



**2019 IEEE 10th International Conference on
Mechanical and Aerospace Engineering
&
2019 the 8th International Conference on
Pure and Applied Mathematics**

ICMAE&ICPAM

**22-25 July, 2019
Brussels, Belgium**

Conference Program

Conference Venue

2019 IEEE 10th International Conference on Mechanical and Aerospace Engineering (ICMAE 2019),
in Conjunction with

2019 The 8th International Conference on Pure and Applied Mathematics (ICPAM 2019)

will be held at **Novotel Brussels City Centre**, during July 22-25, 2019

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<https://www.accorhotels.com/gb/hotel-2122-novotel-brussels-city-centre/index.shtml#section-events>

Floor Map(1st Floor)

Day 1(July 22): Lobby

Day 2(July 23):

Morning: Tour Noire Room (Opening, Keynote Speeches)

Afternoon: Tour Noire Room, Tour de Babel Room, Tour Eiffel, Tour de Londres (Plenary speeches & Parallel Sessions)

Day 3(July 24):

Tour Noire 1 Room, Tour Noire 2 Room, Tour Noire 3 Room, Tour Noire 4 Room.

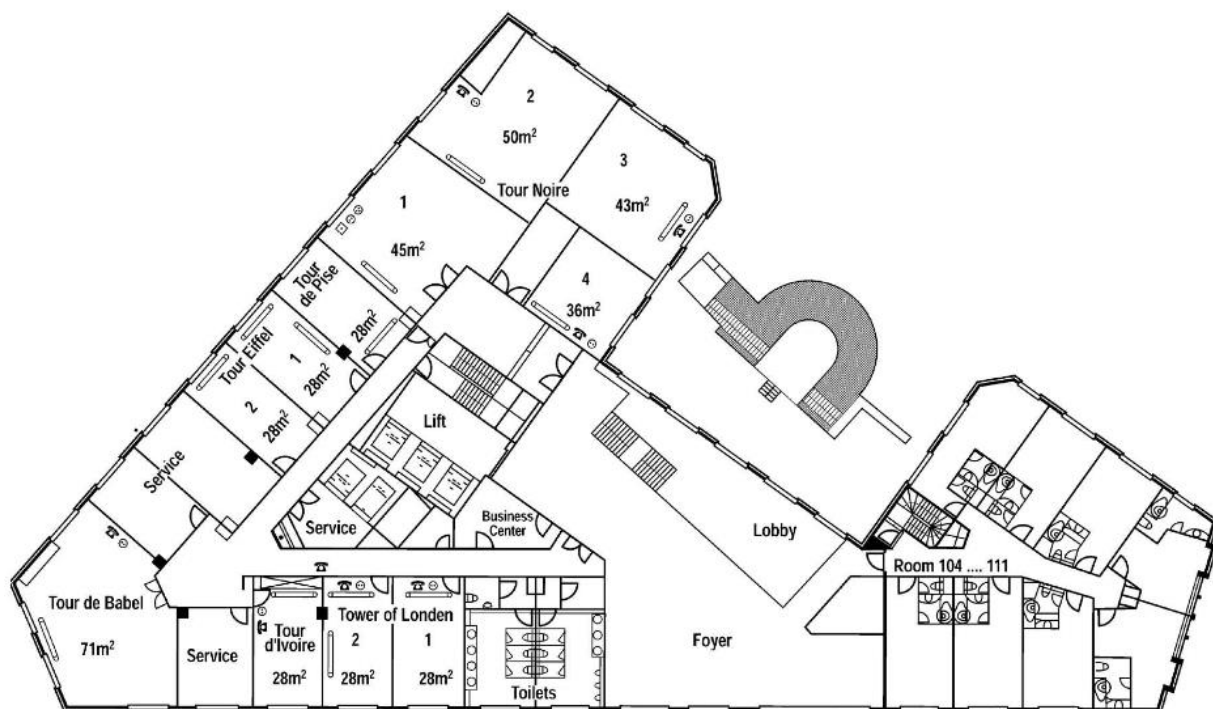


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Welcome Address

Welcome to Brussels and 2019 IEEE 10th International Conference on Mechanical and Aerospace Engineering (ICMAE 2019), in conjunction with 2019 the 8th International Conference on Pure and Applied Mathematics (ICPAM 2019), to be held during July 22-25, 2019, in Brussels, Belgium. ICMAE 2019+ICPAM 2019 continue to be a showcase for some of the most exciting advances in relevant expertise. With a full slate of keynote speeches, plenary speeches, invited speeches, oral presentations, poster sessions, this promise to be a good experience.

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 ICMAE 2019+ICPAM 2019 conference in various ways. Special thanks are extended to committee members for their thorough review of all the submissions, which is vital to the success of the conference, and also 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.

This conference program is highlighted by 3 Keynote Speakers: Prof. Pasquale Dapont,

University of Sannio, Italy; Prof. Ramesh K. Agarwal, Washington University in St. Louis, USA; Prof. Ronghai Qu, Huazhong University of Science and Technology, China; 3 Plenary Speakers: Prof. Dashnor Hoxha, Orleans University, France; Prof. Anh Dung NGO, Ecole de Technologie Superieure (U. du Quebec), Canada; Prof. Necdet Bildik, Celal Bayar University, Turkey.

One best presentation will be selected from each session, evaluated from: originality; applicability; technical Merit; qualities of PPT; English. The best one will be announced at the end of each session and awarded the certificate at the dinner time.

As the centre of European culture and institutions, Brussels has much more to offer than most people imagine. Apart from its famous chocolates and beers, there are almost 90 museums, beautiful parks, architecture, bars and much more.

We wish you a successful conference and enjoyable experience in Brussels!

ICMAE 2019&ICPAM 2019
International Organizing Committee
Brussels, Belgium
July 2019

Organizing Committee

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Kenji Uchiyama, Nihon University, Japan

Linda Vee Weiland, ERAU-Worldwide College of Aeronautics, Asia

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Heow Pueh Lee, National University of Singapore, Singapore

Şener Karabulut, Hacettepe University, Turkey

Abdus Samad, Indian Institute of Technology ,

Madras, India

Shariq Neshat Akhtar, University of Leeds, UK

Emin Taner ELMAS, İSTE - İskenderun Technical University, Turkey

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Serkan Dağ, Middle East Technical University, Turkey

Viktor SZENTE, Budapest University of Technology and Economics, Hungary

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Arif Hepbasli, Yasar University, Turkey

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Espen Oland, UiT - The Arctic University of Norway, Norway

Mehmet Şerif Kavsaoğlu, Fatih Sultan Mehmet Vakıf University, Turkey

Yongdae Kim, Kyungil University, South Korea

Cem Tahsin Yücer, National Defense University Air Force NCO Higher Vocational School, Turkey

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Fatih Karpat, Uludag University, Turkey

Zhaoheng Liu, Université du Québec, Canada

Ming Zhu, Beihang University, China

T.Rajasanthosh kumar, Ace Engineering college, India

Dumitrache Alexandru, "POLITEHNICA" University of Bucharest, Romania

Haydar Al-Ethari, University of Babylon, Iraq

Chingiz Hajiyeu, Istanbul Technical University, Turkey

Sulakshana Chilukuri, Vardhaman College of Engineering, India

Sun Yuwei, Beijing Institute of Spacecraft Environment Engineering, China

Hasan Hacisevki, Eastern Mediterranean University, Turkey

Kai Peng, Northwestern Polytechnical University, China

George Pantazopoulos, Hellenic Research Center for Metals S.A, Greece

Tadahiro Wada, Nara National College of Technology, Japan

Khalid Mahmood, NUST College of Electrical and Mechanical Engineering, Pakistan

Zejun Tang, Nanjing University of Aeronautics and Astronautics, China

Mitsuharu Matsumoto, The University of Electro-Communications, Japan

Wenbin Yu, Beihang University, China

Strelets D.Y., Moscow Aviation Institute (National Research University), Russia

Rajkumar S. Pant, Manipal Institute of Technology, India

Mingfu Liao, Northwestern Polytechnical University, China

Wei-Jie Li, China Academy of Space Technology (CAST), China

Chul-Su Kim, Korea National University of Transportation, South Korea

Sławomir Spadło, Kielce University of Technology, Poland

Xueqin Bu, Beihang University, China

Sanjeev Kumar, Punjab Engineering College, India

Jinhui Jiang, Nanjing University of Aeronautics & Astronautics, China

Jehanzeb Masud, King Fahd University of Petroleum & Minerals Dahrhan, Saudi Arabia
Guoping Huang, Nanjing University of Aeronautics and Astronautics, China
Hakyoony Kim, Hanseo University, Korea
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Mustafa Emre Kansu, Dumlupinar University, Turkey
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Murat Tanışlı, Anadolu University, Turkey
Cuthbert Romero Melendez, Metropolitan Autonomous University, Mexico
Süleyman Demir, Anadolu University, Turkey
Muharrem Tuncay Gencoglu, Fırat University, Turkey

Hossein Abdolzadeh, University of Mohaghegh Ardabili, Iran.
Rıdvan Şahin, Bayburt University, Department of Mathematics, Turkey
Mesut Karabacak, Ataturk University, Turkey
SİNAN DENİZ, Manisa Celal Bayar University, Turkey
Duygu Donmez Demir, Manisa Celal Bayar University, Turkey
Mehmet Onur Fen, TED University, Turkey
Naila Rozi, Sindh Madrassatul Islam University, Pakistan
Mehmet Sezer, Celal Bayar University, Turkey
Okunuga, University of Lagos, Nigeria
Reza Mohammadi, University of Neyshabur, Iran.
Djamil Aissani, University of Bejaia, Algeria
Hossein Kheiri, University of Tabriz, Iran
Suleyman Demir, Anadolü University, Türkiye
Pijitra Jomsri, Suan Sunandha Rajabhat University, Thailand
Burcu Gürbüz, Üsküdar University, Turkey

Guidelines for Presentations

Oral presentations

Standard LCD projector (connected to a local PC) will be provided in each conference room.

