ieee-ims.org. He is the co-founder of the:*

- IEEE Workshop on Metrology for AeroSpace, www.metroaerospace.org
- IEEE Workshop on Metrology for Archaeology and Cultural Heritage, www.metroarcheo.com
- IMEKO Workshop on Metrology for Geotechnics, www.metrogeotechnics.org.
- IEEE Workshop on Metrology for the Sea, www.metrosea.org
- IEEE Workshop on Metrology for Industry 4.0 and IoT, www.metroind40iot.org

He is involved in some European projects. He has published more than 300 scientific papers in journals and at national and international conferences on the following subjects: Measurements and Drones, ADC and DAC Modelling and Testing, Digital Signal Processing, Distributed Measurement Systems. He received:

- in 2009 the IEEE Fellowship,

- in 1987 from the Italian Society of Oftalmology the award for the researches on the digital signal processing of the ultrasounds in echo-oftalmology,

- the Laurea Honoris Causa in Electrical Engineering from Technical University heorghe Asachi" of Iasi (Romania),

- the The Ludwik Finkelstein Medal 2014 from the Institute of Measurement and Control of United Kingdom,

- in May 2018 the areer Excellence Award from the IEEE Instrumentation and Measurement Society or a lifelong career and outsanding leadership in research and education on instrumentation and measurement, and a passionate and continuous service, international in scope, to the profession.

- in September 2018 IMEKO Distinguished Service Award.

PLENARY SPEAKER

Porto Time	11:00-11:40, July 19, 2023	Onsite Room	Room E207
Zoom ID	848 8381 2780	Zoom Link	https://us02web.zoom.us/j/84883812780

Rodolfo Oliveira

Universidade Nova de Lisboa, Portugal

Speech Title: The Role of Cognitive Radios in Aerospace Engineering Systems: From Fundamentals to Applications

Abstract: Cognitive radio (CR) technology has emerged as a groundbreaking solution for addressing the growing demands for spectrum resources. As the utilization of wireless communication systems continues to expand in aircraft, spacecraft, and satellite applications, the efficient management of limited spectrum resources becomes critical. Cognitive radios, with their ability to adaptively utilize underutilized frequency bands, are an effective approach to optimize spectrum utilization and enhance communication reliability in aerospace systems. This talk focuses on the importance of cognitive radio in aerospace engineering and begins by providing an overview of CR systems operating in radio frequency bands and how software-defined radio devices can leverage its implementation. Then, an overview of the challenges posed by spectrum scarcity and interference management in aerospace applications is presented to highlight how CRs can effectively address the challenges. Finally, the talk will explore how CRs can be used for detecting signals of interest (SOIs) and signals of opportunity (SOOP), that are critical for the safe and efficient operation of aerospace systems.

Bio.: Rodolfo Oliveira *received the Licenciatura degree in electrical engineering from the Faculdade de Ciências e Tecnologia (FCT), Universidade Nova de Lisboa (UNL), Lisbon, Portugal, in 2000, the M.Sc. degree in electrical and computer engineering from the Instituto Superior Técnico, Technical University of Lisbon, in 2003, and the Ph.D. degree in electrical engineering from UNL, in 2009. From 2007 to 2008, he was a Visiting Researcher at the University of Thessaly. From 2011 to 2012, he was a Visiting Scholar at Carnegie Mellon University. Rodolfo Oliveira is currently with the Department of Electrical and Computer Engineering, UNL, and is also affiliated as a Senior Researcher with the Instituto de Telecomunicações, where he researches in the areas of Wireless Communications, Computer Networks, and Computer Science. Rodolfo is a member of ACM and a Senior Member of IEEE, serving currently as Chair of the IEEE Portugal Section. He serves on the Editorial Board of Ad Hoc Networks (Elsevier), ITU Journal on Future and Evolving Technologies (ITU J-FET), IEEE Open Journal of the Communications Society, and IEEE Communications Letters.*

PLENARY SPEAKER

Porto Time	11:40-12:20, July 19, 2023	Onsite Room	Room E207
Zoom ID	848 8381 2780	Zoom Link	https://us02web.zoom.us/j/84883812780

Ramesh K. Agarwal

Washington University in St. Louis, USA

Speech Title: Aerodynamics and Shock Buffet of a Transonic Airfoil in Ground Effect

Abstract: The Wing in Ground Effect (WIG) aircraft operates with larger lift to drag ratio compared to a conventional aircraft at low subsonic Mach numbers. To increase the traffic volume of the WIG aircraft, one possible way is to increase the flight speed, which can result in transonic flow. Currently the studies on transonic flight in ground effect are very few. The focus of this paper is to study the aerodynamics and flow physics of a typical transonic RAE2822 airfoil at angles of attack (AOA) from 0 to 12 deg. and Mach numbers from 0.5 to 0.8 in ground effect by varying the ground clearance above the ground. The compressible Reynolds-Averaged Navier-Stokes (RANS) equations with Spalart-Allmaras (SA) turbulence model are solved using the commercial CFD solver ANSYS FLUENT. For flight near the flat ground surface, some interesting shock formations and flow phenomenon are obtained due to transonic flow. For the unsteady shock buffet phenomenon on the upper surface, the buffet boundary in the Angle of Attack (AOA) – Mach number (Ma) plane shrinks with the decreasing ground clearance. Compared to the unbounded flow field, there exists a steady shock on the lower surface of the airfoil in ground effect for low AOAs because the channel between the lower surface of the supercritical airfoil and the ground is a typical converging-diverging shape, resulting in decrease in lift and increase in drag. For extreme conditions of very small ground clearance, small AOA and high Mach numbers, a new coupling between the shock buffets on the lower and the upper surface of the airfoil is observed.

