第四届国际航空科学青年学者学术会议（ICAYS 2019）通知

发布时间：2019-10-11 浏览次数： 169次

第四届国际航空科学青年学者学术会议（4thInternational Conference in Aerospace for Young Scientists，ICAYS 2019）将于2019年10月12日至13日在北京航空航天大学举行。本届会议主题为“融西汇中，学思共享”，议题包含固体力学、流体力学、动力学和控制、飞行器设计、人机与环境工程、航空动力与推进、航空教育、产学研。

国际航空科学青年学者学术会议（ICAYS）旨在促进国内外各高校和院所青年学者之间的学术交流，培养创新意识和创新思维；为各高校和院所同一学科内部或不同学科之间学术思想的交流搭建平台，使各种学术思想融会贯通，相互迸发，汲取灵感；为提高国内外青年学者的学术水平而贡献力量。本届会议得到了国际同行的广泛关注。会议邀请到来自瑞士国家联邦实验室EMPA、英国南安普顿大学、英国东英吉利大学、英国莱斯特大学、淡江大学、西南交通大学等世界知名大学和科研机构的9位顶级专家。同时会议收到了来自北京航空航天大学、淡江大学、大连理工大学、中国科学院、浙江大学、华北电力大学、中国航天动力技术研究院、中国空气动力研究与发展中心、中国农业大学、中国民用航空飞行学院、山东交通学院、重庆大学等12个国内航空高校和科研院所，以及英国、德国、乌克兰、澳大利亚、巴西、阿联酋、巴基斯坦等8个国家和地区共81篇论文。

本届会议将有超过200人直接参会。会议期间，将举办3场开幕式报告、10场特邀报告、10场分会场报告，以及55场投稿作者宣讲会。所有报告面向全校师生开放，以供参与交流。详情请访问ICAYS会议官网：http://icays.buaa.edu.cn/。

开幕式报告一

报告人：Andrea Da Ronch

报告题目：Impact of Epistemic Uncertainty inTurbulence Modelling on Aerodynamic and Aeroelastic Analysis

报告时间：2019年10月12日上午09:30-10:00

报告地点：新主楼第二报告厅

报告人简介：Andrea Da Ronch is a Lecturer in AerospaceEngineering, the Academic Integrity Officer and the Director of the FlightSimulator of the University of Southampton, UK. He coordinates a group of 7researchers and manages a portfolio of projects in excess of £1,000,000 as thePrincipal Investigator or Co-Investigator. He attracted research grants fromnational and international councils, from the Royal Academy of Engineering(RAEng), the Engineering and Physical Sciences Research Council (EPSRC), to theEuropean Commission H2020 framework and the Air Force Office of ScientificResearch (AFOSR). He received commissions by Airbus Operations Ltd to transferresearch innovations to industry by addressing practical needs. He has awell-proved experience in multi-disciplinary computational aero-sciences andmodelling techniques to reduce the computational complexity of mathematicalmodels in numerical simulations, with particular interests in aircraft design,aerodynamics and aeroelasticity. He has published a book, “Advanced UAVAerodynamics, Flight Stability and Control: Novel Concepts, Theory andApplications” by John Wiley & Sons, and his peer-reviewed journals werecited more than 1,000 times. He serves as the Chair of the AIAA Student PaperCompetition within the remits of the Atmospheric Flight Mechanics TechnicalCommittee, he is a reviewer of multiple international journals and researchgrant platforms, and he is on the Editorial Board of Aerospace.

开幕式报告二

报告人：CHEN Bo

报告题目：Selective Electron Beam Melted High-temperatureMaterials: Challenges and Opportunities

报告时间：2019年10月12日上午10:40-11:10

报告地点：新主楼第二报告厅

报告人简介：Bo obtained BEng degree from BeihangUniversity between 2003 and 2007, specialising in Materials Engineering. Hethen carried out his PhD in Department of Engineering at University of Bristol,between 2007 and 2011, followed by taking two Post-doctoral Research Associateposts in 2011 in Bristol’s High Temperature Centre and then in 2013 inMaterials Performance Centre at University of Manchester. In 2015, Bo moved toa Lectureship at Coventry University, being promoted to Senior Lecturer in2017. He was awarded a 5-year EPSRC Early-Career Fellowship in NuclearFission in 2019. Bo became a UK Full Professor of Engineering Materials atUniversity of Leicester in March 2019 and at the same time he took theAssociate Director role for the NISCO UK Research Centre. He has deliveredresearch outcomes by publishing regularly in pre-eminent conference andpeer-reviewed Q1 journals (41) that include top journals in the field: ActaMaterialia (IF: 7.3, 3 papers) and International Materials Reviews (IF: 21.1).