Oral presentations have been allocated 15 minutes of effective presentation time, including Q/A time.

Best Presentation of each session is encouraged to award to student author prior. Winner of Best presentation will be announced by Session Chair at the end of each session and awarded winner certificate during the Dinner.

To show respect to other authors, especially to encourage the student authors, we strongly suggest you attend the whole session.

The scheduled time for presentations might be changed due to unexpected situations, please arrive meeting room at least 10 Mins before your Session starts and introduce yourself to the session chairs.

Authors must prepare their oral presentations to be sure to convey their message in clear and sharp manner, including giving outline of the key principles, facts and results. More detailed discussions can continue during the breaks.

A video projector and a PC will be available in all conference rooms. Speakers suggested not use their own laptop, avoiding useless time breaks in between papers.

Bring your presentation on a USB memory stick in MS-PowerPoint or Adobe PDF formats, and upload it in the Session Room computer no later than 10 minutes prior to your session start! You can also bring it earlier, during the coffee/lunch breaks before your presentation. Please upload your presentation in a right place in order to find it easily at the time of presentation.

Please wear formal clothes or national characteristics of clothing for participation.

The certification of Oral presentation will be awarded at the end of each session, and session photo will be taken at the end too and updated online after conference.

PowerPoint Instructions

For MS-PowerPoint presentations, please use the following versions only: PP 97-2003 (*.ppt) or 2007, 2010 to guarantee that it will be opened successfully on the on-site PC

We recommend to the PPT/PPTX format instead of PPS

All videos or animations in the presentation must run automatically!

Pictures/Videos

We cannot provide support for embedded videos in your presentation; please test your presentation with the on-site PC several hours before your presentation.

In case your video is not inserted in MS-PowerPoint, it is possible to have it in other formats – MPEG 2,4, AVI (codecs: DivX, XviD, h264) or WMV. Suggested bitrate for all mpeg4 based codecs is about 1 Mbps with SD PAL resolution (1024x576pix with square pixels, AR: 16/9).

Fonts

Only fonts that are included in the basic installation of MS-Windows will be available (English version of Windows). Use of other fonts not included in

Windows can cause wrong layout/style of your presentation.

Suggested fonts: Arial, Times New Roman.

If you insist on using different fonts, these must be embedded into your presentation by choosing the right option when saving your presentation:

Click on "File", then "Save As"

Check the "Tools" menu and select "Embed True Type Fonts"

Poster presentations

Suggested Poster with size of 60cm*80cm (width*height).

Posters are required to be condensed and attractive. The characters should be large enough so that they are visible from 1 meter apart.

During this poster presentation time, the presenter must stand by the display board to answer questions and discuss about the contents of the poster informally. The poster display should include a statement the topic, objectives of the research

project, the methodology used to solve the problem or implement the program, the major findings or outcomes and their significance and conclusions. There should be a logical sequence---- introduction, development and conclusion---of your display. Each sheet should be numbered, a heading should be prepared for your presentation using lettering at least 3 cm high. The heading should include the title of the poster, all author names and institutional affiliations, and with ICMAE 2019+Paper ID at right-up corner.

Pins or tapes are provided by conference committee to mount your posters on the boards. All materials to be displayed should be prepared before your arrival. Supplies will not be available at the conference site.

The certification will be awarded at the end of each session. Session photo will be taken at the end of each session and updated online after the conference.

Best Presentation of each session is encouraged to award to student author prior. Winner of Best presentation will be announced by Session Chair at the end of each session and awarded winner certificate during the Dinner.

Keynote Speech

TUESDAY, 23 JULY 2019

Time: 09:05-09:50

Room: Tour Noire Room



TITLE: DRONES AS A FLEXIBLE MOBILE MEASUREMENT PLATFORM

PASQUALE DAPONT

Professor, IEEE Fellow, *University of Sannio, Italy*

Abstract: Unmanned Aerial Vehicles (UAVs) are becoming popular as carrier for several sensors and measurement systems, due to their low weight, small size, low cost and easy handling, which make them flexible and suitable in many measurement applications, mainly when the quantity to be measured is spread over a wide area or it lies in human-hostile environments.

However, the drone itself can interact with both the measurand and the sensors, thus influencing the measurement results. For this reason, the drone equipped with the sensors must be thought as a measurement platform and must be characterized as a whole.

The tutorial will introduce the architecture of the drone, by highlighting its subsystems and the parameters that can influence the on-board sensors and measurement systems.

Then, an overview of the sensors and measurement systems that can be embedded on the drone will be given, by presenting their operating principle and applications.

Finally, some measurement applications will be described. For such applications, the measurement chain is analyzed and the influence of the flight parameters is taken into account to assess the measurement uncertainty.

Bio: Professor 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 N°10 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-ofthalmology,

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

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

- in May 2018 the "Career Excellence Award" from the IEEE Instrumentation and Measurement Society "For a lifelong career and outstanding 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..

TUESDAY, 23 JULY 2019

Time: 09:50-10:35

Room: Tour Noire Room



TITLE: SUSTAINABLE (GREEN) AVIATION: CHALLENGES AND OPPORTUNITIES

RAMESH K. AGARWAL

Professor, IEEE Fellow, *Washington University in St. Louis, USA*

Abstract: Among all modes of transportation, travel by airplanes continues to experience the fastest growth. Currently, there are approximately 500,000 air vehicles (335,000 Active General Aviation Aircraft, 18,000 Passenger Aircraft, 90,000 Military Aircraft, 27,000 Civil Helicopters, and 30,000 Military Helicopters). They are responsible for 9% of fuel consumption and 2% of all greenhouse gas (GHG) emissions worldwide. These numbers are forecasted to double by 2050. Therefore the environmental issues such as noise, emissions and fuel burn for airplanes have become important for energy and environmental sustainability. This lecture will provide an overview of specific energy and environmental issues related to air transportation. Topics dealing with noise and emissions mitigation by technological solutions including new aircraft and engine designs/technologies, alternative fuels, and materials as well as examination of aircraft operations logistics including Air-Traffic Management (ATM), Air-to-Air Refueling (AAR), Close Formation Flying (CFF), and tailored arrivals to minimize fuel burn will be presented. The ground infrastructure for sustainable aviation, including the concept of sustainable Green Airport Design will also be covered.

Bio: Professor 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. From 1978 to 1994, he was the Program Director and McDonnell Douglas Fellow at McDonnell Douglas Research Laboratories in St. Louis. 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. Professor Agarwal continues to serve on many academic, government, and industrial advisory committees. 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.

TUESDAY, 23 JULY 2019

Time: 11:15-12:00

Room: Tour Noire Room



**TITLE: ELECTRIC MACHINE SYSTEMS IN FUTURE
AIRCRAFT ELECTRIFICATION**

RONGHAI QU

Professor, IEEE Fellow, *Huazhong University of Science and Technology, China*

Abstract: Aircraft traffic has been increasing at an annual rate of around 10% for decades and is considered as the most comfortable and fastest way to travel. Due to people's increasingly living requirements, today's civil aircrafts are expected to offer more improvements in safety, capability, and availability. To meet these expectations, one of the most popular ideas is to transform some aircraft systems from the pneumatic, mechanical, and hydraulic systems toward the electrical systems, which will have tremendous benefits of high efficiency, reduced weight, less fuel consumption, high reliability, and easy configuration/maintenance, etc.. On this background, one future trend of aircrafts is heading towards 'more electric aircraft' (MEA) / 'all electric aircraft' (AEA), where majority/all of the aircraft's secondary power needs are supplied in an electrical form. As the key components for future MEAs and AEAs, the electric machine systems determine the performances of the aircrafts. Therefore, the aircraft electric machine system, consisting of electric machines and their drive & controls, should provide the following required capabilities: (a) high reliability; (b) low weight and volume; (c) high power density; (d) high efficiency; (e) thermal robustness; (f) high fault tolerance; (g) low EMI. These required criteria are not only rigorous, but also usually in conflict with each other, thus bringing great difficulties to the design of aircraft electric machine systems.

This speech will provide an overview of the state-of-art technology of the electric machine systems for future aircrafts. First, the rigorous demands and challenges of aircraft electric machine systems will be introduced. Then, to meet the challenging goals, the design of advanced electric machine system for future aircrafts will be presented, which includes novel high-power-density machine topologies, new materials, high-performance control systems, etc.. Finally, the possible trends and developing opportunities of the electric machine systems in future aircrafts will be discussed.

Bio: Professor Ronghai Qu received his B.E. and M.S. degrees from Tsinghua University, Beijing, China, and the Ph.D. degree from University of Wisconsin-Madison, all in electrical engineering. He had been with the General Electric (GE) Global Research Center (GRC), Niskayuna, NY as a Senior Electrical Engineer from 2003 to 2010. He was the recipient of 11 GE GRC awards including EPST Technical Achievement Award and Management Award. In 2010 he joined Huazhong University of Science & Technology, Wuhan, China as a titled professor. He is currently the member of academic degrees committee, director of State and Province Joint Engineering Research Center of Novel Electrical Machines, director of Center for Advanced Electrical Machines and Drives (CAEMD), and deputy director of State Key Laboratory of Advanced Electromagnetic Engineering and Technology. He is an IEEE fellow, IAS Distinguished Lecturer (2019-2020) and the chair of IEEE Industry Application Society (IAS) Wuhan Chapter. His research interests include Electrical Machine Designs, Drives and Controls. He has published over 300 technical papers including 7 IEEE award papers and holds over 100 patents.

