CONFERENCE PROGRAM

The 14th Asia Conference on Mechanical and Aerospace Engineering

(ACMAE 2023)

第 14 届机械与航空航天工程会议

Hong Kong, China| December 22-24, 2023

中国 香港| 2023 年 12 月 22-24 日

TABLE OF CONTENT

WELCOME ADDRESS

Dear Attendees,

The 14th Asia Conference on Mechanical and Aerospace Engineering (ACMAE 2023), the sister conference of ICMAE, will be held in Hong Kong during December 22-24, 2023, following the successful conferences in Chengdu (Online) last year, Nanjing in 2021, online in 2020, Bangkok, Thailand in 2019, Singapore in 2018 and Yokohama, Japan in 2017.

ACMAE 2023 is sponsored by Science and Engineering Institute and Department of Aeronautical and Aviation Engineering (AAE) of The Hong Kong Polytechnic University (PolyU), co-sponsored by Nanjing University of Science and Technology, Moscow Bauman State Technical University, technically supported by Capitol Technology University, Washington University in St. Louis.

After several rounds of rigorous review, the program committee not only indicated acceptance but also provided ratings on those papers accepted for publication in the ACMAE conference proceedings. We wish to express our sincere appreciation to all individuals who have contributed to ACMAE 2023 conference in various ways. Special thanks are extended to our colleagues in the program committee for their review of all the submissions, which is vital to the success of the conference, and also to the members in the organizing committee and other volunteers who had dedicated their time and efforts in planning, promoting and organizing the conference.

We have two keynote speakers and three invited speakers to give us report on their related research. They are Jinjun Shan, from York University, Canada; Osama Tabata, from Kyoto University of Advanced Science, Japan; Rui Zhao, from Beijing Institute of Technology, China; Ben Guan, from Harbin Engineering University, China; Jiaao Hao, from The Hong Kong Polytechnic University, China. And there are eight sessions in this conference. The topics include new engine design and model simulation; engineering materials and mechanical system design; System design and safety analysis in aerospace engineering; aero engine model and spacecraft control; microcar UAV design and electronic system control; modern electronic systems and fluid dynamics analysis; design and analysis of vibration systems in aviation systems; material analysis, aircraft design, and flight control in aerospace engineering. One best presentation will be selected from each session, which will be evaluated based on originality, applicability, technical merit, quality of PPT and communication skill. The best one will be announced at the end of each Session.

We believe that these works will lay the foundation for further research and the interactions during the conference will lead to much improved version of the extended papers.

Have a nice communication on the conference!

ACMAE 2023 Organizing Committees

December, 2023

CONFERENCE COMMITTEES

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Ian McAndrew, Capitol Technology University, USA

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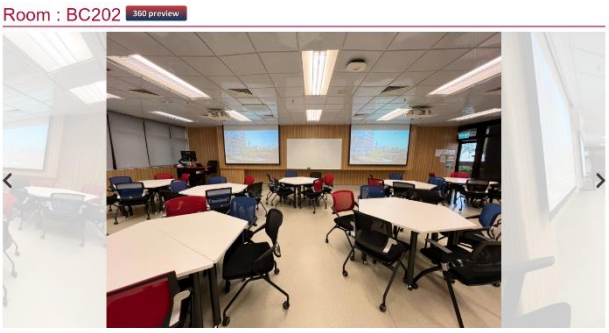
Tao Meng, Zhejiang University, China
Shipeng Li, Beijing Institute of Technology, China
Duquan Zuo, Civil Aviation Flight University of China, China
Lei Hou, Harbin Institute of Technology, China
Guodong Fang, Harbin Institute of Technology, China
Yin Fan, Shanghai Jiao Tong University, China
Kai Wang, Xiamen University, China
Ben Guan, Harbin Engineering University, China

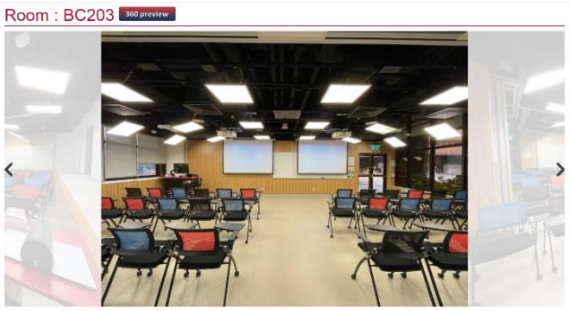
CONFERENCE VENUE

❖ Meeting Venue (会议地点)

The Hong Kong Polytechnic University Seal of Love Foundation Building, BC202& BC203

香港理工大学 (红磡校区)正愛廿慈善基金樓-通常称为"Wing BC"(BC 翼) , BC202& BC203





CAMPUS MAP

❖ Lunch Venue (午餐地点)

U. Green

LOCATION: 5th floor Communal Building, The HK Polytechnic University

(理工大校园内)

❖ Dinner Venue (晚餐地点)

InterContinental Grand Stanford Hong Kong

(海景嘉福洲际酒店)

Location: M Level, InterContinental Grand Stanford Hong Kong, 70 Mody Road, Tsim Sha Tsui

(尖沙咀么地道 70 号海景嘉福洲际酒店 M 层)

PRESENTATION GUIDELINE

For Everyone

- The whole conference program is scheduled in Beijing Time (UTC+8).
- Please double check your Test Time and Presentation Time, and adjust times to device's time zone.
- English will be the only language used for presentation.
- **December 22:** Online Test, Onsite Sign in; **December 23:** Opening Ceremony, Conference Speeches, Oral Sessions; **December 24:** Oral Sessions.
- Each Keynote Speech is within 40 Mins; Each Invited Speech is within 25 Mins.
- Each oral presentation is allocated with 15 Mins (13 Mins presentation, 2 Mins for Q&A), please prepare your English PPT in advance.

For Onsite Presenters

❖ Oral Presentation

- 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.

For Online Presenters

❖ Tool

- **ZOOM** (**zoom.com.cn or zoom.us**) will be used for the whole online event. On the buttom of the web page, you can choose download the app for free and then choose 'JOIN A MEETING ', then input room's ID. As usual you could not create an account now, so you can join in our conference as a visitor, ZOOM may ask you to input your phone number and the passwords they sent to your number to verify.

