

2014 Asia-Pacific International Symposium on Aerospace Technology

(APISAT2014)

Procedia Engineering Volume 99

**Shanghai, China
24-26 September 2014**

Part 1 of 2

Editor:

Hu Haiyan

ISBN: 978-1-5108-0072-4

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© by Elsevier B.V.
All rights reserved.

Printed by Curran Associates, Inc. (2015)

For permission requests, please contact Elsevier B.V.
at the address below.

Elsevier B.V.
Radarweg 29
Amsterdam 1043 NX
The Netherlands

Phone: +31 20 485 3911
Fax: +31 20 485 2457

<http://www.elsevierpublishingsolutions.com/contact.asp>

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

PART 1

Preface	1
A Combined Shape and Liner Optimization of a General Aeroengine Intake for Tone Noise Reduction	5
<i>S. Qiu, J.Y. Ying</i>	
A Frequency Domain Immersed Boundary Method and its Application to 2-dimensional Acoustic Problems	21
<i>A. Liang</i>	
Flutter Influence Mode Analysis of High Speed Wing Model	33
<i>Zhao Ling, Ji Chen, Yang Yinong, Liu Ziqiang</i>	
Sensitive Flutter Parameters Analysis with Respect to Flutter-free Design of Compressor Blade	39
<i>Sun Hai, Yang Lin, Li Hongxin</i>	
Body Freedom Flutter of a Blended Wing Body Model Coupled with Flight Control System	46
<i>Gu Yingsong, Yang Zhichun, He Shun</i>	
The Aeroelastic Characteristic of a Wing with Preload Asymmetry Freeplay	51
<i>Hui Zhang, Jingtao Wu</i>	
Numerical Research on Segmented Flexible Airfoils Considering Fluid-structure Interaction	57
<i>Dong Hefeng, Wang Chenxi, Li Shaobin, Song Xi Zhen</i>	
Study of Aerodynamic Configuration Design and Wind Tunnel Test for Solar Powered Buoyancy-lifting Vehicle in the Near-space	67
<i>Guangqiang Chen, Bingyan Chen, Pengfei Li, Peng Bai, Chunqun Ji</i>	
Parameter Optimization Research on Lift-enhancing of Multi-element Airfoil Using Air-blowing	73
<i>Yuqin Jiao, Yan Lu</i>	
Research on Multi-specialty Coordination, Multi-discipline and Multifunction Integration Oriented Modeling and Simulation Innovation Technology	82
<i>Fan Lin, Cao Baohong, Liu Yifei, Yao Xionghua</i>	
The Application of Tooth Contact Analysis in the Shaper Modification for Face-gear	94
<i>Canhui Wu, Ping Cao</i>	
Research on the New Airplane Develop System Based on 3D-digital Technique and Multi-companies Collaboration	101
<i>Wang Qianping, Fan Lin, Wu Xuhui</i>	
Calculation and Analysis on Stealth and Aerodynamics Characteristics of a Medium Altitude Long Endurance UAV	111
<i>Su Haoqin, Bao Xiaoxiang, Li Jianhua, Liu Kai, Cen Mengxi, Song Jing</i>	
Aerodynamic Configuration Design of Flight Demonstrator for Real Gas Effect	116
<i>Chen Bingyan, Liu Zhou, Gong Anlong</i>	
Aerodynamic Design and Numerical Simulation of Over-under Turbine-based Combined-cycle (TBCC) Inlet Mode Transition	129
<i>Xiang Xianhong, Liu Yuan, Qian Zhansen</i>	
Design and Simulations of a Guide-screw Hand-spike Nose Deflecting Mechanism	137
<i>Hu Handong, Gu Liangxian, Sun Xiaofeng, Song Yifan, Shi Xiangpeng</i>	
Development and Production Costs Estimating for Aviation Equipment Based on Uncertainty Design	143
<i>Huang Zhaodong, Luo Rongxuan, Jin Jing</i>	
System Dynamics Based Simulation Approach on Corrective Maintenance Cost of Aviation Equipments	150
<i>Liu Fang, Huang Zhaodong</i>	
Recent Developments of Experimental Winged Rocket: Autonomous Guidance and Control Demonstration Using Parafoil	156
<i>G. Guna Surendra, K. Yonemoto, T. Matsumoto, Y. Kutsuna, K. Itakura, H. Yamasaki, Y. Ura, M. Ichigie, H. Tanaka, S. Ueno, T. Someya</i>	
Design, Modeling and Analysis of a Sharp-edge Hypersonic Stealthy Re-entry Vehicle	163
<i>Guofu Liu, Daochun Li, Jinwu Xiang, Wenli Luo</i>	
Improving Electric Powered UAVs' Endurance by Incorporating Battery Dumping Concept	168
<i>Tan Chang, Hu Yu</i>	
Research on Probabilistic Safety Analysis Approach of Flight Control System Based on Bayesian Network	180
<i>Chen Kang, Lu Zhong, Zeng Haijun</i>	