Plenary Speech

TUESDAY, 23 JULY 2019

Time: 13:00-13:30

Room: Tour Noire Room



TITLE: MECHANICAL BEHAVIOR MODELLING OF COMPOSITE MATERIALS

ANH DUNG NGO

Professor, *Ecole de Technologie Superieure (U. du Quebec), Canada*

Abstract: Due to their low weight and superior mechanical property, polymer-reinforced composites are becoming more and more used in transportation industries. Aeronautical composite structures having manufactured flaws used to operate in high humidity and temperature conditions. For safety, it is important to predict the fatigue behavior of these new materials. Furthermore, in automotive industry, because of the greenhouse gas emission issue and the advent of natural reinforcements, recently Biocomposites have been developed to replace mineral or petroleum-based reinforcements with bio-based materials. In order to help developing new formulation for these composites, prediction of mechanical properties is necessary. The great variety of operational conditions and materials implicate costly experimental studies. Therefore, simulation is an economical mean to predict the mechanical behavior of material. This talk will present two modelling works: the first one using phenomenological approach to study the hygrothermal effect on tensile fatigue behavior of carbon/epoxy plain weave laminates and the second one based on numerical homogenization approach using finite element method to predict the tensile modulus of three randomly reinforced Biocomposites.

Bio: Professor Anh Dung NGO: B.Sc. A in Mechanical Engineering (É. Polytechnique, Canada), M.Sc. in Wood technology (U. Laval, Canada), Ph.D. in Mechanical Engineering (Concordia U., Canada). Professor NGO spent 18 years in industry as engineer and in governmental agency first as engineer and later as chief officer of the Occupation Safety Division at the Prevention Branch of the Quebec Occupational Health and Safety Commission before joining the university in 1991. He was the Chairman of the Mechanical Engineering Department from 1999 to 2004. He is the founder of two research groups, one in Occupational Safety and one in Composite Materials. He is also the editor of the Proceeding of the EIGHTH JOINT CANADA-JAPAN WORKSHOP ON COMPOSITES and author of sixty scientific papers and technical reports on Composites Materials and Occupational Safety.

TUESDAY, 23 JULY 2019

Time: 13:30-14:00

Room: Tour Noire Room



**TITLE: STRATEGIES OF MODEL REDUCTION FOR
EXPLORATION, MODELING AND PARAMETER
IDENTIFICATION IN MATERIAL SCIENCES**

DASHNOR HOXHA

Professor, *Orleans University, France*

Abstract: Nowadays more and more, In many fields of data exploration, interpretation and modelling, one faces the need to manipulate big data in very short times. The various strategies are developed in order to reduce the order of huge models in order to obtain an acceptable response to a reasonable calculation cost. The paper focuses on spectral methods and their application in practice. Among other methods Proper Orthogonal Decomposition (POD) will be discussed in details. According to its field of application, POD is also known as the Karhunen-Loeve Transform (KLT), the Hotelling Transform, Principal Component Analysis (PCA) and Singular Value Decomposition (SVD). Three case studies on data exploration/analysis and inverse problem on parameter identification will be presented and discussed.

Bio: Professor Dashnor Hoxha: After obtained an engineer degree from Polytechnic Univeristy of Tirana and a Bachelor in Physics form Natural Science Faculty of Tirana, Albanie in 1991, I was awarded Mc. S and Ph. D in Geomechanics Hydrosystems and Structures from National Polytechnic Institut of Lorraine (INPL) France in 1998. I worked for ten years in the research and developing industry before joining the University of Orleans as Head of Sustainable Constructions Division in 2007. I work actually in the Laboratory of Pluridisciplinaty Research in Engineering Systemes, Mechanics and Energy (PRISME) and I teach as Professor in Polytechnic School of Orleans. I published more than 34 papers in refereed international journals and 45 papers in conferences and 4 book chapters and I have been involved in many international conferences as Technical Chair and tutorial presenter.

TUESDAY, 23 JULY 2019

Time: 14:00-14:30

Room: Tour Noire Room



TITLE: OPTIMAL PERTURBATION ITERATION METHOD TO SOLVE A SYSTEM OF PARTIAL DIFFERENTIAL EQUATIONS

NECDET BILDIK

Professor, *Manisa Celal Bayar University, Turkey*

Abstract: In this study, we try to obtain the semi-analytical approximate solutions for the system of partial differential equations by using optimal perturbation iteration method. We shall solve an example to demonstrate the effectiveness of the proposed method. In addition, the current study unveils that optimal perturbation iteration method converges fast to the exact accurate analytical solutions of the given equations at lower order of iterations.

Bio: Professor Necdet Bildik obtained his B.S. degree in Mathematics at Ankara University, Ankara/ TURKEY in 1973. He received his M.S. degree at the University of Louisville in Kentucky, USA in 1978 and Ph. D. degree at Oklahoma State University, Stillwater, USA, Complex Dynamical Systems in Nonlinear Differential Equations, under the supervision of Prof. Marvin KEENER in 1981, by acquiring the grant from The Ministry of National Education, Turkey. In late 1982, Necdet Bildik moved to Firat University, Elazığ, Turkey, and taught mathematics there and worked as an Assistant Professor and Associate Professor at the Faculty of Art and Sciences, Department of Mathematics until 1997. After that he was persuaded to accept an Associate Professorship position at the Faculty of Art and Sciences in Celal Bayar University, Manisa/ Turkey in 1997. He was promoted as a Professor of Applied Mathematics at Celal Bayar University in 2003. Moreover he worked as Head of Applied Mathematics Group and the Head of the Department of Mathematics from 1997 to 2012. He served as the Dean of the Faculty of Art and Science at Celal Bayar University for three years and also Graduate Dean for three years at Celal Bayar University. He is the Author and Co-author of more than 120 articles and he supervised approximately 20 M.S and Ph.D. theses so far. His research interest include numerical methods for partial differential equations (both linear and nonlinear), linear and non linear boundary value problems for ordinary differential equations, and approximate methods for nonlinear systems, Stability ,Ergodic and Approximation Theory and also Complex Variables. Additionally Necdet Bildik is a member in the editorial boards of two international journals.

Program at a Glance

MONDAY, 22 JULY				
TIME	ACTIVITY			VENUE
10:00-17:00	Registration Note: *Collecting conference materials; * Certificate will be issued at the end of each session;			Lobby
TUESDAY, 23 JULY				
09:00-09:05	Opening Remarks			Venue
	Addressed from Conference Chair: <i>Ian McAndrew</i> , Capitol Technology University, USA			Tour Noire
	Chair: <i>Ian McAndrew</i>			
09:05-09:50	Keynote Speech I			
	“Drones as a Flexible Mobile Measurement Platform” <i>Pasquale Dapont</i> , University of Sannio, Italy			
09:50-10:35	Keynote Speech II			
	"Sustainable (Green) Aviation: Challenges and Opportunities" <i>Ramesh K. Agarwal</i> , Washington University in St. Louis, USA			
10:35-11:15	Group Photo& Coffee Break			
11:15-12:00	Keynote Speech III			
	"Electric Machine Systems in Future Aircraft Electrification" <i>Ronghai Qu</i> , Huazhong University of Science and Technology, China			Restaurant
12:00-13:00	Lunch Break			
	Chair: <i>Ramesh K. Agarwal</i>			
13:00-13:30	Plenary Speech I			
	"Mechanical Behavior Modelling of Composite Materials" <i>Anh Dung NGO</i> , Ecole de technologie superieure (U. du Quebec), Canada			Tour Noire
13:30-14:00	Plenary Speech II			
	“Strategies of model reduction for exploration, modeling and parameter identification in material sciences” <i>Dashnor Hoxha</i> , Orleans University, France			
14:00-14:30	Plenary Speech III			
	“Optimal Perturbation Iteration Method to Solve a System of Partial Differential Equations” <i>Necdet Bildik</i> , Celal Bayar University, Turkey			
14:30-14:45	Coffee Break			
TECHNICAL SESSIONS				
	Tour Noire	Tour de Babel	Tour Eiffel	Tour de Londres
14:45-17:00	Oral A-1 Aerospace Technology I	Oral B-1 Manufacturing Science	Oral C-1 Dynamical System I	Oral D-1 Dynamical System II

17:00-18:00	Drink Reception@ Foyer			
WEDNESDAY, 24 JULY				
	Tour Noire 1	Tour Noire 2	Tour Noire 3	Tour Noire 4
09:00-10:15	Oral A-2 Energy Science I	Oral B-2 Applied Mathematics	Oral C-2 Pure Mathematics	Poster I Aerospace Technology
10:15-10:30	Coffee Break			
10:30-12:00	Oral A-2 Energy Science I	Oral B-2 Applied Mathematics	Oral C-2 Pure Mathematics	Poster II Material and Manufacturing Science
12:00-13:00	Lunch Break			
13:00-15:30	Oral A-3 Aerospace Technology II	Oral B-3 Material Science	Oral C-3 Control System	Special Session A (13:00-14:40)
15:30-15:45	Coffee Break			
15:45-18:30	Oral A-4 Energy Science II	Oral B-4 Energy Science II	Oral C-4 System Performance Evaluation	Special Session B (15:00-16:20)
18:30-20:00	Dinner@ Award Banquet			
THURSDAY, 25 JULY				
09:00-18:30	Optional One Day Visit			

*Oral session format (12 min. for presentation +3 min. for Q & A)

*Accommodation is not provided, please make an early reservation.