❖ How to Use Zoom

- Download the ZOOM on https://www.zoom.us/download.
- Turn on your Audio and start your Video. Use headsets/Earphones to enhance the audio effect and avoid the speaker echo or howling. Stay in a quiet place without noise.
- Join TEST DAY on December 22, we will help the delegates know better how to use ZOOM functions as following:
  1. RENAME: authors please rename like Session Number+ Paper ID+ Name as you join the room. E.g.: S1+ME001+Lily. For KN/IS/SC, please rename like KN/IS/SC+ Name
  2. SHARE SCREEN: Choose the files you need to share
  3. RAISE HAND FUNCTIONS: If you have any questions, you can use this function
  4. CHAT: type the word on the chat broad, you can chat to everyone in the room or someone privately

❖ Presentation Tips

- Please prepare a digital device with Microphone (mandatory) and Webcam (optional), a computer or laptop is recommended; And make sure you are connected to a stable and high-quality Wi-Fi network, or 4G/5G or Internet if available.
- Read the detailed program, check the time and Zoom information of the session that you will do your presentation.
- One best Presentation will be chosen from each presentation session and announced at the end of the session. The conference secretary will email you the certificates after the conference.
- Please enter in your session's room 10 Mins earlier of the start of session.
- When giving your presentation, please turn on the video.
- After your presentation, please leave the session room. At the end of the session, a group photo will be taken.

❖ Zoom Information

Online Room	Zoom ID	Zoom Link
Room A	870 4121 8642	https://us02web.zoom.us/j/87041218642
Room B	822 1445 2028	https://us02web.zoom.us/j/82214452028

CONFERENCE AGENDA

Day 1 | Friday December 22, 2023

Time	Activity	Venue
10:00-12:00	Online Test	ZOOM ID: 870 4121 8642
13:00-17:00	Onsite Sign in & Conference Kit Collection	BC202

Day 2 | Saturday December 23, 2023

Time	➤ Venue: BC203 ZOOM ID: 870 4121 8642
	Host: Jiaao Hao, The Hong Kong Polytechnic University, China
	Opening Ceremony
9:00-9:10	**Welcome Address** **Chih-Yung Wen** The Hong Kong Polytechnic Univeristy, Hongkong, China
	Opening Remarks **Ian McAndrew** Capitol Technology University, USA
	Program Address **Danhe Chen** Nanjing University of Science and Technology, China
	Conference Speeches
9:10-9:50	**Keynote Speaker I:** **Jinjun Shan** York University, Canada **Speech Title:** *"Piezo-driven Nano-positioning System and Its Application to An Imaging Fabry-Perot Spectrometer"*
9:50-10:30	**Keynote Speaker II:** **Osama Tabata** Kyoto University of Advanced Science, Japan zoom **Speech Title:** *"Body on A Chip: A Way to Mimic a Body on A Chip"*

10:30-11:00	**Group Photo & Coffee Break**
	Host: Danhe Chen, Nanjing University of Science and Technology, China
11:00-11:25	**Invite Speaker I:** **Rui Zhao** Beijing Institute of Technology, China **Speech Title:** *"Acoustic Metasurfaces for Hypersonic Boundary Layer Stabilization: Mathematical Modeling, Design Strategy, and Mechanism"*
11:25-11:50	**Invite Speaker II:** **Ben Guan** Harbin Engineering University, China **Speech Title:** *"Designing of Supersonic Split Line Nozzles: Optimization, Mechanism, and Modeling"*
11:50-12:15	**Invite Speaker III:** **Jiaao Hao** The Hong Kong Polytechnic University, China **Speech Title:** *"On the Low-Frequency Unsteadiness in Shock-Induced Separated Flow"*
12:15-13:30	**Lunch（U. Green）**

Time	Activity	Venue
13:30-15:45	**Onsite Session 1: New Engine Design and Model Simulation** AC049, AC054, AC065-A, AC060, AC117, AC068-A, AC145-A, AC028, AC011-A	**BC202**
	Onsite Session 2: Engineering Materials and Mechanical System Design AC016, AC042, AC033, AC058, AC101, AC067-A, AC102, AC088, AC122, AC113	**BC203**
15:45-16:00	**Coffee Break**	
16:00-18:15	**Onsite Session 3: System Design and Safety Analysis in Aerospace Engineering** AC004, AC008, AC031, AC032, AC053, AC064, AC057, AC086, AC109	**BC202**
16:30-17:30	**Onsite Poster Session: Material Analysis, Aircraft Design, and Flight Control in Aerospace Engineering** AC002, AC005, AC006, AC013, AC045, AC123-A, AC128-A, AC129-A, AC141, AC146	**BC203**
18: 15-20:00	**Dinner**	**InterContinental Grand Stanford Hong Kong**

Day 3 | December 24, 2023

Time	Activity (online only)	Venue
10:00-12:15	**Online Session 4: Aero Engine Model and Spacecraft Control** AC019, AC023, AC115, AC062, AC116, AC037, AC105, AC061, AC074	**ZOOM ID: 870 4121 8642**
	Online Session 5: Microcar UAV design and electronic system control AC048, AC079, AC147, AC051, AC108, AC112, AC119, AC133, AC137	**ZOOM ID: 822 1445 2028**
12:00-14:00	**Lunch**	
14:00-16:30	**Online Session 6: Modern Electronic Systems and Fluid Dynamics Analysis** AC085, AC090, AC120, AC021, AC097, AC092, AC125, AC127, AC020, AC130	**ZOOM ID: 870 4121 8642**
	Online Session 7: Design and Analysis of Vibration Systems in Aviation Systems AC080, AC039, AC143, AC082, AC083, AC106, AC027, AC036, AC014, AC089	**ZOOM ID: 822 1445 2028**

KEYNOTE SPEAKERS

Keynote Speaker I

Beijing Time: 9:10-9:50, Dec. 23 **Onsite Room: BC203**

Zoom ID: 870 4121 8642

Jinjun Shan
York University, Canada

Speech Title: ***"Piezo-driven Nano-positioning System and Its Application to An Imaging Fabry-Perot Spectrometer"***

Abstract: Piezoelectric actuators have many advantages such as high resolution, fast response, large bandwidth, and good temperature stability. They have been used in a wide range of industrial applications to realize high precise motion. However, the piezoelectric actuators inherently have their own nonlinear behaviour such as hysteresis, creep, thermal drift and vibration which deteriorates overall performances including stability of the developed systems. In this talk, Prof. Shan will present his work on dynamics modeling and compensation for the nonlinearities of the piezoelectric actuators, as well as its application to an imaging Fabry-Peort spectrometer for atmospheric studies.