Bio.: Ramesh K. Agarwal *is the William Palm Professor of Engineering in the department of Mechanical Engineering and Materials Science at Washington University in St. Louis. From 1994 to 2001, he was the Sam Bloomfield Distinguished Professor and Executive Director of the National Institute for Aviation Research at Wichita State University in Kansas. Dr. Agarwal received Ph.D in Aeronautical Sciences from Stanford University in 1975, M.S. in Aeronautical Engineering from the University of Minnesota in 1969 and B.S. in Mechanical Engineering from Indian Institute of Technology, Kharagpur, India in 1968. Over a period of forty years, Professor Agarwal has worked in various areas of Computational Science and Engineering - Computational Fluid Dynamics (CFD), Computational Materials Science and Manufacturing, Computational Electromagnetics (CEM), Neuro-Computing, Control Theory and Systems, and Multidisciplinary Design and Optimization. He is the author and coauthor of over 500 journal and refereed conference publications. He has given many plenary, keynote and invited lectures at various national and international conferences worldwide in over fifty countries. Dr. Agarwal is a Fellow eighteen societies including the Institute of Electrical and Electronics Engineers (IEEE), American Association for Advancement of Science (AAAS), American Institute of Aeronautics and Astronautics (AIAA), American Physical Society (APS), American Society of Mechanical Engineers (ASME), Royal Aeronautical Society, Chinese Society of Aeronautics and Astronautics (CSAA), Society of Manufacturing Engineers (SME) and American Society for Engineering Education (ASEE). He has received many prestigious honors and national/international awards from various professional societies and organizations for his research contributions.*

INVITE SPEAKER

Porto Time	14:00-14:25, July 19, 2023	Onsite Room	Room 210
Zoom ID	848 8381 2780	Zoom Link	https://us02web.zoom.us/j/84883812780

Merab Svanadze

Ilia State University, Georgia

Speech Title: Steady Vibration Problems in the Theory of Elastic Nanoporous Materials

Abstract: In this work, the linear theory of elasticity for nanoporous materials with triple porosity is considered. The internal and external boundary value problems (BVPs) of steady vibrations are investigated. Namely, the fundamental solution of the system of steady vibration equations are constructed explicitly. The uniqueness theorems for the BVPs of steady vibrations are proved. On the basis of Green's tensors, the internal BVPs are reduced to the equivalent Fredholm's integral equations of the second kind with symmetrical kernel. The existence of eigenfrequencies of the internal BVPs of steady vibrations is proved. Then, the formula of the asymptotic distribution of these eigenfrequencies is obtained. The surface (single-layer and double-layer) and volume potentials are constructed and their basic properties are established. Finally, the existence theorems for classical solutions of the BVPs of steady vibrations are proved by means of the potential method (boundary integral equation method) and the theory of singular integral equations.

Bio.: Merab Svanadze *was born on July 11, 1955, in Kutaisi, Georgia.*

Education and Career: In 1972, he graduated from high school with a gold medal. In 1977, he obtained a degree from Tbilisi State University (Georgia) with honors. From 1976 to 2006, he held various scientific positions at the I. Vekua Institute of Applied Mathematics within the same university. In 1998, he was awarded the academic degree of Doctor of Physical and Mathematical Sciences, and in 2004, he was granted the title of professor. Since 2006, he has been serving as a professor at Ilia State University (Tbilisi, Georgia). In addition, from 2000 to 2005, he was the rector of the higher educational institution "Caucasus Academic Center".

Scientific interest: Merab Svanadze's field of scientific research interest is applied mathematics and mechanics. In particular, his works have focused on investigating various mathematical models of materials with micro- and nanostructure in the following fields of continuum mechanics: theories of elasticity and thermoelasticity, theory of mixtures, mechanics of solids, mechanics of porous media, biomechanics, micro- and nanomechanics.

Publications, citations and indexes: Merab Svanadze has a total of 212 publications (including 4 monographs, 1 textbook, 104 research papers and 103 conference abstracts). His works have garnered a total of 1752 citations, resulting in an h-index is 26 and an i10-index is 52.

Participation on International Scientific Events: He has actively participated in 24 international congresses and 67 international conferences.

Membership of Professional Societies: Merab Svanadze is a member of the following international scientific societies: American Mathematical Society, American Society of Mechanical Engineers, Engineering Mechanics Institute of American Society of Civil Engineers, New York Academy of Sciences, International Society of Applied Mathematics and Mechanics

(GAMM), European Mechanics Society, European Society of Biomechanics, Society for Industrial and Applied Mathematics, International Society for Porous Media.

Editorial Activity and Reviewer of International Scientific Journals: Currently, he is an associate editor of the scientific journal „Journal of Thermal Stresses" and a member of the editorial board of "Acta Mechanica". He is a reviewer of 32 international scientific journals.

Academic and Related Awards: Merab Svanadze has received several prestigious awards and recognitions throughout his career. In the years 2020, 2021 and 2022, he was listed as a featured scientist in top 2% scientist list by Stanford University. In 2006, his biography was included in the book "Who's Who in the World" as a noteworthy mathematics professor and researcher by Marquis Who's Who. In 2021, he was honored with the Ilia Chavchavadze medal, recognizing his outstanding contributions to his academic field. In 2006, he received an award of the European Society of Biomechanics.

Scientific Invitations: Merab Svanadze was invited to the following European universities for joint scientific research: University of Salerno, University of Catania, University of Napoli, Technical University of Catalunya (Barcelona), University of Essen, University Konstanz.

Teaching Activity: Since 2006, Merab Svanadze has been actively involved in teaching the following courses at Ilia State University: Equations of Mathematical Physics, Integral Equations I and II, Models of Applied Mathematics, Potential Method in Mathematical Physics, Potential Method in the Theory of Elasticity.

Oral Session 1 (Special Session 1)

S1 / Additive Manufacturing

Porto Time	14:00-16:00, July 19, 2023	Onsite Room	Room E208

Chair: Katarina Monkova, Technical University of Kosice, Slovakia

Time	ID	Presenter	Affiliation
14:00-14:15	S1-1	Heping Peng	Jianghan University, China
14:15-14:30	S1-2	Peter Pavol Monka	FMT TU of Kosice, Slovakia
14:30-14:45	S1-3	Yiwen Guan	Xi'an Modern Chemistry Research Institute, China
14:45-15:00	S1-4	Katarina Monkova	FMT TU of Kosice, Slovakia
15:00-15:15	S1-5	Muhammad Shafiq Mat Shayuti	Universiti Teknologi MARA, Malaysia
15:15-15:30	S1-6	Yuepeng Xin	Northwestern Polytechnical University, China
15:30-15:45	S1-7	Rajnandini Das	Indian Institute of Technology Madras, India
15:45-16:00	S1-8	Kamel Mehdi	University of Tunis EL Manar, Tunis