Oral Sessions

TUESDAY, July 23th, 14:45-17:00

Format (12 min. for presentation + 3 min. for questions)

Oral Session A-1 “Aerospace Technology I” Chair: Prof. Chingiz Hajiyeu (<i>Istanbul Technical University, Turkey</i>) VENUE: Tour Noire Room	
14:45-15:00	[C1027] Simulation Research on Rapid Decompression of Aircraft Cabins Dr. Tong Zhang , Guiping Lin, Xueqin Bu, Chenlu Jia, Chenhui Du Beihang University, China
15:00-15:15	[C1043-A] In-Flight Calibration of Magnetometers via Nonlinear Kalman Filtering Prof. Chingiz Hajiyeu Istanbul Technical University, Turkey
15:15-15:30	[C1031] Experimental Investigation into Convective Heat Transfer of Boger Fluids by Elastic Turbulence within the Serpentine Channel Ms. Haie Yang , Dongsheng Wen Beihang University, China
15:30-15:45	[C1060] Multivariable Steady State Control of Aeroengine Based on Backstepping Method Ms. Xinyue Ma , Linfeng Gou, Chenyang Zhao, Ying Wang Northwestern Polytechnical University, China
15:45-16:00	[C1053] Pilot-Induced Oscillation Analysis for Receiver in Flying-Boom Aerial Refueling via Mission-Oriented Evaluation Dr. Haipeng Yin , Lixin Wang, Ting Yue, Hailiang Liu Beihang University, China
16:00-16:15	[C1071] Numerical Investigation of Aerodynamic Loads on a Flexible Wing Zakria Toor, Tauha Irfan, Mr. Bilal Mufti , Usama Shehzad, Jehanzeb Masud, Omer Khan Air University, Pakistan
16:15-16:30	[C1044] Autonomous Entry Guidance based on 3-D Gliding Trajectory Analytical Solution Dr. Wanqing Zhang , Wanchun Chen, Wenbin Yu, Chaoyue Zhao Beihang University, China
16:30-16:45	[C1077] Optimization of an Airfoil Characteristic to Minimize the Turn Radius of a Small Unmanned Aerial Vehicle Dr. Suleyman Murat Koroglu , Ibrahim Ozkol Istanbul Technical University, Turkey
16:45-17:00	[C1129] Multibody Dynamic Characteristics of Wingtip-jointed Composite Aircrafts Dr. Dongxu Liu , Changchuan Xie, Chao An, Guanxin Hong Beihang University, China
17:00-18:00	Drink Reception

TUESDAY, July 23th, 14:45-17:00

Format (12 min. for presentation + 3 min. for questions)

Oral Session B-1

"Manufacturing Science"

Chair: Prof. Kamel MEHDI (*University of Tunis EL Manar (UTM), Tunisia*)

VENUE: Tour de Babel Room

14:45-15:00	[C1056] Using Inflatable Structures to Remove Space Debris from Orbit Dr. Vsevolod V. Koryanov, Victor P. Kazakovtsev, Alexey G. Toporkov, Anton A. Nedogarok Bauman Moscow State Technical University, Russia
15:00-15:15	[C1057] Research on Key Technologies for High-Precision Whole Flexible Machining of Large-Scale Multi-Supports Cabin Jiabo Zhang, Dr. Ke Wen, Yi Yue, Jizhi Yang, Yinghao Zhou Beijing Spacecrafts, China Academy of space technology, China
15:15-15:30	[C1088] Statistical Analysis of Spacecraft Failure in Full-Life Based on STED Dr. Xin-Yan Ji, Jing Wang, Jia-Bin, Liu China Academy of Space Technology, China
15:30-15:45	[C1136] Bank Angle Protection Methods for a Wing-in-Ground Craft Dr. Kun Yang, Lixin Wang, Ting Yue and Hailiang Liu Beihang University, China
15:45-16:00	[C1154] Numerical and Experimental Investigation of Drilling of Ti6Al4V Alloy Nawel GLAA, Prof. Kamel MEHDI University of Tunis EL Manar (UTM), Tunisia
16:00-16:15	[C003] Early Rolling Bearing Fault Detection Using A Gini Index Guided Adaptive Morlet Wavelet Filter Mr. M.N. Albezzawy, M.G.A. Nassef, E.S. Elsayed, A. Elkhatab Alexandria University, Egypt
16:15-16:30	[C1007] Optimization of Vehicle Suspension System Using Genetic Algorithm Dr. Sikandar Khan, Mamoun M. Horoub, Saifullah Shafiq, Sajid Ali, Umar Nawaz Bhatti King Fahd University of Petroleum and Minerals, Saudi Arabia
16:30-16:45	[C1055] Impact of Powder-Mixed Electrical Discharge Machining on Surface Hardness of AISI D3 Die Steel Bidyut Kumar Panda, Dr. Sanjeev Kumar Punjab Engineering College, India
17:00-18:00	Drink Reception

TUESDAY, July 23th, 14:45-17:00

Format (12 min. for presentation + 3 min. for questions)

Oral Session C-1 “Dynamical System I” Chair: Prof. Katarina Monkova (<i>Technical University in Kosice, Slovakia</i>) VENUE: Tour Eiffel Room	
14:45-15:00	[C1062] Adaptive Backstepping Approach for 2-DOF Telescopes Despite Unknown Wind Disturbance Mr. Ali Cem Unal, Tugrul Yilmaz, Gokhan Kararsiz, Onur Keskin, Cahit Yesilyaprak FMV Isik University OPAM, Turkey
15:00-15:15	[C1065] Multifield Coupling Dynamics of Large Truss Structure for Space Applications Dr. Wei-Jie Li, Qing-Sheng Wei, Yong-Sheng Wu, Cheng Wei Beijing Institute of Spacecraft System Engineering, China Academy of Space Technology, China
15:15-15:30	[C1146] Numerical Investigation of a VTOL Power Unit Based on Gas-Driven Fan Mr. Yang Zhou, Guoping Huang, Lei Li Nanjing University of Aeronautics and Astronautics, China
15:30-15:45	[C1137] An Efficient Implicit High-order Flux Reconstruction Method by Automatic Differentiation using Operator Overloading for Flow Simulation on Unstructured Hexahedral Grids Dr. Lin Bo-xi, Zhang Liang, Chen Shu-sheng, Li Bing, Jiang Zhen-hua China Academy of Aerospace Aerodynamics, China
15:45-16:00	[C1069] Scale Model Design of a turboshaft engine with Mid Turbine Frame Dr. Zhun Liu, Mingfu Liao Northwestern Polytechnical University, China
16:00-16:15	[C1150] Comparison of Different Reconstruction Schemes for Numerical Simulation of Unsteady Cavity Flow Dr. Kailing Zhang, Hongrui Liu, Chao Yan Beihang University, China
16:15-16:30	[C1155] Numerical Analysis of Aerodynamic Heating of Two-dimensional spiral model Mr. Hao Jingke, Zhang Liang, Shi Jiatong China Academy of Aerospace Aerodynamics, China
16:30-16:45	[C1193] Load Reduction Mechanism of Cone Wall Fuse Caused by Fan Blade off Dr. Hou Lizhen, Liao Mingfu, Jia Runtian Northwestern Polytechnical University, China
16:45-17:00	[C1182] Design of Fault Diagnosis System for Pulse Detonation Engine Mr. Wang Bin-kui, Li Jiang-hong, Zhang Wen-long, Fan Wei, Wang Ke, Fu Meng Northwestern Polytechnical University, China
17:00-18:00	Drink Reception

TUESDAY, July 23th, 14:45-17:00

Format (12 min. for presentation + 3 min. for questions)

Oral Session D-1 “Dynamical System II” Chair: Prof. Ian McAndrew (<i>Capitol Technology University, USA</i>) VENUE: Tour de Londres Room	
14:45-15:00	[C1161-A] Study on the Effect of Dynamic Pressure on the Characteristics of a Variable Geometry RBCC at Ma 7 Dr. Jinying Ye, Hongliang Pan, Fei Qin Northwestern Polytechnical University, China
15:00-15:15	[C1119] Adaptive Algorithm to Determine the Coverage Belt for Agile Satellite with Attitude Maneuvers Mr. Huijiang Wang, Chao Han, Shenggang Liu, Yu Sun Beihang University, China
15:15-15:30	[C1157] Hardware-in-the-loop Simulation Platform for Fault Diagnosis of Rocket Engines Dr. Wanli Zhao, Yingqing Guo, Jing Yang , Hao Sun Northwestern Polytechnical University, China
15:30-15:45	[C1173] Adaptive Simulation of Micro-Turbojet Engine Component Characteristics Mr. Yu-Xiang Jiang, Yu-Chun Chen Northwestern Polytechnical University, China
15:45-16:00	[C12004] Dynamic Modeling and Simulation of Washing Machine Suspension System Yidan Qu, Assoc. Prof. Jinhui Jiang Nanjing University of Aeronautics and Astronautics, China
16:00-16:15	[C1187] Numerical Study on the Effect of Slot-Type Casing Treatment in a Transonic Compressor Mr. Zhidong Chi, Wuli Chu, Haoguang Zhang Northwestern Polytechnical University, China
16:15-16:30	[C1133] Structural Design and Aerodynamic Characteristic of an Innovative Split Aileron Configuration Dr. Anmin Zhao, Dongyu He, Dongsheng Wen China Academy of Space Technology, China
16:30-16:45	[C1197] Effect of Geometry and Operation Conditions on Transient Response Characteristics for the Static Cavity Dr. Jianping Hu, Zhenxia Liu, Pengfei Zhu, Yaguo Lyu Northwestern Polytechnical University, China
16:45-17:00	[C1085] The Research of Terminal Optimal Guidance Law of Maneuvering Vehicle with Multiple Constrains Dr. Li Qiang, Wang Yonghai, Li Jun, Zhang Xi, Qin Xuguo Beijing Institute of Space Long March Vehicle, China
17:00-18:00	Drink Reception

WEDNESDAY, July 24th, 09:00-12:00

Format (12 min. for presentation + 3 min. for questions)

Oral Session A-2

"Energy Science I"

Chair: Prof. Dashnor Hoxha (*Orleans University, France*)