Arrowhead-research on Design of Compound-UAV with Fenestron	185
<i>Shen Wei, Hou Lili</i>	
The Effects of Heat Exchanger on Ozone Retention	192
<i>Ke Peng, Yang Min, Zhang Shuguang, Yang Chunxin</i>	
Conceptual Design of Single-stage Rocket Using Hybrid Rocket by Means of Genetic Algorithm	198
<i>Masahiro Kanazaki, Atthaphon Ariyairt, Kazuhisa Chiba, Koki Kitagawa, Toru Shimada</i>	
The Role of Electromagnetic Compatibility Qualification Considerations in Airborne System Integration Programs	208
<i>Huiying Li, Mark Bolsover, Junhui Ye, Linfang Yan</i>	
Modeling the Performance of Aircraft Utilizing Maintenance Free Operating Periods	214
<i>Zhanyong Ren, Yueqin Wu</i>	
A Reliability Prediction Method Based on Simulation Analysis	219
<i>Luo Xuegang</i>	
Research on the MOIPSO Model for Collaborative Capability-flow Allocation in Multi-airports Terminal Area	224
<i>Chen Hao, Wu Yi, Wang Zhan</i>	
An Agent-based Approach to Automated Merge 4D Arrival Trajectories in Busy Terminal Maneuvering Area	233
<i>Liang Man</i>	
Real Time Image Haze Removal on Multi-core DSP	244
<i>Linting Bai, Yongwei Wu, Jianchun Xie, Pengcheng Wen</i>	
Constructing an Index of Difficulty for Air Traffic Control Using Proximity Parameters	253
<i>Sakae Nagaoka, Mark Brown</i>	
Optimization of Approach Trajectory Considering the Constraints Imposed on Flight Procedure Design	259
<i>Tomoki Hasegawa, Takeshi Tsuchiya, Ryota Mori</i>	
Three Dimensional Trajectory Linearization Control for Flight of Air-breathing Hypersonic Vehicle	268
<i>G.D. Zhu, Z.J. Shen</i>	
Study on Key Techniques of Aeronautical Ad Hoc Network MAC and Network Layer	280
<i>Qiming Qiu, Zheng Fang, Cheng Gong</i>	
A Study on the Ignition System of a Pilot Flame in a Cannon-type-combustor of a Turbo-engine	292
<i>Yasuo Obikane</i>	
Support Vector with ROC Optimization Method Based Fuel Consumption Modeling for Civil Aircraft	296
<i>Zhang Haifeng, Wang Xu-hui, Chen Xin-feng</i>	
Experimental Study on Spectral Characteristics of Kerosene Swirl Combustion	304
<i>Hyeonjae Lee, Seonghyeon Seo</i>	
Numerical Study of the Combustion Field in Dual-cavity Scramjet Combustor	313
<i>Wang Lu, Qian Zhansen, Gao Liangjie</i>	
Effect of Combustion Heat Release on the Stability of Confined Boundary/Mixing-layer Confluent Flow	320
<i>Liu Zhiyong, Shang Qing, Liu Xiaoyong, Fei Lisen, Liu Fengjun</i>	
Numerical Studies of Multi-cycle Acetylene-air Detonation Induced by Shock Focusing	327
<i>Zhihong Zhang, Zhiqiang Li, Gan Dong</i>	
Potential of ADN-based Ionic Liquid Propellant for Spacecraft Propulsion	332
<i>Yuichiro Ide, Takuya Takahashi, Keiichiro Iwai, Katsuhiko Nozoe, Hiroto Habu, Shinichiro Tokudome</i>	
Shock Tube Study on Auto-ignition Delay of Kerosene Aerosol and its Cracked Mixture	338
<i>Shengli Xu, Qing Liao</i>	
Fracture Analysis of Thermal Barrier Coating Delamination under Thermal Shock	344
<i>Chen Ping-wei, Wang Shao-ming, Wang Feng-Hui</i>	
Improving Strain Field Measurements for Textile Composites	349
<i>G. Lu, L. Sun, M.Y. Matveev, A.I. Jones</i>	
Strain Monitoring on Damaged Composite Laminates Using Digital Image Correlation	353
<i>Bataxi, Xi Chen, Zhefeng Yu, Hai Wang, Cees Bil</i>	
Numerical Simulation Study on Propeller Slipstream Interference of High Altitude Long Endurance Unmanned Air Vehicle	361
<i>Guangqiang Chen, Bingyan Chen, Pengfei Li, Peng Bai, Chuqun Ji</i>	
The Numerical Simulation of Civil Transportation High-lift Configuration	368
<i>Hao Xuan, Su Cheng, Hu Ning, Zhang weimin</i>	
Effect of Recession on the Re-entry Capsule Aerodynamic Characteristic	377
<i>Xu Guowu, Zhou Weijiang, Chen Bingyan, Zhan Huiling, Yang Yunjun</i>	