Details

ID	Title and Authors
S1-1	Variation Propagation Analysis and Modelling in Multistage Machining Processes Heping Peng, Qianpeng Han, Zhuoqun Peng
S1-2	Sustaibility of Additive and Hybrid Technologies Peter Pavol Monka, Katarina Monkova, Shufeng Sun, Petr Baron, Milena Kubišová, Lucia Knapčíková, Jozef Török
S1-3	Research on the Ablation Charcteristic of Silicon Rubber under Ramjet Combustor Environment Yiwen Guan, Cheng Bian, Ning Yan, Yanjing Yang, Hongyan Li, Chuqing Xiao
S1-4	The Influence of Building Orientation of Additively Produced Samples on Their Mechanical Properties Katarina Monkova, Peter Pavol Monka, Romana Hricova, Fateh Ferroudji, Martin Korol, Simona Hlavata, Adrian Vodilka, Karol Goryl
S1-5	Multiplying Tensile Strength of RTV Silicone Rubber via Fiberglass & Kevlar Plies Reinforcement Siti Samihah Mahmood, Muhammad Shafiq Mat Shayuti, Nur Hidayati Othman, Hazlina Husin, Rahida Wati Sharudin, Nur Hashimah Alias, Fauziah Marpani
S1-6	Heat Transfer Characteristics of Endothermic Hydrocarbon Fuel in C/SiC Composites Cooling Channels Yuepeng Xin, Liang Zhang, Zonglin Li, Tingting Jing, Xing Sun, Fei Qin
S1-7	Design of Novel Auxetic Hybrid Metamaterials: Experimental and Numerical Study Rajnandini Das, Farhanuzzaman Khan, Gurunathan Saravana Kumar
S1-8	Toward a Deep Neural Network System for Machining Chatter Monitoring of Thin Walled Workpieces During Turning Process Kamel Mehdi, Peter Pavol Monka, Katarina Monkova

Oral Session 2

S2 / System Model and Mathematical Analysis

Porto Time	14:30-15:45, July 19, 2023	Onsite Room	Room E210

Chair: Andrei Kolyshkin, Riga Technical University, Latvia

Time	ID	Presenter	Affiliation
14:30-14:45	S2-1	Andrei Kolyshkin	Riga Technical University, Latvia
14:45-15:00	S2-2	Daniela Enciu	National Institute for Aerospace Research “Elie Carafoli” - INCAS Bucharest, Romania
15:00-15:15	S2-3	Qianqian Yuan	Beijing University of Technology, China
15:15-15:30	S2-4	Alexandre Hoffmann	Univ. Grenoble Alpes, France
15:30-15:45	S2-5	Pranesh Kumar	University of Northern British Columbia, Canada

Details

ID	Title and Authors
S2-1	Weakly Nonlinear Instability of a Convective Flow due to Non-Homogeneous Heat Sources Andrei Kolyshkin
S2-2	Further Results on the Input-To-State Stability of a Linear System with Control Delay Daniela Enciu, Loan Ursu
S2-3	FC-projective Comodules and FC-projective Dimensions Qianqian Yuan, Hailou Yao
S2-4	Accelerating Spectral Elements Method with Extended Precision: A Case Study Alexandre Hoffmann, Durand Yves, Fereyre Jérôme
S2-5	Neutrosophic 2^2-Factorial Designs and Analysis Pranesh Kumar

Oral Session 3 (Special Session 2)

S3 / Space Power and Propulsion-A

Porto Time	16:25-18:10, July 19, 2023	Onsite Room	Room E208

Chair: Yiwen Guan, Xi'an Modern Chemistry Research Institute, China

Time	ID	Presenter	Affiliation
16:25-16:40	S3-1	Yonghao Hu	Northwestern Polytechnical University, China
16:40-16:55	S3-2	Guangfeng Wang	Northwestern Polytechnical University, China
16:55-17:10	S3-3	Yixiao Song	Northwestern Polytechnical University, China
17:10-17:25	S3-4	Xiangyu Meng	Beihang University, China
17:25-17:40	S3-5	Dekun Yan	Northwestern Polytechnical University, China
17:40-17:55	S3-6	Kong Fanqi	Northwestern Polytechnical University, China
17:55-18:10	S3-7	Guiqian Jiao	Northwestern Polytechnical University, China

Details

ID	Title and Authors
S3-1	Tube-Based Model Predictive Control for AeroEngine Transient-State Tracking Problem Yonghao Hu, Linfeng Gou, Yingzhi Huang, Yingxue Chen
S3-2	Adaptive Maximum Correntropy Unscented Kalman Filter for Aero-Engine State Estimation Guangfeng Wang, Linfeng Gou, Yingzhi Huang, Yingxue Chen
S3-3	Data-driven Equivalent Space Aero-Engine Sensor Robust Fault Diagnosis Yixiao Song, Linfeng Gou, Meng Zhang, Yingzhi Huang, Yingxue Chen
S3-4	Dynamic Numerical Simulation of Hybrid Rocket Motors with Fuel Containing Aluminum Hydride Xiangyu Meng, Hui Tian, Xuanhong Ge, Xiaoting Niu, Yudong Lu, Guobiao Cai
S3-5	Effect of Fuel System on the Heat Releasing Method and Flow-Path Design of Rocket-Based Combined Cycle Engine Xiao Liu, Yinhu Wang, Yiyan Yang, Lei Shi, Dekun Yan
S3-6	Performance Calculation of Rocket-Based Combined Cycle Engine Kong Fanqi, Li Bianjiang, Zhao Zhennan, Chen Yuchun
S3-7	Experimental Study on Dynamic Characteristics of Wall Pressure in Supersonic Combustor of Kerosene Fuel Guiqian Jiao, Wenyan Song, Xianglong Zeng

Oral Session 4 (Special Session 4)

S4/ Mechanical Design and Power Equipment Control

Porto Time	16:25-18:10, July 19, 2023	Onsite Room	Room E210

Chair: Xuan Liang, Jianghan University, China

Time	ID	Presenter	Affiliation
16:25-16:40	S4-1	Liang Xuan	Jianghan University, China
16:40-16:55	S4-2	Huihui Li	Northwestern Polytechnical University, China
16:55-17:10	S4-3	Liang Xuan	Jianghan University, China
17:10-17:25	S4-4	Bernardino Galasso	CIRA SCPA, Italy
17:25-17:40	S4-5	Liang Xuan	Jianghan University, China
17:40-17:55	S4-6	Kumaradevan Punithakumar	University of Alberta, Canada
17:55-18:10	S4-7	MK Ebrahimi	Loughborough University, UK