开幕式报告三

报告人：WANG Wandong

报告题目：How to obtain pure mode I fracturetoughness in adhesively bonded bi-material joints

报告时间：2019年10月12日上午11:10-11:40

报告地点：新主楼第二报告厅

报告人简介：Dr. Wandong Wang is working at Empa, ETHdomain, Switzerland. His research interests lay in developing a physicallysound understanding of the failure and degradation of lightweight structuresand techniques to remedy the problem. He obtained his PhD degree in AerospaceEngineering from Delft University of Technology. At Delft, he worked on thedamage tolerance of Glare that is a hybrid mate-rial used on Airbus A380. Lateron he worked on a CleanSky 2 project of developing new techniques to bond CFRPto titanium and failure characterization of bonded Ti-CFRP joints. He receivedB.Sc degree and M.Sc degree from Northwestern Polytechnical University in 2010and Beihang University in 2013 respectively.

分会场特邀报告一

报告人：WANG Yi-Ren

报告题目：Vibration Reduction for Nonlinear BeamSystems-Internal Resonance

报告时间：2019年10月12日下午14:30-15:00

报告地点：新主楼第4会议室

报告内容简介：The nonlinear dynamic analyses of beamshave been widely studied for years because of their wide applications inengineering structural members and many technological devices. This report willintroduce several typical nonlinear properties and also give examples on thedamping techniques on elastic beam vibrations. Most of the study examples arefocused on using the dynamic vibration absorber (tuned mass damper (TMD)) tosurpass the nonlinear vibrations. Among the many methods of vibrationreduction, passive dampers are the most widely used, due to their simplicityand low cost. In this report, the TMD is used to prevent internal resonance andreduce beam vibration taking into account various damping effects. With thepremise of preserving the original vibration configuration, the optimal dampingeffects are achieved without excessive cost, simply by adjusting the location,mass, and modulus of elasticity of the TMD. Some design guidelines for the TMDsare presented for the optimal damping effects on the vibration system.

报告人简介：Yi-Ren Wang is a professor of Departmentof Aerospace Engineering at the Tamkang University. His specialties includeAeroelasicity, Structural Dynamics, Nonlinear Vibration and Wake Dynamics. Hereceived his Ph.D. in Aerospace Engineering from the Georgia Institute ofTechnology, U. S. A. He was the chairman of Department of Aerospace Engineeringat Tamkang University. He was awarded the best paper of the year 2013 of JoAAAand ICAYS-2017 conference. He was also awarded the distinguished teacher of theyear 2016 of Tamkang University. He is an experienced international Journalreviewer. Dr. Wang has also served on the AASRC academic committee, and hasbeen the Associate Editor for the Journal of Applied Science and Engineering(JASE). In addition, he also served as councilor in both Association ofHelicopter Development and Aeronautical and Astronautical Society.

分会场特邀报告二

报告人：LIU Dianzi

报告题目：An efficient method for solvingconstrained black-box optimization problems

报告时间：2019年10月12日下午14:30-15:00

报告地点：新主楼第5会议室

报告内容简介：Due to the exponential growth ofsupercomputing power, numerical simulations involving Finite Element Models(FEM) or coupled multidisciplinary analysis prove to be the most helpful,valuable and general technique to take the place of expensive experimentsacross many engineering subjects, such as civil, structural, aerospace andautomotive engineering. Computer simulation-based design optimization has alsobeen applied in engineering to achieve optimal designs. However, there arethree major challenges for optimization on this kind of high fidelity models.First of all, numerical simulations in practical engineering are typicallycomputationally expensive (for example, a whole-vehicle impact simulation). Asa result, evolutionary methods such as particle swarm optimization (PSO),genetic algorithms (GAs) are not suitable optimization methods because theyneed lots of evaluations which are not affordable and realistic in real-worldengineering. Secondly, numerical modeling executed by software is a black boxfor users. The derivative information is unavailable, unreliable, orimpractical to obtain, rending most methods based on finite differences is oflittle or no use. Finally, real-world optimization problems could have variouscomplex properties including nonlinearity, non-convexity and multi-modality. Toalleviate the computational overhead, metamodel techniques are proved to bepromising in replacing the expensive simulation calls.

In this research,CBOILA (Constrained black-box optimization by intrinsically linearapproximation), a trust-region based iterative method, is proposed to solve asequence of constrained optimization sub-problems by using approximations ofthe objective function and constraints in a series of trust regions. Resultsshow the potential of this developed method for solving large-scaleoptimization problems with a high level of efficiency.

报告人简介：Dr. Liu is from the University of EastAnglia, UK. He has more than 10 years of experience in structural analysis,composites modelling, numerical computation and design optimization. Morerecently, his research has been focused on three themes: 1) Developingefficient algorithms for solving complex engineering optimization problems; 2) Designing energy harvesting devices for scavenging the bio-kinetic energy; and3) Defect detection using ultrasonic guided waves.