Investigation of Airfoil Unsteady Aerodynamic Characteristics Based on Finite Macro-Element and TFI Hybrid Dynamic Mesh Correction	384
<i>Tang Han, Gao Zhenxun</i>	
Real Gas Effect on a Standard Model Electre.....	391
<i>Junhong Li, Honglu Pan, Liang Zhang, Wenbo Miao, Zhi Chen, Xiaoli Cheng</i>	
Aerodynamic Design Optimization of a Kind of Reentry Capsule Based on CFD and Multi-objective Genetic Algorithm	396
<i>Wang Rong, Chen Bing-yan, Zhang Hong-jun, Zhou Wei-jiang, Bai Peng, Yang Yun-jun</i>	
Stress Distribution on Composite Honeycomb Sandwich Structure Suffered from Bending Load.....	405
<i>Chun Lu, Mingyue Zhao, Liu Jie, Jing Wang, Yu Gao, Xu Cui, Ping Chen</i>	
Numerical Study of the Leakage Flow on a Novel Turbine Blade Tip	413
<i>Dengyu Jiang, Hualing Luo, Xiang Zhang</i>	
Numerical Simulation of Unsteady Separated Flow over a Delta Wing Using Cartesian Grids and DES/DDES.....	423
<i>Meng Lv, Shuai Fang, Yudong Zhang</i>	
Effects of Nose and Corner Radius on Heat Transfer Rates over Axisymmetric Blunt Body.....	428
<i>Zhang Liang, Chen Zhi, Gong Jian, Zhang Xuejun</i>	
A CFD Based Sonic Boom Prediction Method and Investigation on the Parameters Affecting the Sonic Boom Signature	433
<i>Lengyan, Qian Zhansen</i>	
Detached Eddy Simulation on Hypersonic Base Flow Structure of Reentry-F Vehicle.....	452
<i>Chen Zhi, Zhang Liang, Li Pengfei</i>	
Applications of Overset Grid Technique to CFD Simulation of High Mach Number Multi-body Interaction/Separation Flow	458
<i>Li Xuefei, Liu Yuan, Qian Zhansen</i>	
Unstructured Adaptive Grid Refinement for Flow Feature Capture.....	477
<i>Liu Zhou, Yang Yunjun, Gong Anlong, Zhou Weijiang</i>	
The Aerodynamic Design and Investigation of Loading Distribution of a Mixed Flow Compressor	484
<i>Chen Xuanyu, Meng Xiangwei, Gui Xingmin, Jin Donghai</i>	
Study on the Unsteady Aerodynamic Heating of the Oscillating Model	491
<i>Hu Peng-ju, Zhang Liang, Zheng Jin-xin</i>	
Influence of Geometric Scaling on Linear Cascade Aerodynamic Performance	499
<i>Chen Fen-fen, Gui Xing-min, Jin Dong-hai, Qiu Dao-bin</i>	
Kriging-algorithm-based Aerodynamic Model for Flush Airdata System.....	507
<i>Wang Yibin, Qin Ning, Liu Xueqiang</i>	
Investigation on Different Methods for Numerical Simulation of Propeller Slipstream	515
<i>Zhang Ying, Ye Liang, Yang Shuo, Zhu Xinglin</i>	
Study on the Design of Supersonic Axisymmetric Multicompression and Quasi-isentropic Inlets.....	530
<i>Jiang Yunsong, Gao Zhenxun, Jiang Chongwen</i>	
A Modification Technique of Collision Probability in the Direct Simulation Monte Carlo Method	536
<i>Huang Fei, Li Pengfei, Jin Xu-hong, Liu Xiaowen, Cheng Xiaoli</i>	
Study on Two-dimensional Wing Flutter Analysis by a High-order Flux Reconstruction Method.....	543
<i>Issei Morinaka, Koji Miyaji</i>	
Design and Dynamic Analysis of Micro-vibration Isolator for Single Gimbal Control Moment Gyro.....	551
<i>Shenghao Shi, Dongxu Li, Qing Luo</i>	
Modeling of the Heat Interface of a Plasma Actuator	560
<i>Yasuo Obikane, Khemedekh Lochin</i>	
Numerical Simulation for Changes in Aerodynamic Characteristics Along the Spanwise of “Diamond Back” Wing.....	566
<i>Junkui Chen, Zhijun Wang, Juanting Zhang, Lianbo Zhang, Guodong Wu</i>	
A 3D Anisotropic Cartesian Grid Generation Method and its Applications in Viscosity Flows.....	575
<i>Xiaotian Shi, Shuai Fang, Meng Lv, Ning Hu</i>	
The Study on Longitudinal Aerodynamic Characteristics of a Novel MAV Layout.....	581
<i>Tang Wei, Song Bifeng, Wang Jin</i>	
Evolutionary Maintenance Based on Maintenance Free Operating Period Philosophy.....	587
<i>Ming Xu, Yueqin Wu</i>	
Influence of High-temperature Air on Three-dimensional Nozzle Structure Design.....	593
<i>Bu Junhui, Liu Huaiyin, Wang ying, Sun Yongtang</i>	
Six-DOF Modeling and Simulation for Generic Hypersonic Vehicle in Reentry Phase	600
<i>Wang Chao, Liu Xinyu, Li Feng</i>	
Surface Recombination Effects on Surface Friction of Reentry Vehicles	607
<i>Miao Wenbo, Huang Fei, Zhang Liang, Cheng Xiaoli</i>	