Details

ID	Title and Authors
S4-1	Design of Radial Loading Test Bench for Main Bearing of Wind Turbine Qunyuan Gu, Bowei Yan, Zhuang Lin, Peijie Yang, Jiaxin Dong, Liang Xuan, Tongjin Sun
S4-2	Dynamic Fault Diagnosis of Aeroengine Control System Sensors Based on LSTM-CNN Huihui Li, Linfeng Gou, Huacong Li, Meng Zhang
S4-3	Research on Intelligent Control Method of Rock Drilling Manipulator Based on Force Control Sensor Liang Xuan, Zhuang Lin, Bowei Yan, Peijie Yang, Ao Shen, Shuai Dong
S4-4	Preliminary study of a shape reconstruction sensing architecture for space applications Bernardino Galasso, Salvatore Ameduri, Antonio Concilio, Giovanni Totaro, Paola Spena, Giovangiuseppe Giusto
S4-5	Research on Vibration Fault Prediction of Wind Turbine Gearbox Liang Xuan, Bowei Yan, Zhuang Lin, Peijie Yang, Ao Shen, Xiaochi He, Tongjin Sun
S4-6	Robot-Assisted Multiview Fusion of Three-Dimensional Echocardiography: A Phantom Study Kumaradevan Punithakumar, Michelle Noga, Pierre Boulanger, Harald Becher
S4-7	Multivariable Controller Architectures for Autonomous Driving Vehicles Simon Petrovich, Mk Ebrahimi

Oral Session 5

S5/ Intelligent Control and Electronic Systems in Aerospace Engineering

Porto Time	10:00-12:00, July 20, 2023	Onsite Room	Room E208

Chair: Kumaradevan Punithakumar, University of Alberta, Canada

Time	ID	Presenter	Affiliation
10:00-10:15	S5-1	Bernardino Galasso	CIRA SCPA, Italy
10:15-10:30	S5-2	Jin Yang	Beihang University, China
10:30-10:45	S5-3	Min-Jea Tahk	Korea Advanced Institue of Science and Technology, South Korea
10:45-11:00	S5-4	Jianzhu Wang	Northwestern Polytechnical University, China
11:00-11:15	S5-5	Qi Yu	Beihang University, China
11:15-11:30	S5-6	Yuqi Xue	Northwestern Polytechnical University, China
11:30-11:45	S5-7	Thierry SAMMOUR SAWAYA	AIRBUS, France
11:45-12:00	S5-8	Zhidan Liu	Northwestern Polytechnical University, China

Details

ID	Title and Authors
S5-1	Development of Adaptive Flow Control and Turbulence Generators based on SMA Technologies Bernardino Galasso, Salvatore Ameduri, Antonio Concilio, Catalano Pietro
S5-2	Analytical Entry Guidance with Waypoint Constraints Jin Yang, Wenbin Yu, Wanchun Chen, Wanqing Zhang
S5-3	Suboptimal Guidance Based on Pursuit and Impact Angle Control for Long-Range Air-to-Air Missiles Min-Jea Tahk, Jong-Chan Park, Heekun Roh, Chang-Hun Lee
S5-4	Data-Driven Parameters Identification Method for Freeplay Nonlinear System Hua Zheng, Jianzhu Wang, Shiqiang Duan, Jiangtao Zhou
S5-5	Online Analytical Guidance for a Solid-Fuel Launch Vehicle in Boost Phase Based on Generalized Zero Effort Miss Qi Yu, Wanchun Chen, Hongkui Wei, Chao Wang, Jinchuan Hu
S5-6	Fault Estimation Method for Second-Order Sliding Mode Observer Based on Superhelix Algorithm Yuqi Xue, Linfeng Gou, Chujia Sun, Yingxue Chen, Yingzhi Huang
S5-7	Image Based Landing Solutions for Large Passenger Aircraft Thierry Sammour Sawaya
S5-8	Intelligent Performance Optimization Control of Aeroengine Based on Honey Badger Algorithm Zhidan Liu, Linfeng Gou, Yingxue Chen, Yingzhi Huang, Ding Fan

Oral Session 6

S6/ New Engine Design and Manufacturing Technology

Porto Time	10:00-11:45, July 20, 2023	Onsite Room	Room E210

Chair: Adriana S. Franca, Universidade Federal de Minas Gerais, Brazil

Time	ID	Presenter	Affiliation
10:00-10:15	S6-1	Zhennan Zhao	Northwestern Polytechnical University, China
10:15-10:30	S6-2	Zhen Liu	Northwestern Polytechnical University, China
10:30-10:45	S6-3	Puyi Wang	Northwestern Polytechnical University, China
10:45-11:00	S6-4	Han-yang Wang	Northwestern Polytechnical University, China
11:00-11:15	S6-5	Wang Xiaotian	Northwestern Polytechnical University, China
11:15-11:30	S6-6	Yiyan Yang	Northwestern Polytechnical University, China
11:30-11:45	S6-7	Ziwei Zhang	Northwestern Polytechnical University, China

Details

ID	Title and Authors
S6-1	Integrated Analysis of Rotating Detonation Combined Cycle Engines Zhennan Zhao, Linyuan Jia, Yining Zhang, Fanqi Kong
S6-2	Test Simulation and Control Law Optimization of Micro-Turbojet Engines Zhen Liu, Linyuan Jia, Hanyang Wang, Zhennan Zhao, Fanqi Kong, Yuru Wang
S6-3	Matching Modeling and Parameter Influence Analysis of PTMS and Turbofan Engine Puyi Wang, Sanmai Su, Fangju Zheng, Lixin Bo
S6-4	Transient Performance Calculation Model for Turbofan Engines Coupled with Air System Hanyang Wang, Linyuan Jia, Ruiyuan Fang, Zhen Liu, Zhennan Zhao, Fanqi Kong
S6-5	Research on the Overall Comprehensive Design Method of Turbine Based Combine Circle Engine Wang Xiaotian, Chen Minze, Jia Linyuan, Zhang Yining, Zhao Zhennan, Kong Fanqi
S6-6	Study on Flow Control Method in Isolator of a Wide-Range Ramjet Inlet Yiyan Yang, Xue Yang, Fuhao Chen, Lei Shi
S6-7	Improved BES Algorithm for Steady- State Optimal Control of Propfan Engine Hua Zheng, Ziwei Zhang, Jiangtao Zhou, Shiqiang Duan