VENUE: Tour Noire 1 Room

09:00-09:15	[C1112] Simultaneously Identification of Thermal Conductivity and Heat Capacity of Thermal Insulation Tile Ms. Yulin Sun , Hongli Ji, Jinhao Qiu Nanjing University of Aeronautics & Astronautics, China
09:15-09:30	[C1175] Influence of Different Fuels on Scramjet Engine Performance Zhihua Wang, Yuchun Chen, Xiodong Wang, Assist. Prof. Minze Chen Northwestern Polytechnical University, China
09:30-09:45	[C1047] Simulation and Comparison on Energy Consumption Between Electric and Diesel Buses: Feasibility Study on Electric Rubber-Tire Bus Potential in Chiang Mai Dr. Niti Kammuang-lue , Jirawat Boonjun Chiang Mai University, Thailand
09:45-10:00	[C1151-A] Preliminary Experimental and Numerical Study on the Solid Rocket Gas Fueled Scramjet Assist. Prof. Shaohua Zhu , Fei Qin, Lei Liang Northwestern Polytechnical University, China
10:00-10:15	[C1123] Output Performance Optimization of High-Altitude Airship based on Attitude and Solar Array Layout Dr. Weiyu Zhu , Yuanming Xu Beihang University, China
10:15-10:30	<i>Coffee Break</i>
10:30-10:45	[C1147-A] Investigation of Combustion Characteristic in Full-scale Kerosene Fueled RBCC Engine Using Large Eddy Simulation Assoc. Prof. Zhang Duo , Liu Bing, Qin Fei Northwestern Polytechnical University, China
10:45-11:00	[C1149] Research on Nonlinear Oscillation Suppression and Mixing Characteristics of RVABI Base on Bypass Pressure Fluctuation Mr. Chao Li , Guoping Huang Nanjing University of Aeronautics and Astronautics, China
11:00-11:15	[C1148] An Optimization Method for Non-Augmented Supersonic Cruise Performance of Turbofan Engine Xin-yue Ma, Lin-feng Gou, Dr. Tian Tan Northwestern Polytechnical University, China
11:15-11:30	[C1010] Three-year Performance Test of a Dual Compensation Chamber Loop Heat Pipe Dr. Huanfa Wang , Guiping Lin, Xiaobin Shen, Hongxing Zhang Beihang University, China

11:30-11:45	[C1198] Numerical Study on the Ejector Structure Of Deaerator Mr. Qiang Tian , Jianping Hu, Zhenxia Liu Northwestern Polytechnical University, China
11:45-12:00	[C1100] A Simplified Model for the Thermal Behavior Prediction of Inflatable Hangar Mr. Yifei Wu , Huafei Du, Mingyun Lv, Zhongcheng Wang Beihang University, China
12:00-13:00	Lunch

WEDNESDAY, July 24th, 13:00-15:30

Format (12 min. for presentation + 3 min. for questions)

Oral Session A-3

"Aerospace Technology II"

Chair: Prof. Simon Barrans (*University of Huddersfield, United Kingdom*)

VENUE: Tour Noire 1 Room

13:00-13:15	[C1122] Ascent Performance Analysis for High Altitude Super Pressure Balloon in Real Wind Field Dr. Huafei Du, Yifei Wu, Mingyun Lv Beihang University, China
13:15-13:30	[C1103] Constellation Design and Low-Thrust Station-Keeping Strategy for Satellites in Inclined Geosynchronous Orbits Mr. Lincheng Li, Ioannis Gkolias, Camilla Colombo, Jingrui Zhang Politecnico di Milano, Italy
13:30-13:45	[C1125] Analysis of Stratospheric Airship Endurance Strategy Dr. Lanchuan Zhang, Cong sun Beihang University, China
13:45-14:00	[C1092] Flow Field Analysis of a Diverterless Supersonic Inlet using Embedded LES Methodology Mr. Bilal Mufti, Tauha Irfan Khan, Zakria Toor, Jehanzeb Masud Air University, Pakistan
14:00-14:15	[C1132] A Kriging Based Framework for Rapid Satellite-to-site Visibility Determination Mr. Yi Gu, Chao Han and Xinwei Wang Beihang University, China
14:15-14:30	[C1179] Research on Control Law of High Speed Turbofan Engine Dr. Tian Tan, Yu-chun Chen, Hao-min Li, Ke-ran Song Northwestern Polytechnical University, China
14:30-14:45	[C1128] Hyperbolic Navier-Stokes Systems for Three-Dimensional Viscous Flow in Edge-Based Cell-Vertex Unstructured Solver Dr. Shuai Lou, Zhao-wei Wang, Yuan Zhao, Bo-xi Lin, Chao Yan Beihang University, China
14:45-15:00	[C1169] Experimental Study of the Suppression of Wing-Body Rock by Spanwise Blowing Kun Chen, Mr. Yizhang Dong, Zhiwei Shi, Shengxiang Tong, Jun Sha Nanjing University of Aeronautics and Astronautics, China
15:00-15:15	[C1135] Structural Design and Simulation of the Oxygen Regulator Jinhai Hu, Dongsheng Jiang, Haichuan Jin, Guiping Lin, Bingjun Su, Junjie Gan, Mr. Anmin Zhao Beihang University, China
15:15-15:30	[C13004] Study on Factors Affecting the Position of Low-Pressure Rotor Transition State Line of Double-Rotor Engine Li Yu-sang, Chen Yu-chun, Ms. Chen Feng-ping, Zhang Tian-hao, Chen Min-ze Northwestern Polytechnical University, China

WEDNESDAY, July 24th, 15:45-18:00

Format (12 min. for presentation + 3 min. for questions)

Oral Session A-4 “Energy Science II”

Chair: Prof. Hyemin Kim (*Korea National University of Transportation, South Korea*)

VENUE: Tour Noire 1 Room

15:45-16:00	[C1167] Design and Characteristic Calculation of Combustion Chamber of Hydrogen-Fueled Scramjet Based on Constant Static Temperature Heating Method Hao-min Li, Yu-chun Chen, Dr. Tian Tan , Jin-feng Du, Jun-hui Zhou, Chi Liu Northwestern Polytechnical University, China
16:00-16:15	[C1170] Calibration Method and Test Result Analysis of High Temperature Film Temperature Sensor Mr. Su Xinming , An Wanqing, Liu Xiaoning, Liu Chang, Wang qingyu, Zhang Xi Beijing University of Aeronautics and Astronautics & Beijing Institute of Spacecraft Environment Engineering, China
16:15-16:30	[C1174-A] Experimental Research on the Influencing Factors of Thermal Throat in RBCC Combustor Assist. Prof. Yajun Wang , Duo Zhang , Jinying Ye Northwestern Polytechnical University, China
16:30-16:45	[C1046] A Cleaner Design of Nuclear-Powerd Hybrid Aero Engine Mr. Xu Xinze , Hong Guanxin Beihang University, China
16:45-17:00	[C1181] Study on the Influence of Geometry Configuration of Combustion Chamber on the Performance of Hydrogen-Fueled Scramjet Engine Hao-min Li, Yu-chun Chen, Ke-ran Song, Dr. Tian-hao Zhang Northwestern Polytechnical University, China
17:00-17:15	[C1052-A] Combustion of Single Ethanol Droplet with Dilute Concentration of Carbon Black Particles Prof. Hyemin Kim Korea National University of Transportation, South Korea
17:15-17:30	[C1158] Co-simulation of Aircraft Engine Fuel and Oil System Dr. Hao Sun , Yingqing Guo, Wanli Zhao Northwestern Polytechnical University, China
17:30-17:45	[C1028] Research on Incremental Forming Technology for Integral Panels with Flanges Dr. XU Ai-jun , Zhang Yu-liang, Li Cai-ling, Jia Yue-rong, Zhao Chang-xi Beijing Spacecrafts, China
18:30-20:00	Dinner& Award Banquet

WEDNESDAY, July 24th, 09:00-12:00

Format (12 min. for presentation + 3 min. for questions)

Oral Session B-2

“Applied Mathematics”

Chair: Prof. Necdet Bildik (*Celal Bayar University, Turkey*)

VENUE: Tour Noire 2 Room

09:00-09:15	[C2077] Fixed Point Results for Orthogonal Z-contraction Mappings in O-complete Metric Spaces Ms. Kanokwan Sawangsup, Wutiphol Sintunavarat Thammasat University, Thailand
09:15-09:30	[C2002-A] Point-wise Estimation for Anisotropic Densities Dr. Cong Wu Beijing University of Technology, China
09:30-09:45	[C2007-A] Solving Higher-Dimensional Time-Dependent Diffusion Equations with Dirichlet Boundary Conditions by using Bernoulli Matrix Method Prof. Bashar Zogheib American University of Kuwait, Kuwait
09:45-10:00	[C2006-A] Magneto-hydrodynamics of Solid-Liquid Two Phase Fluid in Rotating Channel Due to Peristaltic Wave Dr. Sajjad Haider, Nouman Ijaz, Ahmed Zeeshan, Yun-Zhang Li Beijing University of Technology, China
10:00-10:15	[C21002] Some Characteristic Properties of Ruled Surface with Frenet Frame of an Arbitrary Non-Cylindrical Ruled Surface in Euclidean 3-Space Mrs. Soukaina Ouarab, Amina Ouazzani Chahdi Hassan II University of Casablanca/Ben M'sik Faculty of Sciences, Morocco
10:15-10:30	[C2009-A] Blow-up Behavior for a Problem with a Moving Nonlinear Source in a Subdiffusive Medium Prof. H. T. Liu Tatung University, Taiwan
10:30-10:45	<i>Coffee Breaks</i>
10:45-11:00	[C2014-A] On Investigation of One-Dimensional Models for Thermoelastic Piezoelectric Bars Assoc. Prof. Gia Avalishvili, Mariam Avalishvili I. Javakhishvili Tbilisi State University, Georgia
11:00-11:15	[C2023] A higher-order numerical method on the Shishkin mesh for time-dependent problems with boundary layers Prof. Quan Zheng, Ke Jin North China University of Technology, China
11:15-11:30	[C2030-A] Towards Quantum Information Characterization of Non-Markovian Evolution of Open Quantum Systems Assoc. Prof. Andrey Bulinski Moscow Institute of Physics and Technology, Russia