Numerical Study on Drag Reduction by Micro-Blowing/Suction Compounding Flow Control on Supercritical Airfoil.....	613
<i>Cai Junxuan, Gao Zhen Xun</i>	
Study on the Vortex Shedding Mechanism of Coupling Combustion Stabilizer with V-gutter and Strong Swirl Flow	618
<i>Gan Dong, Zhiqiang Li, Zhihong Zhang</i>	
Research on the Design Methods of Channeled Centerbody Supersonic Inlet	623
<i>Cheng Tongguang, Wang changhui, Hu Wentong</i>	
Comparison between High Order Schemes Related Convection Diffusion of Navier-stokes Equations	628
<i>Xie Yan, Wang Haiying, Zeng Weiping, Xue Zhanjun</i>	
An Experimental Investigation of Showerhead Film Cooling Performance on a Turbine Blade	634
<i>Zhu Xingdan, Zhang Jingzhou, Tan Xiaoming</i>	
Applying CFD Technology to Determine the Effect of Two New Designed Fan Inlet Distortion Generators.....	646
<i>Li Zhipeng, Lu Chao, Wu Hui, Liu Xiaopeng, Zhang Guowang</i>	
A Long-term Analysis of the GPS Broadcast Orbit and Clock Error Variations	654
<i>Mingyu Kim, Jeongrae Kim</i>	
Test Particle Monte Carlo Simulation of Return Flux on Various Geometric Surfaces due to Ambient Scatter of Outgassing Molecules.....	659
<i>Xuhong Jin, Fei Huang, Zhi Chen, Xiaoli Cheng</i>	
Investigation on Spanwise Wall Oscillation in Turbulent Channel Flow Based on Reynolds Stress Model (RSM).....	665
<i>Duan Dehao, Zhang Jinbai, Gao Zhenxun</i>	
Study on the Heat Transfer Characteristics in Aircraft Icing	671
<i>Zhi-Hong Zhou, Xian Yi, Ye-Wei Gui, Yan-Xia du</i>	
An Immersed Boundary Method Based on Volume Fraction.....	677
<i>Yuelong He, Dun Li, Shuai Liu, Handong Ma</i>	
Airfoil Dynamic Stall and Aeroelastic Analysis Based on Multi-frequency Excitation Using CFD Method.....	686
<i>Daobo Huang, Jiandong Li, Yong Liu</i>	
Optimization of Suction Control on an Airfoil Using Multi-island Genetic Algorithm	696
<i>D.J. Zhao, Y.K. Wang, W.W. Cao, P. Zhou</i>	
Surrogate Model of Aerodynamic Model toward Efficient Digital Flight	703
<i>Norazila Othman, Masahiro Kanazaki</i>	
Verification of a Chemical Nonequilibrium Flows Solver Using the Method of Manufactured Solutions	713
<i>Li Wang, Wei-jiang Zhou, Chu-qun Ji</i>	
Analysis of Aerodynamic Design Characteristics of Flade Fan	723
<i>Zeng Yueliu, Wei Yuan</i>	
Unsteady Flow Numerical Simulation of Vertical Axis Wind Turbine.....	734
<i>Du Gang, Wu Chun Kau</i>	
Study on the Vortex Structure of Coupling Combustion Stabilizer with Square Cylinder-strong Swirl Flow	741
<i>Gan Dong, Zhiqiang Li, Zhihong Zhang</i>	
Experimental Investigation of Heat Transfer Performance of Rotating Heat Pipe	746
<i>Minghui Xie, Zhihu Xue, Wei Qu, Wei Li</i>	
Simulation Study of Cooling System Temperature Control Based on Subsection Control	752
<i>Wang Jiali, Li Yanna</i>	
Experimental Investigation on Flow Characteristics of Gas in Micro-channels	758
<i>Zhang Kai, Zheng Guanghua, Du Fenglei</i>	
Numerical Simulation and Thermal Analysis of Stratospheric Airship.....	763
<i>Kangwen Sun, Qinzen Yang, Yang Yang, Shun Wang, Yong Xie, Mou Sun, Xiaoming Chen, Jianming Xu</i>	
Patent Analysis of the Course of Aerojet's Business and the Key Technologies of Hypersonic	773
<i>Li Yelan, Bai Yang, Zhou Peng</i>	
The Testing Simulation Technology Investigation on the Thermal Environment of Engine Combustor Wall Material.....	780
<i>Tu Jianqiang, Chen Lianzhong, Zhang Youhua</i>	
Research of Model-based Aeroengine Control System Design Structure and Workflow.....	788
<i>Dong Zhang, Jin-zhi Lu, Lin Wang, Jun Li</i>	
Review – Volcanic Ash and its Influence on Aircraft Engine Components	795
<i>W.R. Chen, L.R. Zhao</i>	