Oral Session 7

S7/ Aircraft Design and Wing Aerodynamic Analysis

Porto Time	13:30-15:15, July 20, 2023	Onsite Room	Room E208

Chair: Ali Arshad, Riga Technical University, Latvia

Time	ID	Presenter	Affiliation
13:30-13:45	S7-1	Yachen Hou	Beihang University, China
13:45-14:00	S7-2	Jong-Chan Park	Korea Advanced Institute of Science and Technology, South Korea
14:00-14:15	S7-3	Bohwi Seo	Agency for Defense Development, South Korea
14:15-14:30	S7-4	Ali Arshad	Riga Technical University, Latvia
14:30-14:45	S7-5	Luca Nanu	Polytechnic University of Turin, Italy
14:45-15:00	S7-6	Carlos Olea	Vanderbilt University, United States
15:00-15:15	S7-7	Sanjeev Kumar	Punjab Engineering College, India

Details

ID	Title and Authors
S7-1	A Celestial Navigation Method for Endo-atmospheric Flight Vehicle Using Starlight Refraction Yachen Hou, Wenbin Yu, Wanchun Chen
S7-2	Nonlinear Three-Loop Autopilot Design for Hypersonic Vehicles Considering Aerodynamic Propulsion Dynamics Couplings Jong-Chan Park, Heekun Roh, Chang-Hun Lee, Min-Jea Tahk, Hyoung-Sik Choi, Sung-Yug Kim
S7-3	Test Methodology Establishment of Hydrodynamic Ram Effect on Aircraft Wing Fuel Tank Bohwi Seo, Jong Heon Kim
S7-4	Numerical Investigations for the Influence of Shape of Trapezoidal Micro Vortex Generators (MVGs) on the Aerodynamic Performance of the 4R-UAV Wing Ali Arshad, Vadims Kovalcuks
S7-5	Design of a Drone for Urban Application Using a Patented Technology Luca Nanu, Angelo Lerro, Piero Gili
S7-6	String Grammars for Preliminary UAV Design Exploration Carlos Olea, Michael Sandborn, Peter Volgyesi, Jules White
S7-7	Effect on the Aerodynamic Characteristics of the Delta Wing Using Active Flow Control Technique Sugandh Gupta, Sanjeev Kumar, Rakesh Kumar

Oral Session 8

S8/ Material Performance Analysis and Experiment

Porto Time	13:30-15:15, July 20, 2023	Onsite Room	Room E210

Chair: Peter Pavol Monka, FMT TU of Kosice, Slovakia

Time	ID	Presenter	Affiliation
13:30-13:45	S8-1	Aishabibi Mukhangaliyeva	Nazarbayev University, Kazakhstan
13:45-14:00	S8-2	Adriana S. Franca	Universidade Federal de Minas Gerais, Brazil
14:00-14:15	S8-3	Damira Dairabayeva	Nazarbayev University, Kazakhstan
14:15-14:30	S8-4	Hai-Ping Tsui	National Central University, Taiwan
14:30-14:45	S8-5	Amir Navidfar	Bahcesehir University, Turkey
14:45-15:00	S8-6	Jung-Chou Hung	National Central University, Taiwan
15:00-15:15	S8-7	Lijun Meng	Jianghan University, China

Details

ID	Title and Authors
S8-1	Optimization of Dimensional Accuracy and Surface Roughness of Fused Filament Fabrication Printed Hip Implants Aishabibi Mukhangaliyeva, Damira Dairabayeva, Asma Perveen, Didier Talamona
S8-2	Tayloring Mechanical Properties of Biopolymeric Composites based on Agricultural By-Products Adriana Franca, Leandro Oliveira
S8-3	Flexural Performance of Mono-material and Multimaterial Fused Filament Fabrication Honeycomb Structures Damira Dairabayeva, Asma Perveen, Didier Talamona
S8-4	A Study on the Effect of Various Method Assisted Through-Mask Electrochemical Machining by Using Micro Multiple Tool Electrodes Hai-Ping Tsui, Jung-Chou Hung, Meng-Wei Lin, Chun-Hao Yang
S8-5	Hybridization Strategy of Nanofillers for Mechanical Properties Improvement in Polymeric Nanocomposites Amir Navidfar
S8-6	Electrode Design and Process Analysis for Precision Internal Gear in Electrochemical Machining Jung Chou Hung, Hai Ping Tsui, A Cheng Wang, Jheng Hong Liu
S8-7	Rub-Impact Signal Monitoring of Rotating Machinery Based on Fiber Bragg Grating Sensing Lijun Meng, Jing Chen, Tianxiang Pan, Xiao Huang

Oral Session 9 (Special Session 2)

S9/ Space Power and Propulsion-B

Porto Time	10:00-12:00, July 21, 2023	Online only	Zoom ID: 848 8381 2780 https://us02web.zoom.us/j/84883812780

Chair: Lei Shi, Bingning Jin, Lin Sun, Northwestern Polytechnical University, China

Time	ID	Presenter	Affiliation
10:00-10:15	S9-1	Sun Rui-Qian	Northwestern Polytechnical University, China
10:15-10:30	S9-2	Runkun Li	Kunming Shipborne Equipment Research and Test Center, China
10:30-10:45	S9-3	Du Jinfeng	Northwestern Polytechnical University, China
10:45-11:00	S9-4	Jiazuo Yu	Shanghai Engineering Research Center of Civil Aircraft Flight Testing, China
11:00-11:15	S9-5	Yuru Wang	Northwestern Polytechnical University, China
11:15-11:30	S9-6	Tianfang Wei	Beihang University, China
11:30-11:45	S9-7	Xiaochen Wang	Northwestern Polytechnical University, China
11:45-12:00	S9-8	Changzheng Qian	Harbin Institute of Technology, China