11:30-11:45	<p>[C2031-A] Survival Predictors from Tensor Rank Decomposition of Images with Missing Data</p> <p>Asst. Prof. ShengLi Tzeng National Sun Yat-sen University, Taiwan</p>
11:45-12:00	<p>[C2034-A] The dynamics and effects of heavy alcohol consumption on the transmission of gonorrhea with optimal control</p> <p>Dr. Kazeem Okosun, Ebenezer Bonyah, Altaf Khan VAAL University of Technology, South Africa</p>
12:00-13:00	<p><i>Lunch</i></p>

WEDNESDAY, July 24th, 13:00-15:30

Format (12 min. for presentation + 3 min. for questions)

Oral Session B-3

"Material Science"

Chair: Prof. Nam Seo Goo (*Konkuk University, South Korea*)

VENUE: Tour Noire 2 Room

13:00-13:15	[C1049] Investigating Mechanical Properties of Polyacetal/Graphene Nanocomposites by a Structural-Mechanical Model Dr. Hamid Asadollahi Yazdi , Vali Parvaneh, Mahmoud Shariati Islamic Azad University, Iran
13:15-13:30	[C1066-A] Thermo-Mechanical Behavior of a Super-Alloy Thermal Protection System Vinh Tung Le, Prof. Nam Seo Goo Konkuk University, South Korea
13:30-13:45	[C1082] Optical Fiber Mach-Zehnder Interferometric Strain Sensor based on Concatenating Two Micro Cavities Fabricated by a Femtosecond Laser Mr. Jinpeng Yang , Sumei Wang, Xiaoguang Chen, Xiaofeng Zou, Yuxiao Liu, Ruo Lin, Yimin Wang, Yang Chen Beijing Institute of Space Long March Vehicle, China
13:45-14:00	[C1084] Self-heating Effect of HTPB Propellant during Fatigue Mr. Xin Tong , Issam Doghri, Jin-sheng Xu, Xiong Chen Université Catholique de Louvain, Belgium
14:00-14:15	[C1093] Effect of Temperature on Local Stresses in Magnetoelectric Composites Meghana Sudarshan, Ms. Punya D Gowda , Benjamin Rohit, Nandini B Nagaraju, Rashtreeya Vidyalaya College of Engineering, India
14:15-14:30	[C1102] Research of Young's Modulus of the Simple Lattice Structures Made from Plastics Prof. Katarina Monkova , Peter Monka, Jozef Tkac, Jozef Torok, Oldrich Suba, Milan Zaludek FMT TU Kosice with the seat in Presov, Slovakia
14:30-14:45	[C1120-A] Functionally-Graded Metallic Syntactic Foam Dr. T. Fiedler , N. Movahedi The University of Newcastle, Australia
14:45-15:00	[C1017-A] FEM Modelling of Torsional Buckling of Functionally Graded Cylindrical Shells Reinforced with Graphene Platelets (GPLs) Dr. Chuang Feng , Yu Wang, Zhan Zhao, Jie Yang RMIT University, Australia
15:00-15:15	[C1041] Experimental Study on Oxygen Production Performance of Multi-bed Molecular Sieves Dr. Yu Zeng , Xue Yang, Dabo Wan and Pan Rui Beihang University, China

15:15-15:30	[C13003-A] Modelling, Fabrication and Characterization of Nanocrystalline Alloys for the Aerospace Sector: The ICARUS Project Prof. Nicolas A. Cordero Universidad de Burgos, Spain
15:30-15:45	<i>Coffee Break</i>

WEDNESDAY, July 24th, 15:45-18:00

Format (12 min. for presentation + 3 min. for questions)

Oral Session B-4

"Energy Science II"

Chair: Prof. Peter Monka (*FMT TU Kosice with the seat in Presov, Slovakia*)

VENUE: Tour Noire 2 Room

15:45-16:00	[C1190] Application of Inverse Design Method in Transonic Turbine Blade Mr. Jinguang Li, Hu Wu Northwestern Polytechnical University, China
16:00-16:15	[C1032] Numerical Experiment of Flow Around a Flat Plate with Round Edges Prof. Yoshifumi Yokoi National Defense Academy of Japan, Japan
16:15-16:30	[C1034] Overall Parameters Sensitivity Analysis of Solar-Powered Aircraft Based on MDO Mr. Yiyuan Ma, Wei Zhang, Ke Li Northwestern Polytechnical University, China
16:30-16:45	[C1045] Study on RCD Clamping Circuit in Satellite Electrical Power System Dr. Lin Wenli, Feng Shuo, Li Xiaofei, Tian Peng, Ma Jinyuan Beijing Institute of Spacecraft System Engineering, China
16:45-17:00	[C1165] An Unmanned Aerial Vehicle Path Planning Method Based on the Elastic Rope Algorithm Jingfan Tian, Dr. Yankai Wang, Dongdong Yuan Beijing Institute of Technology Beijing, China
17:00-17:15	[C1068] Research on Flow Fields of Electro-Arc Heater Dr. Qin Xuguo, Shui Yongtao, Wang Yonghai, Chen Gang, Li Qiang Beijing Institute of Space Long March Vehicle, China
17:15-17:30	[C1191] A Method for Manufacturing Navigation Startable of Star Sensor Based on Darkness-and-Density Factor Xunjiang Zheng, Mr. Yuan Gao, Shuodong Sun, Zhilong Ye, Songhang Ye Shanghai Aerospace Control Technology Institute, China
18:30-20:00	Dinner& Award Banquet

WEDNESDAY, July 24th, 09:00-12:00

Format (12 min. for presentation + 3 min. for questions)

Oral Session C-2

"Pure Mathematics"

Chair: Prof. Mangatiana A. Robdera (*University of Botswana, Bptswana*)

VENUE: Tour Noire 3 Room

09:00-09:15	[C2003-A] The Bongartz's Theorem on the homotopy Category Dr. Yonggang Hu Beijing University of Technology, China
09:15-09:30	[C2013-A] On the Matrix Completion Problem in Nonnegative Q-Matrices Prof. Bhaba Kumar Sarma, Kalyan Sinha IIT Guwahati, India
09:30-09:45	[C2004-A] Bialgebra-Ore Extensions of Automorphism Type Dr. Yongfeng Zhang Beijing University of Technology, China
09:45-10:00	[C2033] Strong Transcendental Numbers and Linear Independence Prof. Mangatiana A. Robdera University of Botswana, Bptswana
10:00-10:15	[C2005-A] A Class of Vector-Valued Dilation-and-Modulation Frames on the Half Real Line Dr. Yahui Wang Beijing University of Technology, China
10:15-10:30	<i>Coffee Break</i>
10:30-10:45	[C2051] Bounded Linear Functional on n-Normed Spaces through its Quotient Spaces Mr. Harmanus Batkunde, Hendra Gunawan Bandung Institute of Technology, Indonesia
10:45-11:00	[C2073] Generalized Holder's inequality in weighted Orlicz spaces Dr. Al Azhary Masta, Ifronika Ifronika, Siti Fatimah Universitas Pendidikan Indonesia, Indonesia
11:00-11:15	[C2070] Bilinear Robust H_∞ Controller to Minimize HIV Concentration in Blood Plasma Prof. Roberd Saragih, onathan saputro, Dewi Handayani Bandung Institute of Technology, Indonesia
11:15-11:30	[C2075] On New Approximations of the Generalized Logarithmic Functional Equation in 2-Banach Spaces Ms. Laddawan Aiemsomboon, Wutiphol Sintunavarat Thammasat University, Thailand
11:30-11:45	[C2076] Hyers-Ulam stability of Euler-Lagrange-Jensen k-cubic Functional Equations on Generalized Non-Archimedean Normed Spaces Mr. Anurak Thanyacharoen, Wutiphol Sintunavarat Muban Chombueng Rajabhat University, Thailand

11:45-12:00 **[C2056-A] A Robust Method for Piecewise Regression Models**

Prof. Shao-Tung Chang, Kang-Ping Lu

National Taiwan Normal University, Taiwan

12:00-13:00 ***Lunch***

WEDNESDAY, July 24th, 13:00-15:30

Format (12 min. for presentation + 3 min. for questions)

Oral Session C-3

"Control System"

Chair: Assoc. Prof. Kai Peng (*Northwestern Polytechnical University, China*)

VENUE: Tour Noire 3 Room

13:00-13:15	[C12008] Active Fault-tolerant Control of Auxiliary Power Unit Based on Analytical Redundancy and Heterogeneous Redundancy Design Assoc. Prof. Kai Peng, Zhaorong Zhang, Fan Yang, Chunbo Jiao Northwestern Polytechnical University, China
13:15-13:30	[C1078] Design of Flight Control System Based on Novel State Variables Dr. Ryosuke Matsushima, Kenji Uchiyama, Kai Masuda Nihon University, Japan
13:30-13:45	[C1145] Numerical Investigation of a New Unsteady Control Method to Suppress Tip Clearance Flow in Compressors Mr. Yuxuan Yang, Zheng Xie, Guoping Huang, Zhiyuan Zhang, Shuli Hong Nanjing University of Aeronautics and Astronautics, China
13:45-14:00	[C1188] Path Planning and Tracking of an Autonomous Car with High Fidelity Vehicle Dynamics Model and Human Driver Trajectories Dr. Husain Kanchwala Cranfield University, UK
14:00-14:15	[C1006] Marionette-like control for intuitive tele-operation Yoko Ishida, Dr. Mitsuharu Matsumoto University of Electro-Communications, Japan
14:15-14:30	[C1075] Modified Independent Modal Space Control for Large-Flexible Asymmetrical Resonant Structures Mr. Peng Zhang, Fangpo He Flinders University, Australia
14:30-14:45	[C1086] An Intercept Guidance Law with Impact-Angle-Constrained Based on Linear Gauss Pseudospectral Model Predictive Control Mr. Xingcai He, Wanchun Chen, Liang Yang Beihang University, China
14:45-15:00	[C1164] Inverse, Direct Kinetics and Differential Kinematic Control of Parallel Robot with Six Degrees of Hexa Freedom – Hunt Angie Valencia, Dr. Mauricio Mauledoux, Claudia Castañeda Universidad Militar Nueva Granada, Colombia
15:00-15:15	[C1176] A Design Method of Steady State Control Law for Civil Turbofan Engine Dr. Ke-ran Song, Yu-chun, Chen, Tian Tan, Feng-ping Chen Northwestern Polytechnical University, China
15:30-15:45	<i>Coffee Break</i>