Development Strategy Study for Commercial Aero Engine Companies in European Countries and the United States	804
<i>Liu Hongxia, Zhang Shifu, Liang Chunhua, Liu Qi</i>	
Study of the Pressure Drop and Thermal Performance of an Air-Air Heat Exchanger for Aero-engine Application	812
<i>Lu Haiying, Lv Duo, Yu Xiao, Li Yi, Shen Yi, Dong Wei</i>	

PART 2

Numerical Simulation of Direct Action Liquid Rocket Engines Hydro Mechanical Flow Controllers	822
<i>Iana Bakhmet, Zhang Lihui</i>	
Study of the Dump Diffuser Optimization for Gas Turbine Combustors	828
<i>Leilei Xu, Yue Huang, Can Ruan, Peiyong Wang and Fei Xing</i>	
The Study of Process Reliability of Aircraft Engine	835
<i>Wang Ji Ming, Huang Min, Yi Jun, Liu Xue Jun</i>	
Performance Estimation for Differential Pressurization Pulse Jet Engine	840
<i>Zhang Jianpeng, Qin Lizhi, He Miaosheng</i>	
The Effect of the Inlet Total Pressure and the Number of Detonation Waves on Rotating Detonation Engines	848
<i>Song-Bai Yao, Meng Liu, Jian-Ping Wang</i>	
Orbit Design for Approaching Multiple Space Objects in a Circular Orbit	853
<i>Wei Yanyan, Wang Hongyu, Lv ZhaoFu</i>	
Study on Algorithms of Flush Air Data Sensing System for Hypersonic Vehicle	860
<i>Guangqiang Chen, Bingyan Chen, Pengfei Li, Peng Bai, Chunqun Ji</i>	
Nine-degree of Freedom Modeling and Flight Dynamic Analysis of Parafoil Aerial Delivery System	866
<i>Yu Gang</i>	
Morphing Process Research of UAV with PID Controller	873
<i>Su Haoqin, Huang Zhan, Bao Xiaoxiang, Shi Hongwei, Song Jing</i>	
The Effect of Airflow over Mountains on Flight Safety	878
<i>Chen Junping, Wang Lixin</i>	
Flapping Wing Multi-body Dynamic Simulation	885
<i>Zhong Jingyang, Song Bifeng, Wang Jin</i>	
Numerical Simulation of Wind Field over Complex Terrain and its Application in Jiuzhaihuanglong Airport	891
<i>Chu Tang, Libo Wang</i>	
Assessment of Landing Gear Design Based on the Virtual Testing and Evaluation Methodology	898
<i>Liu Hailiang, Wang Lixin</i>	
Behavior of Tether for Captive Stratosphere Platform Using Airship	905
<i>Kazuhisa Chiba, Shin Satori, Ryuichi Mitsuhashi, Jun'ya Sasaki, Ryojiro Akiba</i>	
An Experimental Investigation of the Supersonic Planar Mixing Layer with Finite Thickness	911
<i>Hailong Zhang, Jiping Wu, Jian Chen, Weidong Liu</i>	
The Optical Flow Method Research of Particle Image Velocimetry	918
<i>Wang Hongwei, Huang Zhan, Gong Jian, Xiong Hongliang</i>	
Aerodynamic Characterization of 'DelFly Micro' in Forward Flight Configuration by Force Measurements and Flow Field Visualization	925
<i>Shuanghou Deng, Mustafa Percin, Bas van Oudheusden</i>	
Numerical Simulation of the Atomization Process of a Like-doublet Impinging Rocket Injector	930
<i>Gang Zheng, Wansheng Nie, Songjiang Feng, Gaoyang Wu</i>	
Atomization Performance Study of a Fuel Injector in IGC by Experimental and Numerical Investigation	939
<i>Can Ruan, Xiaoyuan Fang, Guanxing Huang, Hongzhou Ho, Fei Xing</i>	
Observation of Kerosene Injected from a Cavity into a Supersonic Airstream	948
<i>Shengli Xu, Liseng Fei</i>	
An Experimental Investigation on Combustion Characteristics of Hypermixer Injectors—Effects of the 'Swept' Applied to Hypermixer Injector Ramps	954
<i>Noritsugu Kubo, Atsuo Murakami, Kenji Kudo, Sadatake Tomioka</i>	
Maneuver Strategy Adaptive Target Tracking Algorithm by Integrated Kalman Information Filtering	961
<i>Ying Li, Deyun Zhou, Hao Zhang</i>	
L1 Adaptive Dynamic Inversion Controller for an X-wing Tail-sitter MAV in Hover Flight	969
<i>Wang Jin, Song Bifeng, Wang Liguang, Tang Wei</i>	