Details

ID	Title and Authors
S9-1	Generalized TSKF-based Aeroengine Actuator Fault Estimation under Multi-Source Uncertainty Sun Rui-Qian, Han Xiao-Bao, Chen Ying-Xue, Gou Lin-Feng
S9-2	Analysis of Altitude Influence on the Dynamic Performance of Thermal Power Ship Runkun Li, Moubiao Xie, Yixinyu Wang, Tieshu Li
S9-3	Analysis of Scramjet's Flight Engine Integration Considering the Fuel Proportional Distribution Inside the Combustor Du Jinfeng, Chen Yu-Chun, Zheng Shangzhe, Zhao Zhennan, Kong Fanqi
S9-4	Temperature Prediction Model Based on Low Temperature Release Method of Fire Extinguishing Bottle for Civil Aircraft Flight Test Jiazuo Yu, Zheng Li, Chao Feng
S9-5	Parametric Modeling Method for the Hybrid Distributed Propulsion System Yu-Ru Wang, Yu-Chun Chen, Xiao-Chen Wang, Ji-Chang Wu
S9-6	Experiment Research on Regression Rate of Aluminized Solid Propellant with HMX using Reconstruction Techniques Tianfang Wei, Guobiao Cai, Hui Tian, Yudong Lu, Xiaoting Niu
S9-7	Transient Performance Simulation of Turbofan Engine with Component Deviation Xiaochen Wang, Yuchun Chen, Keran Song, Yuru Wang
S9-8	Minimun-Fuel Low-Thrust Trajectory Optimization Using Adaptive Wavelet Collocation and Successive Convex Programming Algorithm Changzheng Qian, Hutao Cui, Wenlai Ma

Oral Session 10

S10/ Engine Performance Simulation and Numerical Analysis

Porto Time	10:00-12:00, July 21, 2023	Online only	Zoom ID: 826 4522 8278 https://us02web.zoom.us/j/82645228278

Chair: Lv Xiang, Northwestern Polytechnical University, China

Time	ID	Presenter	Affiliation
10:00-10:15	S10-1	Chuming Gao	Northwestern Polytechnical University, China
10:15-10:30	S10-2	Xianzhu Jiang	Beihang University, China
10:30-10:45	S10-3	Yongchun Lou	Northwestern Polytechnical University, China
10:45-11:00	S10-4	Xiaoting Niu	Beihang University, China
11:00-11:15	S10-5	Zhen Xu	Northwestern Polytechnical University, China
11:15-11:30	S10-6	Chun-Jie Ma	Beijing University of Technology, China
11:30-11:45	S10-7	Chao Huo	Northwestern Polytechnical University, China
11:45-12:00	S10-8	Xiaoshuai Fan	National University of Defense Technology, China

Details

ID	Title and Authors
S10-1	Generation and Comparison of Sub-Idle Speed Characteristics Based on Beta Line Chuming Gao, Linyuan Jia, Yulin Qiu, Changjiang An
S10-2	Numerical Analysis on Nozzle Erosion in Hybrid Rocket Motors with Different Injection Parameters Xianzhu Jiang, Hui Tian, Xiaoming Gu, Jingfei Gao
S10-3	Critical Parametric Studies of Combustion Instability in Solid Rocket Motors Yongchun Lou, Xiaoting Ji, Peijin Liu, Shengjie Yin, Qin-Liu Cao
S10-4	Numerical Analysis of Hybrid Rocket Motor with Star-Wheel Segmented Grain Xiaoting Niu, Hui Tian, Xianzhu Jiang, Jingfei Gao
S10-5	Thermomechanical Response Analysis of Regenerative Cooling Channel for Rocket-Based Combined-Cycle Engine Zhen Xu, Xiaoning Luan, Xing Sun, Tingting Jing, Wei Jiao, Fei Qin
S10-6	A Study on Weakly Lindelöf (Para)Topological Groups with a q-point and m(M)-factorizability Liang-Xue Peng, Chun-Jie Ma
S10-7	Analysis of Pressure Oscillation Characteristics in an Engine with a Submerged Nozzle Based on Clx Motor Chao Huo, Hongbo Xu, Peijin Liu
S10-8	Hardware-in-the-Loop Simulation Test Method for the Inertial Navigation System of a Boost-Glide Rocket Xiaoshuai Fan, Xibin Bai, Zhenyu Jiang, Shifeng Zhang

Oral Session 11 (Special Session 3)

S11/ Materials Engineering & Mechanical Design

Porto Time	10:00-11:45, July 21, 2023	Online only	Zoom ID: 842 3789 0054 https://us02web.zoom.us/j/84237890054

Chair: Haydar Al-Ethari, University of Babylon, Iraq

Time	ID	Presenter	Affiliation
10:00-10:15	S11-1	Mohammad Almahdi	Babylon University, Iraq
10:15-10:30	S11-2	Zhenggang Fang	Northwestern Polytechnical University, China
10:30-10:45	S11-3	Chen Zhou	AECC Commercial Aircraft Engine Co.LTD, China
10:45-11:00	S11-4	Wurood Asaad Midab	Al-Salam- University College, Iraq
11:00-11:15	S11-5	Cristea Aurora Felicia	Technical University of Cluj-Napoca, Romania
11:15-11:30	S11-6	Jinguang Li	Northwestern Polytechnical University, China
11:30-11:45	S11-7	Mingning Yin	University of Jinan, China

Details

ID	Title and Authors
S11-1	Influence of Warm Squeezing on Some Properties of AA7075 Alloy Prepared by Stir Casting Mohammad al-Mahdi Hataf al-Mhanna, Haydar Al-Ethari, Talib A. Jasim
S11-2	Test Method of Aviation Rubber Properties in Service Environment Yongjie Zhang, Zhenggang Fang, Bo Cui, Mingzhen Wang, Chuzhe Zhang
S11-3	Numerical Investigation of Film Cooling Characterstics in Multi-perforated CMC Plates Chen Zhou, Zhiliang Hong, Liang Ding
S11-4	Improvement the Performance of Carbide Cutting Tool by YSZ Coating Wurood Asaad M., Shaimaa J. Kareem, Haydar Al-Ethari
S11-5	Contributions on the Kinematics of Unconventional Worm Gears Haragas Simion, Ninacs Roland, Cristea Aurora Felicia
S11-6	Throughflow Inverse Design of a Transonic Fan Stage Based on Time Marching Method Jinguang Li, Hu Wu
S11-7	Analysis of Influence of Blade Number on Aerodynamic Performance and Noise of Forward Centrifugal Fan Mingning Yin, Rongyu Ge, Jiaqi Li, Quxian Jia