BIO: Prof. Jinjun Shan is a Full Professor at the Department of Earth and Space Science and Engineering, York University. He joined York University in 2006 as Assistant Professor of Space Engineering and was promoted to Full Professor in 2016, he also served as the department chair in 2018-2023. Prof. Shan's research areas include dynamics, control and navigation of autonomous systems, multi-agent systems, smart materials and structures, spacecraft dynamics and control, and space instrumentation. His pioneering work has led to over 200 widely cited publications. Prof. Shan's accomplishments in research and engineering education have seen him recognized with prestigious awards such as a Fellow of Canadian Academy of Engineering (CAE), a Fellow of Engineering Institute of Canada (EIC), and a Fellow of American Astronautical Society (AAS).

Keynote Speaker II

Beijing Time: 9:50-10:30, Dec. 23 **Onsite Room: BC203**

Zoom ID: 870 4121 8642

Osama Tabata

Kyoto University of Advanced Science, Japan

Speech Title: ***"Body on A Chip: A Way to Mimic A Body on A Chip"***

Abstract: In vitro cell-based assay with human cells is getting attention since the accuracy of preclinical predictions of drug responses should be improved to reduce costly failures in clinical trials. In order to generate reliable predictions, a micro-engineered biomimetic systems, so called "Body on a Chip: BoC" was proposed. The BoC make it possible to investigate the effects of drugs/metabolites on various organs by assembling a closed-loop medium circulation system on one microfluidic device. In this talk, we demonstrate our two examples. One is a BoC in which human heart and liver cell lines are integrated to evaluate the effects of an anti-cancer drug (doxorubicin) on cell survival. The next is a BoC in which human gut and liver cell lines are integrated to investigate Non-alcoholic fatty liver disease (NAFLD). In both examples, a three-dimensional (3D) polymeric device fabrication technique based on the reliable 3D lithography with the process optimization method is applied to realize a better performance of the integrated fluidic components such as a valve and a pump.

BIO: Osamu Tabata received his M.S. and Ph.D. degrees from Nagoya Institute of Technology, Japan, in 1981 and 1993, respectively. In 1981, he joined the Toyota Central Research and Development Laboratories, Inc., Japan. In 1996, he joined the Department of Mechanical Engineering, at Ritsumeikan University, Japan. In 2003, he moved to the Graduate School of Engineering, Kyoto University, Japan. In October 2019, he moved to Kyoto University of Advanced Science as a founding Dean of the Faculty of Engineering and Graduate School of Engineering. From Dec. 2022, he is also serving as an Executive Vice President. He has been engaged in research on micro/nano processes, MEMS, and DNA Nanotechnology. Prof. Tabata was a guest professor at the Department of Microsystem Engineering, University of Freiburg, Germany from September to December 2000, a guest Professor of ETH Zurich, Switzerland from January to March 2001, a visiting senior international scientist of the Chinese Academy of Science in 2010, a guest Professor of Huazong University of Science and Technology, China from July 2011 to July 2014, a senior research fellow at the Freiburg Institute for Advanced Studies (FRIAS) from May 2010 to September 2012, a distinguished visiting researcher of American University in Cairo in 2016 and a visiting Professor of Tsinghua University China from November 2018. He is a senior editor of the IEEE Transactions on Nanotechnology (TNANO), an associate editor of the ASME/IEEE Journal of Micro Electro Mechanical Systems (JMEMS), and an editorial board member of the Elsevier Journal Sensors and Actuators. He is also a program committee member of many important International Conferences in his area of expertise. Since 2020, he has been an Award Committee Member for EDS IEEE. He is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE) and the Institute of Electrical Engineers Japan (IEEJ).

INVITED SPEAKERS

Invited Speaker I

Beijing Time: 11:00-11:25, Dec. 23 **Onsite Room: BC203**

Zoom ID: 870 4121 8642

Rui Zhao

Beijing Institute of Technology, China

Speech Title: "*Acoustic Metasurfaces for Hypersonic Boundary Layer Stabilization: Mathematical Modeling, Design Strategy, and Mechanisms*"

Abstract: Hypersonic boundary layer (BL) transition generates a significant increase in viscous drag and heat flux, which leads to severe restrictions on the performance and thermal protection systems of hypersonic vehicles. Among various passive/active transition control strategies, acoustic metasurfaces demonstrate minimal effects on the mean flow but significantly suppress the Mack second mode. Therefore, it can be considered one of the most promising transition control technologies. Acoustic metasurfaces are planar metamaterial structures that comprise monolayer or multilayer stacks of subwavelength microstructures, which affect unstable modes via acoustic wave manipulations. This paper presents a review of the research progress made on acoustic metasurfaces for hypersonic BL stabilization. Acoustic characteristics and their corresponding stabilization effects on the first and second modes are compared and discussed. Recent improvements in the mathematical modeling of acoustic metasurfaces have been highlighted. The broadband design strategies and possible mechanisms are proposed and discussed.

BIO: Dr. Rui Zhao is currently the Associate Professor of School of Aerospace Engineering, Beijing Institute of Technology. He received his Bachelor (2008) and Ph.D (2013) degrees in fluid dynamics from Beihang University. He was appointed as a visiting Assistant Professor at Hong Kong Polytechnic University in 2017. His research interests include hypersonic boundary-layer transition and control, ablation effect, thermal-chemical nonequilibrium, etc. He is now the Fellow of China Aerodynamics Society, and the youth editorial board member of Space: Science & Technology, Aerospace Technology, and Aerodynamic Research & Experiment. He has published two monographs and more than 40 academic papers in international journals. In 2023, he was awarded the Excellent Individual Awards of the First Exploration of Mars Mission of China.