WEDNESDAY, July 24th, 15:45-18:00

Format (12 min. for presentation + 3 min. for questions)

Oral Session C-4

“System Performance Evaluation”

Chair: Prof. Tudor Barbu (*Institute of Computer Science of the Romanian Academy, Romania*)

VENUE: Tour Noire 3 Room

15:45-16:00	[C1104] Controlling a Chain of Integrators with Constrained Actuation Using Exponential Activation Functions Dr. Espen Oland and Raymond Kristiansen UiT – The Arctic University of Norway, Norway
16:00-16:15	[C1090-A] Effect of Viscoelasticity on Skin Pain Sensation Dr. Fusheng Liu , Feng Xu, Tianjian Lu Xi'an Jiaotong University, China
16:15-16:30	[C1177] Research on Overall Design of Turboshift Engine Based on Data Analysis Method Mr. Chen Min-ze , Chen Yu-Chun, Fan Wei, Zhang Shao-Feng, Li Xia-xin Northwestern Polytechnical University, China
16:30-16:45	[C1178] A Visual Study on Coherent Structures in Flat Plate Turbulent Boundary Layer Mr. Chao Wu , Hui Guo, Yanze Li Beihang University, China
16:45-17:00	[C2011] Detail-preserving Fourth-order Nonlinear PDE-based Image Restoration Framework Prof. Tudor Barbu Institute of Computer Science of the Romanian Academy, Romania
17:00-17:15	[C2057-A] Robust Fitting Regression Models with Change Points to data Dr. Kang-Ping Lu , Shao-Tung Chang National Taichung University of Science and Technology, Taiwan
17:15-17:30	[C1180] Study on the Influence of Heat Transfer Effect on Performance Simulation of Engine Transition State Ms. Feng-ping Chen , Yu-chun Chen, Ke-ran Song, Yu-sang Li Northwestern Polytechnical University, China
17:30-17:45	[C2079] Justification of Macroscopic Boundary Conditions for One-Dimensional Nonlinear Non-Stationary Moment System of Equations of Boltzmann Prof. Auzhan Sakabekov , Yerkanat Auzhani Satbayev University, Kazakhstan
17:45-18:00	[C23002] Optimal Perturbation Iteration Method to Solve a System of Partial Differential Equations Prof. Necdet Bildik , Sinan Deniz Celal Bayar University, Turkey
18:30-20:00	Dinner& Award Banquet

Poster Sessions

WEDNESDAY, July 24th, 09:00-10:30

Poster Session I “Aerospace Technology” Chair:

VENUE: Tour Noire 4 Room

- | | |
|---|--|
| 1 | [C1016] The Research on Modern Civil Jets Top Level Design Requirements Based on Systems Engineering Method
Mr. Yue Wang, Dan Gao
Commercial Aircraft Corporation of China, Ltd., China |
| 2 | [C1025] Configuration Planning of Space Cellular Robotic System
Dr. Hang Zhao, Hao Tian, Yang Zhao, Dexiao An
Harbin Institute of Technology, China |
| 3 | [C1026-A] Design of Propulsion System Open Air Test for Hyperloop Using Superconducting Magnet - Linear Synchronous Motors
Dr. Suyong Choi, Jung Min Jo, Chang Young Lee, Jung Yeol Lim, Kwan Sup Lee
Korea Railroad Research Institute, Korea |
| 4 | [C11006] Forming the Technical Concept of Aircraft Power Systems of the Perspective Aircraft Taking Into Account the Outside Mechanical Impacts
Arbuzov I.V. , Serebryanskii S.A., Dr. Strelets D.Y.
Moscow Aviation Institute (National Research University), Russia |
| 5 | [C1142] Three-Dimensional CFD Investigation of Performance and Interference Effect of Coaxial Propellers
Mr. Youngtae Kim, Changhwan Park, Hakyoon Kim
Hanseu University, Korea |
| 6 | [C11009] Methods for the Design of Modern On-Board Systems of Advanced Aircraft
Mr. Smagin D.I., Savelev R.S., Satin A.A.,
Moscow Aviation Institute, Russia |
| 7 | [C1185] Clustering Analysis of Acoustic Emission Signals in 2D-C/SiC Tensile Damage Using Genetic Simulated Annealing Optimization Algorithm
Wang Yin-ling, Li Hua-cong
Northwestern Polytechnical University, China |
| 8 | [C1184] Test method for SADA's servo control system of China Space Station
Dr. Zhen Zhao, Bi Wang
Nanjing University of Aeronautics and Astronautics, China |
| 9 | [C1186] Research on Acoustic Emission Source Localization of Carbon Fiber Composite Plate Based on Wavelet Neural Network
Wang Yin-ling, Li Hua-cong
Northwestern Polytechnical University, China |

10	<p>[C12001] Optimal placement of actuators for active vibration control using EER and Genetic Algorithm</p> <p>Jianding Chen, Assoc. Prof. Jinhui Jiang, Ke Wang, Fang Zhang Nanjing University of Aeronautics and Astronautics, China</p>
11	<p>[C1009] A Rigorous Orbit Attitude Estimation Algorithm for Low-Earth-Orbit Spacecrafts</p> <p>Dr. Lijun Zhang, Zhicheng Zhu, Wei Li, Xinqi Wang, Qingqing Luo, Hai Song, Bing Han, Jianan Ma, Hengnian Li China Xi'an Satellite Control Center, China</p>
12	<p>[C12002] Design and Simulation Analysis of Rocket Sled Vibration Reduction</p> <p>Xinchao Wang, Assoc. Prof. Ke Wang, Yuanyuan Yu Nanjing University of Aeronautics and Astronautics, China</p>
13	<p>[C2058-A] Efficient learning technique for Recurrent Neural Network</p> <p>Asst. Prof. Sunyoung Bu Hongik University, South Korea</p>
	<p><i>Coffee Break</i></p>

WEDNESDAY, July 24th, 10:45-12:00

Poster Session II
“Material and Manufacturing Science”
Chair:

VENUE: Tour Noire 4 Room

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|----|---|
| 1 | <p>[C1039-A] Design of a Test Bed Driving Unit for An Electromagnetically Propelled Vacuum Tube Train
Dr. Jaeheon Choe, Jin-Ho Lee, Suyong Choi, Kwan-Sup Lee
Korea Railroad Research Institute, Korea</p> |
| 2 | <p>[C1050] Cutting Performance in Threading Turning and Grooving Turning of Ti-6Al-4V Alloy with a High-Pressure Coolant Supply
Prof. Tadahiro Wada
Nara National College of Technology, Japan</p> |
| 3 | <p>[C1020] Modeling and Simulation of Diaphragm Oxygen Regulator Pressure Control system
Dr. Rui Pan, Guiping Lin, Zhigao Shi, Yu Zeng, Xue Yang
Beihang University, China</p> |
| 4 | <p>[C1023] Sparse Representation Based Approach for Acoustic Emission Signal Identification in Glass-Epoxy Composites
Dr. A. Satour, S. Montrésor, M. Bentahar
Univerité SAAD DAHLAB Blida, Algeria</p> |
| 5 | <p>[C1171] Application of a New Shock-Stable Scheme for Supersonic Combustion Flows
Dr. Yongkang Zheng, Yue Zhou, Shusheng Chen, Chao Yan
Beihang University, China</p> |
| 6 | <p>[C1051] Progressive Damage Analysis of Deployable Composite Cylindrical Thin-Walled Hinges
Liangwei Su, Prof. Beibei Sun, Yingjie Zhang
Southeast University, China</p> |
| 7 | <p>[C1067] A Study on the Durability Improvement of the Connection Passage Assembly for Railway Vehicles
Dr. Chul-Su Kim, Jae-Moon Kim
National Korea university of Transportation, Korea</p> |
| 8 | <p>[C1070-A] A XFEM and Anisotropic Plasticity Combined Method to Predict Matrix Crack Initiation and Propagation in Composites under Shear Load
Dr. Xiaodong Wang, Zhidong Guan, Yao Wang, Fengyang Jiang, Xiaodong Liu
Beihang University, China</p> |
| 9 | <p>[C11010] A Solution to the Problems of Appearance Optimization for “Flame blocker” -type Units Using Advanced Production Technologies
Ms. Zyazeva T.Y., Smagin D.I., Savelev R.S.
Moscow Aviation Institute (National Research University), Russia</p> |
| 10 | <p>[C1076] Cure Kinetics Characterization of Epoxy Resin by Piecewise Model Fitting Method
Mr. Xiaodong Liu, Zhidong Guan, Xiaodong Wang, Yao Wang, Fengyang Jiang
Beihang University, China</p> |

11	<p>[C1087] Optimization of comprehensive Stiffness Performance Index for Industrial Robot in Milling Process</p> <p>Jiabo Zhang, Mr. Jizhi Yang, Yi Yue, Ke Wen, Yinghao Zhou China Academy of space technology, China</p>
12	<p>[C1073] Experimental and Numerical Investigation of Curve Section Stringer/skin Runout Under Tensile Load</p> <p>Dr. Yao Wang, Zhidong Guan, Xiaodong Wang, Fengyang Jiang, Xiaodong Liu Beihang University, China</p>
13	<p>[C1134-A] Study on Design and Characterization of Non-regular Hexagon Structure Honeycomb Absorbing Materials</p> <p>Dr. Sun Huimin, Chen Le, Gu Zhaozhan Nanjing University, China</p>
14	<p>[C1189] PID Based Control of Electric Vehicle Drive Line With Backlash</p> <p>Zeeshan Ali Akbar, Dr. Fahad Mumtaz Malik, Hameed Ullah, Anjum Saeed and Amer Aziz National University of Sciences and Technology, Pakistan</p>
15	<p>[C13005-A] Parametric Shape Optimization of a Flat Ring-Chain Extension Spring</p> <p>Mr. Islam Mohamed Elgamal American University in Cairo, Egypt</p>
16	<p>[C1156] Multi-rigid-body Dynamics Modeling and Controller Design for a Connected UAV Formation</p> <p>Mr. Mingzhe Chen, Zhou Zhou, Rui Wang Northwestern Polytechnical University, China</p>
	<p>Lunch</p>