Anti Measure Noise Research of Morphing Wing UAV	975
<i>Su Haoqin, Bao Xiaoxiang, Shi Hongwei, Liu Kai, Song Jing</i>	
The Test Verification Design Method Based on Rapid Prototyping Technology of Aero-engine	981
<i>Xiao-Jie Qiu, Wen-Hua Zheng, Yu-Ting Tang, Feng Lu</i>	
Assessment Model of the Architecture of the Aerospace Embedded Computer	991
<i>Wei Han, Xiaoying Bai, Jianchun Xie</i>	
Hybrid Re-entry Guidance for Reusable Launch Vehicle	999
<i>Wang Zhi, Zhang Ran, Li Huifeng</i>	
A Comparison Study of Advanced Tracking Differentiator Design Techniques	1005
<i>Wang Hongwei, Wang Heping</i>	
Efficient Nonlinear Algorithm for Drag Tracking in Entry Guidance	1014
<i>Xin Du, Hai-Yang Li, Yue-Chen Huang</i>	
Research on Adaptive Guidance Technology of UAV Ship Landing System Based on Net Recovery	1027
<i>Wang Kai, Sun Chunzhen, Jiang Yi</i>	
Flight Evaluation of Fault-tolerant Control System Using Simple Adaptive Control Method	1035
<i>Daichi Tokunaga, Kazuya Masui, Shinji Suzuki</i>	
The Ascent Trajectory Optimization of Two-Stage-To-Orbit Aerospace Plane Based on Pseudospectral Method	1044
<i>Jing Song, Haoqin Su</i>	
Model Predictive Flight Controller Using Prior Air Disturbance Information Obtained by Doppler LIDAR	1049
<i>Seiya Miyagaki, Shinji Suzuki</i>	
Mars Atmospheric Entry Guidance Design by Sliding Mode Disturbance Observer-Based Control	1062
<i>Yue-Chen Huang, Hai-Yang Li, Jin Zhang, Xin Du</i>	
Predictive Sliding Mode Control Using Feedback Linearization for Hypersonic Vehicle	1076
<i>Xianlei Cheng, Peng Wang, Luhua Liu, Guojian Tang</i>	
Monte Carlo Analysis for Significant Parameters Ranking in RLV Flight Evaluation	1082
<i>Jie Gu, Shuguang Zhang, Baoyin Wang</i>	
Application Research of MRAC in Fault-tolerant Flight Controller	1089
<i>Shuguang Zhang, Yang Feng, Di Zhang</i>	
Key Techniques Research on UAV Data Link	1099
<i>Jinxi Li, Yongfei Ding, Zheng Fang</i>	
Three Dimensional Trajectory Linearization Control for Flight of Air-breathing Hypersonic Vehicle	1108
<i>G.D. Zhu, Z.J. Shen</i>	
An Asynchronous Track-to-track Association Algorithm without Time Alignment	1120
<i>Yi Xiao, Han Jianyue, Guan Xin</i>	
New Method of Ground Target Recognition Based on Stable Edge Weighted HOG	1126
<i>Wentao Shen, Xiaoqing Ding, Changsong Liu, Chi Fang, Bin Xiong</i>	
Development of Large-scale 3D Map Generation System for Indoor Autonomous Navigation Flight – Work in Progress	1132
<i>SungTae Moon, Wesub Eom, Hyunchul Gong</i>	
Research Progress and Future Development on Mission Planning Technologies of Planetary Rover	1137
<i>Wang Qiong, Yu Dengyun, Jia Yang</i>	
Investigation of Estimation Methods for Time-varying Residual Magnetic Moment	1146
<i>Halil Ersin Soken, Shin-ichiro Sakai</i>	
The Research of Temperature Indicating Paints and its Application in Aero-engine Temperature Measurement	1152
<i>Li Yang, Li Zhi-min</i>	
Dimensional Measurement of Small Hot Pieces Based on a Monochrome CCD	1158
<i>Bi Chao, Qu Xinghua, Liu Yong, Liu Yaping, Liu Jingliang</i>	
Design and Calibration of a Six-axis Force/torque Sensor with Large Measurement Range Used for the Space Manipulator	1164
<i>Danfeng Chen, Aiguo Song, Ang Li</i>	
Research on 3D Virtual Environment Modeling Technology for Space Tele-robot	1171
<i>Biyu Zhu, Aiguo Song, Xiaonong Xu, Song Li</i>	
Sapphire Fiber-optic Temperature Sensor Based on Black-body Radiation Law	1179
<i>Wang Wei, Shi Xiaotian, Wang Ying</i>	
Implication of Dynamic Unbalance to the Inertial Accelerometer Calibration with Vibrafuge	1185
<i>Xue-Ming Dong, Wei Guan, Xiao-Feng Meng</i>	
A Novel Data Association Algorithm for Unequal Length Fluctuant Sequence	1190
<i>Xin Guan, Guidong Sun, Xiao Yi, Qiang Guo</i>	