He hassuccessfully completed various projects funded by EU-FP7 and industries such asAirbus UK and Jaguar Land Rover Company. The applications of these projects canspan from composite fuselage design to control of bonnet fluttering and fromstructural integrity improvement to reliable and robust designs.

Dr. Liu is theauthor of more than 20 technical papers since 2016 and is the recipient of therunner-up prize in the ISSMO-Springer Prize competition in 2009. He is a Memberof South Asia Institute of Science and Engineering (SAISE), Member of AmericanInstitute of Aeronautics and Astronautics (AIAA) and Member of InternationalSociety for Structural and Multidisciplinary Optimization (ISSMO). He was thehost chair for International Symposium on Mathematics and

Computer Science2015. He has been a recipient of Short-term Recruitment Program of ProfessionalScholars sponsored by Beihang University since 2016.

分会场特邀报告三

报告人：Fu-Yuen Hsiao

报告题目：Automatic Altitude Control and SystemIntegration of Ultra Lightweight Robotic Birds

报告时间：2019年10月12日下午14:30-15:00

报告地点：新主楼第8会议室

报告内容简介：This talk reviewed a control law forstabilizing the vertical motion of a flappingwing MAV and developed a systemarchitecture that is potentially beneficial in realizing the autonomous flightof flapping-wing MAVs fewer than 10 g. The talk began with a brief introductionto the Golden Snitch, including its development history and the development ofthe overall system. The vertical dynamics were given for altitude control. Theuse of wind tunnel tests to obtain aerodynamical parameters was described. Due tothe limited payload-carrying capability, the control architecture was modifiedso that automatic control of flight altitude of a flapping-wing MAV fewer than10g is possible using current technology. Taking the hardware constraint intoaccount, it was shown that the modified P-control can stabilize the verticalmotion and track altitude commands. Numerical simulations and flight tests werepresented that demonstrate the function of the developed control law and thesystem architecture. We believe this flapping-wing MAV to be the first under 10g able to automatically maintain its flight altitude.

报告人简介：Dr. Fu-Yuen Hsiao is currently anAssociate Professor with the Department of Aerospace Engineering in the TamkangUniversity (TKU), Taiwan. He obtained his Ph.D. from the University of Michiganat Ann Arbor in 2004, and B.S.E from National Cheng- Kung University in Taiwanin 1997. He is currently the advisor of the Unmanned Aerial Vehicle Laboratoryin TKU, and has devoted himself for years to the research regardingapplications of computer vision, flight dynamics of aircraft and spacecraft,and orbit mechanics.

分会场特邀报告四

报告人：LI Tao

报告题目：Hypervelocity impact resistance of2D_C/SiC composites at different temperatures

报告时间：2019年10月13日上午08:30-09:00

报告地点：新主楼第3会议室

报告内容简介：To understand the mechanical behavior ofC/SiC composites under hypervelocity impact at different temperatures, impacttests are conducted using a modified electrical gun, and correspondingnumerical simulations are implemented. In addition, the decrease of residualstrength induced by damage is also measured after impact tests. Tensile andshear failures occur in different regions of fracture, and the damage zonearound the fracture is very confined. Besides, the distribution of debrisclouds shows “three zones” mode, forming with different mechanisms, anddemonstrates that there is a high-energy powdering column in the center zone.As for the diameter of penetration

hole, it increases with impact velocity. Atlow temperature, with the change of mechanical properties and forming of newmicro-cracks, the fracture is smoother, while the diameters of damage zone andpenetration hole are smaller. Furthermore, the damage induced by hypervelocityimpact significantly reduces the strength of C/SiC composites. Since thedecrease of elastic modulus induced by damage weakens the stress concentrationeffect of the penetration hole, the residual strength of recovered target plateis only reduced from 241 MPa to 175 MPa.

分会场特邀报告五

报告人：XU Qi

报告题目：Definite Integral Stability Method ofMulti-Delay Systems with Thermo-Acoustic Applications

报告时间：2019年10月13日上午08:30-09:00

报告地点：新主楼第8会议室

报告内容简介：Time delay is an inevitable factor in realsystems, like robot, internet, metal cutting, man-machine interaction, and soon. Usually time delay systems are categorized into two classes: Retarded typeand neutral type, where the neutral ones have peculiar dynamical behaviors andare often more complex. Capable of dealing with both types, we have developed adefinite integral stability method, which is efficient, and convenient forcomputer coding, and suits for multiple discrete delay systems. In addition, athermo-acoustic oscillation problem, which involves multiple time delays, isintroduced to illustrate the proposed definite integral stability method.