Invited Speaker II

Beijing Time: 11:25-11:50, Dec. 23 **Onsite Room: BC203**

Zoom ID: 870 4121 8642

Ben Guan

Harbin Engineering University, China

Speech Title: "*Designing of Supersonic Split Line Nozzles: Optimization, Mechanism, and Modeling*"

Abstract: Thrust vector control systems are essential to modern rocket motors. They are widely used to ensure that rockets travel on their correct trajectories. The supersonic split line (SSSL) nozzle is one of the thrust vector nozzles. Because of the complex internal flow, designing a high-performance SSSL nozzle, especially with a large swing angle, could be quite challenging. In this talk, an SSSL nozzle design procedure is presented first. The multi-objective optimization method is utilized to determine the nozzle configurations that provide the best thrust vector performance. The influence of key geometric parameters on the nozzle thrust performance is uncovered. By monitoring the nozzle internal flow during the multi-objective optimization procedure, the significant roles played by shock waves on the nozzle thrust performance are demonstrated. Finally, a mathematical model is proposed to predict the thrust vector performance of the SSSL nozzles based on the resultant optimized nozzle configurations.

BIO: Dr. Ben GUAN is now an Associate Professor at the College of Aerospace and Civil Engineering, Harbin Engineering University. He received his bachelor's degree from Harbin Shangye University in 2008, master's degree from Harbin Engineering University in 2012, PhD degree from the University of Science and Technology of China in 2016, and then acted as a Research Associate at the Hong Kong Polytechnic University until March 2019. His research covers solid rocket motor operational stability, advanced rocket nozzle, shock waves, Richtmyer-Meshkov instability, and droplet secondary breakup. He serves as a member of the Chinese Aerodynamics Research Society, and a member of the youth editorial board of Propulsion and Energy. He has published more than 20 academic journal papers.

Invited Speaker III

Beijing Time: 11:50-12:15, Dec. 23 **Onsite Room: BC203**

Zoom ID: 870 4121 8642

Jiaao Hao

The Hong Kong Polytechnic University, China

Speech Title: "*On the Low-Frequency Unsteadiness in Shock-Induced Separated Flow*"

Abstract: Shock-wave/turbulent boundary-layer interactions feature a low-frequency, back-and-forth shock motion and large-scale flow structures. The physical mechanisms of these flow phenomena are revealed using linear stability analysis based on a separation of scales. For the first time, an intrinsic three-dimensional instability is identified, which manifests itself as corrugated separation and reattachment lines and pairs of counterrotating streamwise vortices downstream of reattachment. Shock-induced separated flow also responds actively to both two-dimensional and three-dimensional upstream disturbances as a consequence of modal resonance. For the former, the frequency-premultiplied optimal energy amplification peaks at a universal low frequency nondimensionalized using the length of the separation region and the freestream velocity. The response is in the form of a back-and-forth shock motion. For the latter, counterrotating streamwise vortices are excited and wander in the spanwise direction with a range of frequencies and spanwise wavelengths.

BIO: Dr. Jiaao Hao is an Assistant Professor in the Department of Aeronautical and Aviation Engineering, the Hong Kong Polytechnic University. He received his PhD in Fluid Mechanics and BEng in Aircraft Design and Engineering from Beihang University in 2018 and 2013, respectively. His research interests include hypersonic aerodynamics, aerothermodynamics, and flow stability. He has published more than 40 papers in peer-reviewed journals, such as Journal of Fluid Mechanics, Physics of Fluids, Physical Review Fluids, etc.

TECHNICAL SESSIONS

Onsite Session 1
New Engine Design and Model Simulation

Chair: Rui Zhao, Beijing Institute of Technology, China

Beijing Time	13:30-15:45, Dec.23, 2023	Venue	BC202

Time	ID	Presenter	Affiliation
13:30-13:45	AC049	Chuang Zhou	Beihang University, China
13:45-14:00	AC054	Dongsheng Zhao	Beijing Institute of Technology, China
14:00-14:15	AC065-A	Jaewon Song	Yeungnam University, Republic of Korea
14:15-14:30	AC060	Duanyang He	Beijing Institute of Technology, China
14:30-14:45	AC117	Haoran Shi	Beihang University, China
14:45-15:00	AC068-A	Ziyue Zhou	Yeungnam University, Republic of Korea
15:00-15:15	AC145-A	Amaan Mukadam	SRMIST Chennai, India
15:15-15:30	AC028	Linxuan Zhang	Xi'an Jiaotong University, China
15:30-15:45	AC011-A	Mengjie Hu	China University of Mining and Technology, China

Details:

ID	Title, Authors
AC049	**Frequency Domain Analysis of Full-Flow Staged Combustion Cycle Rocket Engine System during Startup** *Chuang Zhou, Nanjia Yu, Pingping Zhu, Jue Wang, Guobiao Cai, Xuesong Guo, Shan An, Haodong He*
AC054	**Effect of Different Particle Sizes on Combustion Characteristics of DCR Engines** *Dongsheng Zhao, Zhijun Wei, Duanyang He, Dalin Li, Chujiu Huang*
AC065-A	**Reduction of Transverse Vibration of Vertical Shaft for Hydropower Generation Using Thrust Bearing and Active Bearing** *Jaewon Song, Byeongil Kim*