Oral Session 12

S12/ Aircraft Structural Design and Wing Aerodynamic Analysis

Porto Time	13:30-15:15, July 21, 2023	Online only	Zoom ID: 848 8381 2780 https://us02web.zoom.us/j/84883812780

Chair: Rajkumar S. Pant, Indian Institute of Technology Bombay, India

Time	ID	Presenter	Affiliation
13:30-13:45	S12-1	Junjie Sun	Beihang University, China
13:45-14:00	S12-2	Hu Wenqiang	AVIC Changhe Aircraft Industry (Group) Corporation LTD, China
14:00-14:15	S12-3	Jingyi Liu	Chang'an University, China
14:15-14:30	S12-4	Youwei Jiang	AECC Commercial Aircraft Engine Co.LTD, China
14:30-14:45	S12-5	William Widjaja	University of Nottingham Ningbo China, China
14:45-15:00	S12-6	Shubhodeep Shiv Aditya	Delhi Technological University, India
15:00-15:15	S12-7	Shiyu Lin	Beijing University of Technology, China

Details

ID	Title and Authors
S12-1	Intelligent Multi-objective Optimization Design for Aerodynamic Layout of Mechanical Expansion Reentry Vehicle Junjie Sun, Hao Zhu, Haizhou Guo, Dajun Xu
S12-2	Optimization and Application of Hydraulic Clamps for Helicopter Rotorconnectors Based on Fuzzy Hierarchical Analysis Zhou Xinmin, Hu Wenqiang, Yang Xianyong
S12-3	Performance Reliability Modeling and Analysis of an Airplane Cabin Door Retraction Mechanism Jingyi Liu, Xinchen Zhuang, Huan Pang, Bo Yan
S12-4	The Effects of Nacelle Pipe Design Parameters on Resistance to Fire Youwei Jiang, Songyang Li, Zhentao Cui
S12-5	Investigation of The Improvement of Airfoil Aerodynamic Performance by Using a Novel Mechanism to Adjust Different Cant Angles William Widjaja, Shanshan Long, Xiaogang Yang, Richard Amankwa Adjei
S12-6	Design and Analysis of a Single-rotor UAV for Safe Indoor Navigation Shubhodeep Shiv Aditya, Bharat Bhushan, Atul Kumar Agarwal
S12-7	Representations of a Class of Positively Based Algebras Shiyu Lin, Shilin Yang

Oral Session 13

S13/ Dynamic Modeling and Fluid Mechanics Analysis

Porto Time	13:30-15:30, July 21, 2023	Online only	Zoom ID: 826 4522 8278 https://us02web.zoom.us/j/82645228278

Chair:

Time	ID	Presenter	Affiliation
13:30-13:45	S13-1	Seraj Alzhrani	King Abdulaziz University, Saudi Arabia
13:45-14:00	S13-2	Huaibo Yao	Harbin Institute of Technology, China
14:00-14:15	S13-3	Mohammed M Abdulla	King Abdulaziz University, Saudi Arabia
14:15-14:30	S13-4	Angel Gabriel Corpuz	Mapúa University, Philippines
14:30-14:45	S13-5	Jitlada Premyothin	King Mongkut's Institute of Technology Ladkrabang, Thailand
14:45-15:00	S13-6	Jia-Xing Jia	Xi'an Jiaotong University, China
15:00-15:15	S13-7	Guang Tan	Beihang University, China
15:15-15:30	S13-8	Dima Younes	Wuhan University of Technology, China

Details

ID	Title and Authors
S13-1	Effect of Maglev Suspension on the Aerodynamics of Multiple Vehicles Moving in a Low-Pressure Tube Seraj Alzhrani, Mohammed Abdulla, Khalid Juhany, Ibraheem Alqadi
S13-2	A Study on the Effects of Clearance Joints on the Dynamic Response of a Planar Deployable Structure Huaibo Yao, Lei Liang, Wenlai Ma, Yang Zhao, Yuntao Hua
S13-3	Application of Adjoint Aerodynamics Optimization for a High-Speed Vehicle Moving in a Tube Mohammed M Abdulla, Seraj Alzhrani, Khalid Juhany, Ibrahim Alqad
S13-4	CFD Modeling and Optimization of Paint Hangar Overspray Filtration System Angel Gabriel Corpuz, Jaime Honra, Aldrin Calderon, Reylina Tayactac, Mark Christian Manuel
S13-5	Numerical Study on Flow Physics of Damaged Vane Trailing Edge Benyapa Thammachote, Jitlada Premyothin, Siwanart Khumhaeng, Ditthaphat Tanpradit, Daniele Dipasquale, Prasert Prapamonthon
S13-6	Multi-Fidelity Gaussian Processes with Derivatives for Aerodynamic Data Fusion Jia-Xing Jia, Feng Lian, Zi-En Fan
S13-7	Experimental Study on Flow Coefficient of Variable Area Cavitating Venturi Guang Tan, Hui Tian, Xiaoming Gu, Xianzhu Jiang, Xiangyu Meng, Yuanjun Zhang
S13-8	Research on Tracking Control and System of 6 DOF Robotic Arm Based on STM32 Dima Younes, Tan Yuegang, Nader Ben Haj Salem

Oral Session 14

S14/ Advanced Electronics and Information Technology

Porto Time	13:30-15:30, July 21, 2023	Online only	Zoom ID: 842 3789 0054 https://us02web.zoom.us/j/84237890054

Chair: Kamel MEHDI, University of Tunis EL Manar, Tunisia

Time	ID	Presenter	Affiliation
13:30-13:45	S14-1	Yuntao Hua	Harbin Institute of Technology, China
13:45-14:00	S14-2	Bo Cao	Guangzhou Civil Aviation College, China
14:00-14:15	S14-3	Shuai Lou	Beijing Institute of Astronautical Systems Engineering, China
14:15-14:30	S14-4	Qiong Zhang	COMAC flight test center, China
14:30-14:45	S14-5	Haiwei Huang	Jianghan University, China
14:45-15:00	S14-6	Xiaoli Zhang	Beijing University of Technology, China
15:00-15:15	S14-7	Rong Yi	Civil Aviation Flight University of China, China
15:15-15:30	S14-8	Huimin Li	Beijing University of Technology, China