Research on Fiber Bragg Grating Acoustic Emission Technology Applied in Helicopter Bearing Detection	1203
<i>Gao Xuan, Zhang Xiao-peng, Li Ning, Pei Xin</i>	
Feasibility of an Electrostatic Energy Harvesting Device for CFCs Aircraft	1213
<i>Huilong Xie, Zhaorong Huang, Shijun Guo, Ekiyor Torru</i>	
Solutions to Improve Multiple Configuration Systems Resolution in Sensors	1223
<i>LIU Hua, DING Quanxin, ZHOU Liwei</i>	
Topology Optimization Method Research on Hollow Wide-chord Fan Blade of a High-bypass Turbofan Engine	1228
<i>J. Meng, L.F. Liao, D. Li, Y. Cao, L.Y. Yang, Y.Y. Chen</i>	
Synthesise of Polythioether and Heat Resistant Property of Polythioether Sealants	1234
<i>Guo Ruiyi, Zhang Jianzheng, Wu Songhua</i>	
Shape Memory Alloy in Various Aviation Field	1241
<i>Du Quan, Xu Hai</i>	
Optimization Selection of Regulated Pressurization System Schemes for Liquid Attitude and Divert Propulsion Systems	1247
<i>Lie Liu, Guozhu Liang</i>	
Investigation on Effective Sampling Strategy for Multi-objective Design Optimization of RBCC Propulsion Systems via Surrogate-assisted Evolutionary Algorithms	1252
<i>Tuan Quang Ho, Hideaki Ogawa, Cees Bil</i>	
Research on the Influence of Reflected Shock Wave on Continuously Rotating Detonation Engine	1263
<i>Liu Yu-Si, Li Yang, Wang Yu-hui, Wang Jian-ping</i>	
Experimental Report on the Nano-indentation Testing of Textured Stainless Steel 904 L and 316 L	1268
<i>Changjian Geng, Liu Fang, Tong Wenwei, Han Zhenyu, Chi Qingxin</i>	
Multidisciplinary Design Optimization of Turbine Disks Based on ANSYS Workbench Platforms	1275
<i>Qi Xiaodong, Shen Xiuli</i>	
Aeroengine Reliability Prediction Based on Fuzzy and Interval Number	1284
<i>Zhao De-zi, Cai Na</i>	
Failure Analysis of Rubbing of the Fan Tip and Case of an Engine	1289
<i>Wei Feifei, Chen Yunyong, Wu Zhiqing, Chen Lulu, Meng Jin</i>	
Optimal Design Aircraft Engine Mount Systems	1297
<i>Jiang Xianghua, Du Ran</i>	
Microstructure Evolution of K6509 Cobalt-base Superalloy for Over-temperature	1302
<i>Wei Zhen-wei, Zhao Wen-xia, Zhou Jing-yi, Liu Chang-kui, Zheng Zhen, Qu Shi-yu, Tao Chun-hu</i>	
Safety of Lap-held Infants in Aircraft	1311
<i>Cees Bil, Adam Shrimpton, Graham Clark</i>	
Prediction of Low Cycle Fatigue Crack Growth under Mixed-mode Loading Conditions Using Cohesive Zone Models	1317