Special Session

WEDNESDAY, July 24th, 13:00-14:40

Format (16 min. for presentation + 4 min. for questions)

Special Session A “Approximation Theory and Special Functions” Chair: Prof. Oktay Duman TOBB University of Economics and Technology, Turkey VENUE: Tour Noire 4 Room	
13:00-13:20	[CM001-A] On a New Type Stancu Operators Prof. Gülen Başcanbaz-Tunca, Ayşegül Erençin Ankara University, Turkey
13:20-13:40	[CM002-A] On Parametric Extension of Szasz Durrmeyer Operators Prof. İsmet Yüksel, Nadire Fulda Odabaşı Gazi University, Turkey
13:40-14:00	[CM003] Generating Functions for the Extended Multivariable Fourth Type Horn Functions Dr. Duriye Korkmaz-Duzgun, Esra Erkus-Duman Kafkas University, Turkey
14:00-14:20	[CM006-A] On the Approximation by Bernstein-Chlodovsky type Operators Ms. Meryem Ece Alemdar, Oktay Duman TOBB University of Economics and Technology, Turkey
14:20-14:40	[CM008-A] The Construction of a Dynamical System on the Vicsek Fractal Ms. Nisa Aslan, Mustafa Saltan, Bünyamin Demir Eskişehir Technical University, Turkey
14:40-15:00	Coffee Break

WEDNESDAY, July 24th, 15:00-16:20

Special Session B
“Approximation Theory and Special Functions”
Chair: Prof. Esra Erkus-Duman
Gazi University, Turkey

VENUE: Tour Noire 4 Room

15:00-15:20	[CM005-A] General Approach for Approximation by Max-Min Operators Ms. Türkan Yeliz Gökçer, Oktay Duman TOBB University of Economics and Technology, Turkey
15:20-15:40	[CM004-A] Summability of Nonlinear Integral Operators in the Space of Bounded ϕ-Variation Mr. Ismail Aslan Hacettepe University, Turkey
15:40-16:00	[CM007-A] Calculation of Linear Recurrences Series of Some Reciprocal Sums Ms. Didem Ersanlı, Emrah Kılıç TOBB University of Economics and Technology, Turkey
16:00-16:20	[CM009-A] On Generalization of Szasz-Mirakyan-Durrmeyer Operators Dr. Melek Sofyalıoğlu, Kadir Kanat Ankara Hacı Bayram Veli University, Turkey
18:30-20:00	<i>Dinner& Award Banquet</i>

L001	Prof. Peter Pavol Monka FMT TU Kosice with the seat in Presov, Slovakia
L002	Mr. Tomer Shoshany IMOD, Israel
L003	Mr. Shuodong Sun Shanghai Aerospace Control Technology Institute, China
L004	Ms. Ke Jin North China University of Technology, China
L005	Mr. Niton Chakma Indira Gandhi National Open University (Ignou), India
L006	Ms. Luck Priya Chakma Rabindra Bharati University, India
L007	Mr. Aminu Munkaila Wits University Student, South Africa
L008	Mr. Yerkanat Auzhani Satbayev University, Kazakhstan
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One Day Visit

Thursday, 25 July, 2019

09:00-18:30

Gathering Spot: Grasmarkt, 82, Rue du Marché aux Herbes (NO pick-up service).



Attention:

- ✧ This visit will charge **100USD** for each person. (Pay to join before **July 15, 2019**);
- ✧ or you could choose to enjoy free time on **July 25** to explore the Brussels City by yourself;
- ✧ 8:50 AM (**July 25**), gathering spot at **Grasmarkt**, 82, Rue du Marché aux Herbes, NO pick-up service.
- ✧ Please be there on time, or you will miss the visit.

Route: Gathering Spot -- Ghent—Gravensteen -- Sint Baafskathedraal — Bruges – Minnewater — Beguinage — Gathering Spot

Service includes:

- Transportation, Fuel, Parking fees;
- English speaking tour guide;
- Tips for Tour guide and driver;
- Travel insurance;
- Pick-up & drop-off at gathering spot.

Service excludes:

- Entrance Fees, Lunch, other Personal expenses (not mentioned above).

Remarks

- The itinerary / duration to visit may change without advance notice depending on unexpected local situation;
- The participants should go to the assembly point by themselves, no pick-up service;
- It is suggested to bring Umbrella, due to the unexpected whether condition.

If you are willing to join the One Day Visit, please fill in form below and return back before July 15

Should you have any further inquiry, please be free to contact us.

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Scenic Introduction

No.1 Ghent (根特)



Ghent is a city and a municipality in the Flemish Region of Belgium. It is the capital and largest city of the East Flanders province, and the second largest municipality in Belgium, after Antwerp. The city originally started as a settlement at the confluence of the Rivers Scheldt and Leie and in the Late Middle Ages became one of the largest and richest cities of northern Europe, with some 50,000 people in 1300. It is a port and university city.

The municipality comprises the city of Ghent proper and the surrounding suburbs of Afsnee, Desteldonk, Drongen, Gentbrugge, Ledeborg, Mariakerke, Mendonk, Oostakker, Sint-Amandsberg, Sint-Denijs-Westrem, Sint-Kruis-Winkel, Wondelgem and Zwijnaarde. With 260,467 inhabitants in the beginning of 2018, Ghent is Belgium's second largest municipality by number of inhabitants. The metropolitan area, including the outer commuter zone, covers an area of 1,205 km² (465 sq mi) and has a total population of 594,582 as of 1 January 2008, which ranks it as the fourth most populous in Belgium. The current mayor of Ghent, Mathias De Clercq is from the liberal & democratic party Open VLD.

No. 2 Gravensteen (伯爵城堡)



Gravensteen is one of the strongest moated fortresses in Western Europe, surrounded by the River

Lieve. It was built between 1180 and 1200 on the orders of Philip of Alsace, the former count of Flanders, on the foundation of an earlier 9th-century structure and was created in the style of Syrian crusader castles. Today, it remains a unique example of the European medieval art of fortification. In the 14th-century, it ceased to have a military function and was used by the counts for administration of the land. In 1800, it came into private ownership and was converted into a cotton mill and flats for the workers. In front of the castle extends the ancient Sint-Veerleplein, possibly the oldest square in Ghent, although the neighboring facades are of 17th-century origin at the earliest. This square was a marketplace but also the site of executions and burnings of the victims of the Inquisition

No. 3 Sint Baafskathedraal (圣巴夫主教座堂)



On the eastern side of Sint-Baafsplein stands the Cathedral of St. Bavo, a majestic building of brick and granite with a Romanesque crypt of its predecessor, Sint-Jans church. Charles V gave the cathedral its present name after he destroyed the old one to build a fortress. The High Gothic cathedral choir dates from the 13th century, while the late Gothic tower and the main nave were built during the 15th and 16th centuries. The light interior of the cathedral is richly decorated with some unique paintings. These include *The Conversion of St. Baaf* by Peter Paul Rubens (1624) and *Christ among the Doctors* by Frans Pourbus (1571). The most famous artwork here though is The Altar of Ghent, also known as The Adoration of the Mystic Lamb, renowned as by far the greatest masterpiece of old Flemish painting. Below the main church, the extensive crypt contains numerous tombs of bishops and a rich treasury. The outstanding Calvary triptych of 1464 by Joos van Wassenhove (Justus van Gent) is also shown in one of the chapels.

No.4 Bruges (布鲁日)



Bruges is the capital and largest city of the province of West Flanders in the Flemish Region of Belgium, in the northwest of the country. Along with a few other canal-based northern cities, such as Amsterdam, it is sometimes referred to as the Venice of the North. Bruges has a significant economic importance, thanks to its port, and was once one of the world's chief commercial cities. Bruges is well known as the seat of the College of Europe, a university institute for European studies.

No.5 Minnewater （爱之湖）



Tucked away at the southern end of Bruges is the beautiful area known as "Minnewater". The centre piece is the "Lake of Love" and "Lovers bridge". It's a great place to be with someone you love! A very tranquil location within the confines of the city. So serene and peaceful. A wonderful place to relax with families or loved ones. On your way from the train station or the coach parking to the city center you cannot escape the Minnewater Park. It's a beautiful entrance to Brugge. The Lake Of Love is the heart of the park. A legend tells the story of a young and pretty girl named Minna who was in love with Stromberg, a warrior of a neighbouring tribe. Her father did not agree with her love and arranged her to marry a man of his choice. Minna escaped and ran into the forest. When Stromberg finally found her, she died in his arms of exhaustion. The lake was named after Minna and the bridge by the lake was considered the bridge of love, in her honour.

No.6 Beguinage （贝居安会院）



In medieval times, Minnewater (the "Lake of Love"), on the far side of Wijngaardplein, was part of Bruges' busy outer harbour. Nowadays, only the Gothic Lock House (sluishuis) at the north end provides a clue to its far-from-tranquil past. Standing by the Lock House is a lovely view of the bridge over to Bruges' Béguinage (Prinselijk Begijnhof ten Wijngaerde) with its white 17th-century houses grouped around a grassy, tree-shaded court. It was founded in 1245 by Margaret of Constantinople, and today is the home of Benedictine nuns. Between the entrance gate and church (founded 1245, restored 1605), one of the former béguine houses has been turned into the Begijnhof museum, which offers a fascinating insight into life in the béguinage.

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