AC060	**Numerical Study on Dynamic Flow of the Flexible Extension Nozzle in Rocket Motors** *He Duanyang, Wei Zhijun, Zhang Xudong, Li Dalin, Zhao Dongsheng, Huang Chujiu, Yu Haixu*
AC117	**Design and Experimental Study of High Flow Variable Area Cavitation Venturi Tube** *Haoran Shi, Jie Fang, Guobiao Cai, Nanjia Yu, Chuang Zhou, Jiangning Wang*
AC068-A	**Analysis of Optimal Mount Location Based on Modeling and Input Quantification of Multi-Directional Active Mounting System for Automotive Powertrain** *Ziyue Zhou, Yang Qiu, Byeongil Kim*
AC145-A	**Conceptual Idea to A Probable Chance at Improving Efficiency of Pulse Detonation Engines** *Amaan Mukadam*
AC028	**Integrated Design Optimization of Ducted Lift Fan for Lift Enhancement and Noise Reduction Based on Nested NFFD Control Body** *Linxuan Zhang, Jian Sun, Xiaofei Cai, Chao Zhang, Yuheng Ding*
AC011-A	**Event Triggered Fault Detection Filtering of Unmanned Aerial Vehicles Systems with Semi Markov Jumping Parameter** *Mengjie Hu, Ju H. Park*

Onsite Session 2
Engineering Materials and Mechanical System Design

Chair: Ben Guan, Harbin Engineering University, China

Beijing Time	13:30-16:00, Dec.23, 2023	Venue	BC203

Time	ID	Presenter	Affiliation
13:30-13:45	AC016	Qianlei Gu	Southeast University, China
13:45-14:00	AC042	Yijia Tang	Guangdong Polytechnic of Science and Technology, China
14:00-14:15	AC033	Hang Yin	Southeast University, China
14:15-14:30	AC058	Fengting Hou	Beijing Institute of Technology, China
14:30-14:45	AC101	Ce Liu	Southeast University, China
14:45-15:00	AC067-A	YeoRM Kim	Yeungnam University, Republic of Korea
15:00-15:15	AC102	Zeyu Li	Southeast University, China
15:15-15:30	AC088	Yvonne Xue	Harbin Engineering University, China
15:30-15:45	AC122	Ting Zhang	Xi'an Jiaotong University, China
15:45-16:00	AC113	Jingyuan He	Nanjing University of Science and Technology, China

Details:

ID	Title, Authors
AC016	**Flow Resistance Enhancement for the Leakage Reduction of Labyrinth Seals Using Teeth Tip Winglets** *Qianlei Gu, Jiangang Yang*
AC042	**Aero-Acoustics Study of Coupled Cavities in Close Proximity Along A Rectangular Flow Duct at Low Mach Number** *Yijia Tang, Chen Liang, Jianliang Gao, Shuzhen Zhang, Yangsheng Cai*
AC033	**Structural Design/Manufacturing and Cavitation Efficiency Calculation of The Bio-inspired Snapping-Claw Apparatus** *Hang Yin*

AC058	**Study on Laser Ignition and Combustion Characteristics of Micron-sized Aluminum and Al-Mg Alloys Particles** *Fengting Hou, Beichen Zhang, Muyang Feng, Shuwei Liu and Shipeng Li*
AC101	**Global Adaptive Event-Triggered Output Feedback Control for P-Normal Feedforward Nonlinear Systems with Uncertain Output Function** *Ce Liu, Junyong Zhai, Zeyu Li*
AC067-A	**Experimental Analysis on Noise Characteristics of Defective Linear Bushing** *YeoRM Kim, Byeongil Kim*
AC102	**Asymptotic Consensus Tracking Control of Robotic Manipulators with Disturbance and Dead-Zone Via Adaptive Sliding Mode Control** *Zeyu Li, Junyong Zhai, Ce Liu*
AC088	**Numerical Study on Altitude-Compensating Mechanism of a Permeable Nozzle** *Yvonne Xue, Yuzhe Bu, Shuai Wang, Ben Guan, Ge Wang*
AC122	**Process Identification of Laser Powder Bed Fusion Anomalies Based on Process-Monitored Melt Pool Radiation Intensity Data** *Yao Chenguang, Ting Zhang, Zhibin An, Mengxiang Dang*
AC113	**Study on Trajectory Optimization of Satellite Rapid Orbit Formation Flying for Space Object** *Jingyuan He, Danhe Chen, Xingchuan Liu*

Onsite Session 3
System Design and Safety Analysis in Aerospace Engineering

Chair: Jiaao Hao, The Hong Kong Polytechnic University, China

Beijing Time	16:00-18:15, Dec.23, 2023	Venue	BC202

Time	ID	Presenter	Affiliation
16:00-16:15	AC004	Yan Liu	Innovation Academy for Microsatellites of Chinese Academy of Sciences, China
16:15-16:30	AC008	Pengfei Li	Nanjing University of Aeronautics and Astronautics, China
16:30-16:45	AC031	Yundong Guo	Nanjing Vocational University of Industry Technology, China
16:45-17:00	AC032	Huajian Deng	Zhejiang University, China
17:00-17:15	AC053	Ling Zhang	Beijing Institute of Technology, China
17:15-17:30	AC064	Renhao Mao	Zhejiang University, China
17:30-16:45	AC057	Qun Niu	Beijing Institute of Technology, China
17:45-18:00	AC086	Zhijiang Wen	Innovation Academy for Microsatellites of Chinese Academy of Sciences, China
18:00-18:15	AC109	Longlong Shi	Northwestern Polytechnical University, China

Details:

ID	Title, Authors
AC004	**Improved Differential Optimization Algorithm for Multi-satellite Joint Earth Observation Scheduling** *Yan Liu, Shengyu Zhang, Jingying Cai, Zhijiang Wen, Haiying Hu*
AC008	**Numerical Simulation of Deformation Hysteresis Effect of the Bristles of Brush Seals** *Pengfei Li, Yaping Hu, Honghu Ji*
AC031	**A Comprehensive Index System Oof Human Reliability Assessment for Flight Crew** *Yundong Guo*
AC032	**High Performance Subpixel Edge Location based on FPGA for Horizon Sensors** *Huajian Deng, Hao Wang, Zhonghe Jin*