Details

ID	Title and Authors
S14-1	Thermal Response of a Truss Antenna Considering Friction Joints Using Improved HHT-α Method Yuntao Hua, Wenlai Ma, Hutao Cui, Yang Zhao, Yingyong Shen, Xiaoyi Fu, Huaibo Yao, Changzheng Qian
S14-2	Simulation Analysis of Localizer Antenna of NM7000 Series Bo Cao, Wenping Liu
S14-3	An Energy Stable Alternative WENO Scheme with a New Smoothness Indicator for Hyperbolic Conservation Laws Shuai Lou, Yi-peng Ren, Xue-jun Yang, Zhao-wei Wang, Kang Zhong, Chao Yan
S14-4	Research and Application of Double Layer Bayesian Network Model in Human Error Provention in Flight Test Qiong Zhang, Jun Jie Wang, Hao Zhang, Chun Jia
S14-5	Design of Smart Laboratory System Based on Home Assistant Haiwei Huang, Jiangang Yi, Jun Gao, Peng Liu, Lijun Meng, Hongfeng Zou
S14-6	Frame Properties of Hilbert-Schmidt Operator Sequences Xiaoli Zhang
S14-7	Applying Hierarchical Task Analysis to Reduce Human Errors of Tower Controllers Rong Yi, Jingyu Zhang, Jianping Zhang, Xiaoqiang Tian, Xinyi Yang
S14-8	Pilot Estimations for a Family of Sparse Covariance Matrices Huimin Li

Poster Session

P/ Material Design and Power Mechanical Engineering

Porto Time	15:45-16:25, July 19, 2023	Venue	1st Floor Hall

Chair: Albert Wen-Jeng Hsue, National Kaohsiung University of Science and Technology, Taiwan

ID	Title and Authors	Presenter	Affiliation
P1	Investigation of Hydrophobic Microstructure on Stainless Steel Fabricated by Fine Wire-EDM Processes Associated with Low-Temperature Baking Albert Wen-Jeng Hsue, Zih-Shou Su	Albert Wen-Jeng Hsue	National Kaohsiung University of Science and Technology, Taiwan
P2	Large Deformation Prediction of Wing Model and Geometric Nonlinear Aeroelastic Analysis Chao An, Lipeng Zhu, Changchuan Xie and Chao Yang	Chao An	Beihang University, China
P3	A Study on the Determination of Material Coefficients of Rubber Materials for Vehicle Secondary Suspension Kyung-Sik Kim, Seung-Il Lee, Chul-Su Kim	Kyung-Sik Kim	Korea National University of Transportation, South Korea
P4	Singular-Perturbation-based Intelligent Midcourse Guidance for Air-to-Air Missiles Equipped with Dual-Pulse Motor Xiaopeng Gong, Wanchun Chen, Zhongyuan Chen	Xiaopeng Gong	Beihang University, China
P5	Study of Turbine Engine Component Characterization Method Changjiang An, Linyuan Jia, Fengping Chen, Chuming Gao	Changjiang An	Northwestern Polytechnical University, China
P6	A Guidance Law with Both Impact Time and Impact Angle Constraints Based on Circular Guidance Xiangxiang Li, Wanchun Chen, Zhongyuan Chen, Heng Shi	Xiangxiang Li	Beihang University, China
P7	Heat Treatment Effect on SLM Printed Al-Si12 Using Ultrasonically Atomized Powder Aidana Seisekulova, Hussain Ali Murtaza, Asma Perveen, Didier Talamona	Aidana Seisekulova	Nazarbayev University, Kazakhstan

Optional Academic Visit

July 21, 2023

Lab 1	At ISEP, Autonomous Systems Laboratory, (LSA)
Lab 2	At FEUP, INEGI

Delegates could choose to join the academic visit on July 21, or enjoy free day to explore the city by themselves.

Who willing to join the optional visit please fill the online form to book by 00:00 of July 18th, 2023, Porto Time:

Link: http://registration-link.mikecrm.com/acaA8Fp

Or we will take is as not to join.

Tips: No meal will be provided during the labs visit, please arrange by yourself.

Meeting Point @ Building E front.

Lab Visit Time and details will be notified to booked visitors' emails.

About Lab 1: At ISEP, Autonomous Systems Laboratory, (LSA)

http://www.lsa.isep.ipp.pt/

LSA is a R&D unit from ISEP the Engineering School of Porto Polytechnic. It conducts research in autonomous systems and related areas such as navigation, control and coordination of multiple robots. The laboratory activity is developed in four lines of work:

R&D programs

Educational project

Dissemination projects

Strategic positioning projects for the school ISEP/IPP

Articulate scientific and technological excellence to development requirements in the emerging areas of security and monitoring, water management, oceans and environment (climate changes). To support and promote research and development leading to society new problems solving in a European, national or regional dimension.

We developed multiple land, air and sea autonomous robots ranging from the ROAZ autonomous surface vehicles, to the FALCOS unmanned aircraft systems and multiple land robots such as the soccer playing ISePorto robots or the LINCE autonomous rovers.

Laboratory activity also includes teaching support for school courses and consulting.

About Lab 2: At FEUP (Engineering Faculty of the Porto University), INEGI

www.inegi.pt/en/

NEGI – Institute of Science and Innovation in Mechanical and Industrial Engineering is a Research and Technology Organization (RTO), founded in 1986, focused on research and technology-based innovation activities, technology transfer, consulting and technological services, oriented to the development of industry and economy in general.

A non-profit, private and recognized as a public utility entity.

Mission

To contribute towards the development of industry and the economy in general, through scientific and technology-based innovation, while ensuring the personal and professional development of employees and the enrichment of higher education.

Vision

To grow, to be the best at converting knowledge into value and to confirm our strong institutional identity as a technological partner for companies.

Organizational Structure

It has in its base a cluster of research units specialized by scientific and technological areas supporting the research activity. Crosswise there are the Innovation, Consulting and Services activities that address the development of solutions for companies.

INEGI integrates and leads LAETA - Associated Laboratory for Energy, Transports and Aerospace, a unit of national dimension, which also includes the Institute of Mechanical Engineering - Instituto Superior Técnico (IDMEC - IST), of the Association for the Development of Aerodynamics Industrial (ADAI) of the University of Coimbra and the Aeronautics and Astronautics Research Group of the University of Beira Interior (AeroG).

MEMO