AC053	**A Novel Method of Internal Ballistics Identification and Performance Prediction for Srms Based on Genetic Algorithm** *Ling Zhang, Deyou Wang, Beichen Zhang, Yingying Lu, Shipeng Li*
AC064	**An approximate Optimal Control Method for 6-DOF Spacecraft** *Renhao Mao, Shujian Sun, Jiakun Lei, Shangqi Wang*
AC057	**A Parameters Optimization Framework for Pose Estimation Algorithm Based on Point Cloud** *Qun Niu, Ziru Wang, Hongkun Li, Jieliang Zhao*
AC086	**Scheduling Observation Tasks for Large-Scale Satellite Constellation** *Zhijiang Wen, Yan Liu, Shengyu Zhang, Haiying Hu*
AC109	**Researches on the Aerodynamic and Stealth Characteristics for Flying Wing Fighter** *Longlong Shi, Lu Xia, Meng Zhang, Jun Deng, Wei Zhang*

Online Session 4
Aero Engine Model and Spacecraft Control

Chair: Shengzhou Bai, The Hong Kong Polytechnic University, China

Beijing Time	10:00-12:15, Dec.24, 2023	Zoom ID	870 4121 8642

Time	ID	Presenter	Affiliation
10:00-10:15	AC019	Wenlong Zhang	Xi' an Aviation Power Control Technology Co.,Ltd, AECC, China
10:15-10:30	AC023	Xianzhu Jiang	Beihang University, China
10:30-10:45	AC115	Tenghui Liao	Nanjing University of Science and Technology, China
10:45-11:00	AC062	Xuan Chen	Northwestern Polytechnical University, China
11:00-11:15	AC116	Jinping Wang	Nanjing University of Science and Technology, China
11:15-11:30	AC037	Kun Wang	Zhejiang University, China
11:30-11:45	AC105	Yue Guan	Nanjing University of Science and Technology, China
11:45-12:00	AC061	Pengfei Pan	Chinese Flight Test Establishment, China
12:00-12:15	AC074	He Li	China Aero-Polytechnology Establishment, China

Details:

ID	Title, Authors
AC019	**Development of Flow Metering for Electric Aircraft Oil Pump** *Li Xuepeng, Zhang Wenlong, Cheng Yueming, Li Jianghong*
AC023	**Transient Numerical Investigation on Thermochemical Erosion of C/C Nozzles in Hybrid Rocket Motors** *Xianzhu Jiang, Hui Tian, Xuanhong Ge*
AC115	**Design of Ignition Control System for Failed Spacecraft Array Solid Thruster** *Tenghui Liao, Hanyu Deng, Yuqing Tang, Yantao Pu, Ping Cao*
AC062	**Modeling and Evaluation of Centrifugal Pump Performance Degradation Model Based on Stochastic Process** *Xuan Chen, Jia Li, Ping Li, Xiaolong Chrn, Limin Gao*

AC116	**Influence of Thermochemical Non-Equilibrium Effects on Non-Uniform Entrance Scramjet Nozzle** *Jinping Wang, Changfei Zhuo, Xiaobin Ren*
AC037	**Adaptive Adjustable Performance Function based Direct Prescribed Performance Control for Spacecraft Flying Around Mission** *Kun Wang, Tao Meng, Jiakun Lei*
AC105	**Artificial Potential Field-Based Method for Multi-Spacecraft Loose Formation Control** *Yue Guan, Xiang Zhang, Danhe Chen, Shuhui Fan*
AC061	**Mathematical Modeling and Time-Frequency Characterization of Aero-Engine Actuators** *Pengfei Pav, Jia Li, Zhengbo Guo, Xiaolong Chen*
AC074	**Research on Dynamic Prediction Method of Temperature Environment of Unmanned Aerial Vehicle Platform based on Physical Information and Neural Network** *He Li, Jianjun Zhang, Yun Fu, Ju Xu, Yujun Hao*

Online Session 5
Microcar UAV Design and Electronic System Control

Chair: Ian McAndrew, Capitol Technology University, USA

Beijing Time	10:00-12:15, Dec.24, 2023	Zoom ID	822 1445 2028

Time	ID	Presenter	Affiliation
10:00-10:15	AC048	Zhao Li	Northwest Institute of Mechanical & Electrical Engineering, China
10:15-10:30	AC079	Zizhuo Cai	Bauman Moscow State Technical University, Russia
10:30-10:45	AC147	Anmin Zhao	Beihang University, China
10:45-11:00	AC051	Chengjin Yin	Zhejiang University, China
11:00-11:15	AC108	Yongqin Huang	Xi' an Institute Electromechanical Information Technology, China
11:15-11:30	AC112	Yingjian Qi	Nanjing University of Science and Technology, China
11:30-11:45	AC119	Lei Sun	Institute of Army Aviation, China
11:45-12:00	AC133	Jiao Ren	Northwestern Polytechnical University, China
12:00-12:15	AC137	Se Yang Pak	Kim Chaek University of Technology, Democratic People's Republic of Korea

Details:

ID	Title, Authors
AC048	**Study on the Influence of Variable Camber Airfoil on Aerodynamic Characteristics of Gun-Launched UAV** *Zhao Li, Long Zhang, Guangjun Yang, Cheng Wang*
AC079	**Dijkstra Algorithm Based Minimum Acceleration/Snap Quadrotor UAV Trajectory Planning** *Zizhuo Cai, Maria Sergeevna Selezneva, Mo Yang*
AC147	**Design and Research of an Electric Unmanned Aerial Vehicle Power System** *Anmin Zhao, Tiancheng Wang, Deshan Liu*
AC051	**High Frequency Attitude Determination of Micro Satellites based on FPGA** *Chengjin Yin, Tao Meng*

AC108	**Miniaturization Design of Laser Detection Device for Naval Gun Composite Fuse** *Yongqin Huang, Panxiong Yang, Zuntian Chen*
AC112	**Gas rudder 2DOF FOPID Position Control Based on CSFLA Optimization** *Yingjian Qi, Hanyu Deng, Haijun Shen, Zai Yu*
AC119	**Sensitivity Analysis of Attack Helicopter Combat Indicators Based on Machine Learning** *Lei Sun, Lingqin Li, Fu Gao*
AC133	**Distributed Dynamic Backup Servo Control for Satcom-On-The-Move Systems** *Jiao Ren, Xiaoxiang Ji, Jianghong Li, Lei Han, Yafeng Wu*
AC137	**PID Controller Tuning Based on PSO and Dominant Pole Placement** *Yong Su Kim, Kwang Hyok Hong, Hun Yu, Se Yang Pak*

Online Session 6
Modern Electronic Systems and Fluid Dynamics Analysis

Chairs: Katarina Monkova, FMT TU Kosice with seat in Presov, Slovakia
Vsevolod V. Koryanov, Bauman Moscow State Technical University, Russia

Beijing Time	14:00-16:30, Dec.24, 2023	Zoom ID	870 4121 8642

Time	ID	Presenter	Affiliation
14:00-14:15	AC085	Mingming Sun	Shanghai Aircraft Design and Research Institute, Commercial Aircraft Corporation of China, China
14:15-14:30	AC090	Tianshu Cui	China Academy of Aerospace Science and Innovation, China
14:30-14:45	AC120	Mingming Sun	Shanghai Aircraft Design and Research Institute, Commercial Aircraft Corporation of China, China
14:45-15:00	AC021	Boxu Yang	Northwestern Polytechnical University, China
15:00-15:15	AC097	Jia Liu	Shanghai Aircraft Design and Research Institute, China
15:15-15:30	AC092	Yingyong Shen	Harbin Institute of Technology, China
15:30-15:45	AC125	Maryam Raheem	University of Babylon, Iraq
15:45-16:00	AC127	Hongming Li	Harbin Institute of Technology, China
16:00-16:15	AC020	Ying Wang	University of Electronic and Technology of China, China
16:15-16:30	AC130	Un Chol Han	Kim Chaek University of Technology, Democratic People's Republic of Korea

Details:

ID	Title, Authors
AC085	**An Overview of Icing Scaling Parameters for Supercooled Large Drop Icing Conditions in Icing Wind Tunnels** *Mingming Sun, Yuwen Jie, Liping Wang, Feng Zhou*
AC090	**Multi-Resolution Convolutional Neural Network for Specific Emitter Identification** *Tianshu Cui, Yang Yu, Liang Shi, Hongjiang Zhang, Chunzhe Wang, and Yang Liu*
AC120	**Research on Ice Shedding Experiment for Large Civil Aircraft to Exit Ice Protection Mode** *Mingming Sun, Yuwen Jie, Binbin Zhao, Feng Zhou*

AC021	**Influence of Emissivity on Infrared Radiation Characteristics of the Two-Dimensional Nozzle** *Hongwei Deng, Qingzhen Yang, Boxu Yang, Chenxing Xiao*
AC097	**Research on Icing Scaling Technology for Large Civil Aircraft Icing Wind Tunnel Test** *Jia Liu, Yingchun Chen, Feng Zhou, Binbin Zhao*
AC092	**Effects of Different Deployment Strategies on The Dynamic Characteristics of Bidirectional Solar Array** *Yingyong Shen, Cong Wang, Shiyu Tan, Ning Zhang, Jingbo Gao*
AC125	**Physical and Mechanical Impact of Y2O3 on (Cu-7Ag) Electrical Contact Alloy** *Maryam Raheem, Haydar Al-Ethari, Sundus Abbas*
AC127	**Equivalent Modeling of LSTS and Frequency Calculation Based on Dynamic Stiffness Method** *Hongming Li, Wenlai Ma, Yang Zhao*
AC020	**A Mapping Method for Process Planning Bill of Materials Based on Process Flow** *Ying Wang, Tao Hong, Haifan Jiang, Bo Li*
AC130	**Estimation of the Rope Tension in Trucklift Slope Hoisting System with Bearing Profile of Track** *Tok Hyong Han, Kwang Hyok Kim, Un Chol Han*

Online Session 7
Design and Analysis of Vibration Systems in Aviation Systems

Chair: Carmelo Rosario Vindigni, Kore University of Enna, Italy

Beijing Time	14:00-16:30, Dec.24, 2023	Zoom ID	822 1445 2028

Time	ID	Presenter	Affiliation
14:00-14:15	AC080	Chunliang Dai	Nanjing University of Science and Technology, China
14:15-14:30	AC039	Carmelo Rosario Vindigni	Kore University of Enna, Italy
14:30-14:45	AC143	Chunhui Wang	Beijing Institute of Technology, China
14:45-15:00	AC082	Songlin Yang	Nanjing University of Science and Technology, China
15:00-15:15	AC083	Burak Akkaya	Ostim Technical University, Turkey
15:15-15:30	AC106	Chang Hao	Nanjing University of Science and Technology, China
15:30-15:45	AC027	Shaoqing Jin	Civil Aviation Flight University of China, China
15:45-16:00	AC036	Chao Zhang	Xi'an Jiaotong University, China
16:00-16:15	AC014	Meng Huang	University of Electronic and Technology of China, China
16:15-16:30	AC089	Yong Xiao	Nanjing University of Science and Technology, China

Details:

ID	Title, Authors
AC080	**Effects of High-Temperature and Entropy Layer of Mach 12 Oblique Shock Wav** *Chunliang Dai, Bo Sun, Yanjin Man, Changsheng Zhou*
AC039	**Stochastic Robustness Analysis of Wing-Aileron Flutter Suppression Systems** *Carmelo Rosario Vindigni, Giuseppe Mantegna, Antonio Esposito, Calogero Orlando, Andrea Alaimo*
AC143	**Dynamic Modeling of Shaping-changing Cross Parachute** *Chunhui Wang, Hongmiao Zhou, Jianqiao Yu*
AC082	**Design of Active Vibration Isolation System for Satellite Optical Load Based on Stewart Platform**

	Songlin Yang, Haibo Yang, Xiang Zhang, Chang Xu
AC083	**Analysis of the Shimmy in the Landing Gear of A General-Purpose Helicopter for Different Payloads** *Burak Akkaya, Hikmet Bal*
AC106	**Drag Reduction Study Based on Boundary Layer Combustion on Single Expansion Ramp Nozzle** *Hao Chang, Bo Sun, Yuzhuo Gan*
AC027	**Numerical Simulation on the Dynamic Cold Extrusion of Bolted Single-Lap Al/Al Joint Under Interference-Fit** *Duquan Zuo, Shaoqing Jin, Jie Liu, Yuejie Cao, Minghao Zhang, Guo Zheng, Binbin Lin, Yaoming Fu*
AC036	**A hybrid Dynamics Modeling Method for Micro-Turbojet Engine Thrust Vectoring** *Chao Zhang, Shi Aobo, Cheng Guangqi, Zhu Jihong*
AC014	**Study of Critical Deviation Transfer for Assembly of Complex Structural Parts of Aircraft** *Meng Huang, Bo Li, Xiaoyun Chen, Qineng Zhuang, Yanbing Guo*
AC089	**The Design and Implementation of Star Extraction Algorithm in FPGAs** *Yong Xiao, Xiang Zhang, Changfei Zhuo*

Onsite Poster Session
Material Analysis, Aircraft Design, and Flight Control in Aerospace Engineering

Chair: Danhe Chen, Nanjing University of Science and Technology, China

Beijing Time	16:30-17:30, Dec.23, 2023	Venue	BC203

Order	ID	Presenter	Affiliation
1	AC002	Weiwei Liu	Nanjing Aerospace Wise Cloud Simulation Technology Company, China
2	AC005	Weiwei Liu	Nanjing Aerospace Wise Cloud Simulation Technology Company, China
3	AC006	Xiaoyi Fu	Harbin Institute of Technology, China
4	AC013	Yuan-Chi Huang	Feng Chia University, Taiwan
5	AC045	Xiaoyu Chen	Structural Strength Technology Research Laboratory, Jinan Institute of Special Structures, China
6	AC123-A	Cheolhwi Ryu	Hoseo University, Rebpublic of Korea
7	AC128-A	Shushuai Zhu	Yeungnam University, Korea
8	AC129-A	Hongjun Jeong	Yeungnam University, Korea
9	AC141	Long Li	Beihang University, China
10	AC146	Yuhong Cai	China Electronic Product Reliability and Environmental Testing Research Institute, China

Details:

ID	Title, Authors
AC002	**CF-LSTM-based Post-Maneuver Position Prediction for GEO Spacecraft** *Xi Long, Leping Yang, Huan Huang, Jiaxin Hu, Chenyuan Qiao*
AC005	**A Decision Fusion-based Methodfor Global Sensitivity Analysis of Complicated Experiments** *Jiaxin Hu, Weiwei Liu, Weiwei Cai, Yanwei Zhu, Huan Huang*
AC006	**EHFE Refinement and Extension for Variable Physical Earth Radiation in Spacecraft Uncertainty Thermal Analysis** *Xiaoyi Fu, Lei Liang, Wenlai Ma, Hutao Cui, Yang Zhao*

AC013	**Enhancement and Optimization of The Propulsion System Modules of Unmanned Aerial Vehicles** *Yau-Ren Shiau, Jiunn Fang, Yuan-Chi Huang*
AC045	**Mechanical Property Analysis and Experimental Validation of Composite Honeycomb Sandwich Radome Considering Perforation and Impact Damage** *XiaoYu Chen, YunWen Feng, ZhiCen Song, Chun PingZhou*
AC123-A	**Thermal Analysis of A Battery Pack for Application in Urban Air Mobility** *Boyoung Jung, Gabjin Hwang, Cheolhwi Ryu*
AC128-A	**Enhanced Elastic Piezoelectric-Triboelectric Hybrid Nanogeneratorsconsisting of Porous Polydimethylsiloxane, ZnO and CNT** *Shushuai Zhu, Hongjun Jeong, Changyoon Jeong*
AC129-A	**VARTM-assisted High-Performance Solid-State Structural Supercapacitor Device Based on the Synergistic Effect of Ni(OH)2-Co3S4 Nanocomposite for Widened Potential Window and Charge Storage Mechanism** *Hongjun Jeong, Shushuai Zhu, Changyoon Jeong*
AC141	**Non-smooth Dynamic Modeling and Simulation of Spatial Multibody Systems with Frictional Translational Clearance Joints on SE(3)** *Yujie Du, Fangzheng Jiao, Ping Wang, Fei Liu, Long Li*
AC146	**Aerodynamic Characteristic Analysis of Blast Wave Lateral Sweeping Aircraft Based on CFD Numerical Simulation Method** *Cai Yuhong, Niu Jianchao, Li Mailiang, Huang Duojia, Chen Zijie*

DELEGATES

Delegate 1	Byeongil Kim, Yeungnam University, Republic of Korea
Delegate 2	Nanjia Yu, Beihang University, China
Delegate 3	Ju Hyun Park, Yeungnam University, South Korea
Delegate 4	Shuai Wang, Harbin Engineering University, China
Delegate 5	Mun-Kyeom Kim, Chung-Ang University, Republic of Korea

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Chair: Prof. Katarina Monkova
Technical University of Kosice, Slovakia

Special Session 2 Space Power and Propulsion
Chair: Prof. Lei Shi, Prof. Bingning Jin, Prof. Lin Sun
Northwestern Polytechnical University, China

Special Session 3 Materials Engineering & Mechanical Design
Chair: Dr. Haydar Al-Ethari, University of Babylon-College, Iraq

Special Session 4 Industrial Robots and Intelligent Manufacturing Technology
Chair: Dr. Xuan Liang, Jianghan University, China

Special Session 5 Lighter-Than-Air Systems
Chair: Dr. Rajkumar S. Pant, Indian Institute of Technology Bombay, India

- Electronic systems
- Circuit analysis
- Analog and digital circuits
- Navigation and Precise Positioning
- Synthetic aperture radar technology
- Navigation guidance and control
- Automatic Control Systems
- Control theory and control engineering
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- Motor and electrical equipment
- Electronic device design and control
- Sensors and Sensor Systems
- Novel sensor and material development
- Aerospace Science and Technology
- Aircraft design
- Flight mechanics and control
- Rocket theory and design
- Flight driving and control technology

Submission Method:
Submission Link: *http://www.easychair.org/conferences/?conf=icmae2024*

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