<i>Yuan Huang, Li Huan, Li Xiao</i>	
Characterization of a Metastable Austenitic Stainless Steel with Severe Plastic Distortions	1323
<i>Zeng Wu, Yuan Huang</i>	
Design and Performance Analysis of an Electromagnetic Tricycle Operated in an Airport	1330
<i>Puttaratorn Ekapun, Toh Yen Pang</i>	
Technology and Application of Identifying Dynamic Loads Based on Flight Test Data	1339
<i>Chen Liebin, Jin Wei, Shi Shanglu</i>	
Study on Impact Dynamics of Development for Solar Panel with Cylindrical Clearance Joint	1345
<i>Wang Xu-peng, Liu Geng</i>	
Labyrinth Seals Diameter and Length Effect Study on Nonlinear Dynamics	1358
<i>Ma Wensheng, Huang Hai, Feng Guoquan, Chen Zhaobo, R.G. Kirk</i>	
Structural Damping Effect on Deformation of Flexible Flapping Wing	1365
<i>Xue Dong, Song BiFeng, Yang WenQing, Fu Peng</i>	
Vibration Reduction of a Bearingless Helicopter Rotor with Composite Tailored Couplings	1372
<i>Yu Jin, Luo Yu, Liu Yong</i>	
Design and Simulation of Long Slender end Mill Embedded with Passive Damper	1380
<i>Yang Yiqing, Yu Yu</i>	
TC4 Hollow Fan Blade Structural Optimization Based on Bird-strike Analysis	1385
<i>Zeng Chuan, Jiang Xiang-hua, Chai Xiang-hai, Shi Tong-cheng</i>	
Statistic Strategy of Damage Detection for Composite Structure Using the Correlation Function Amplitude Vector	1395
<i>Xiaojuan Dang</i>	

Mechanical Properties and Thermal Shock Resistance of Rhenium Coating in Iridium/Rhenium/Carbon-carbon Composites	1407
<i>Guo Yue, Xie Hong-yu, Jiang Zeng-rong, Xia Zhi-xiang</i>	
Effect of Melting Temperature on the Microstructure Stability of a Ni-based Single Crystal Superalloy.....	1415
<i>Zhenxue Shi, Shizhong Liu, Xiaoguang Wang, Xiao-dai Yue, Jia-rong Li</i>	
Fatigue Damage Monitoring of an Aluminum Joint Specimen.....	1421
<i>Cui Ronghong, He Yuting, Jing Bo, Hou Bo</i>	
Landing Gear Ground Load Measurement and Verification Test for a Large Passenger Jet.....	1426
<i>Kong Xiangjun, Le Ningning, Li Chunsheng, Xiao Xianbo, Lin Bo, Xu Bing</i>	
Contrastive Study of the Radiography on Film and Real-time Imaging.....	1434
<i>Gao Yan, Guan Xuesong, Qiao Yuliang, Xu Guirong</i>	
Analysis and Innovation for Penetrant Testing for Airplane Parts.....	1438
<i>Xu Guirong, Guan Xuesong, Qiao Yuliang, Gao Yan</i>	
The Application Research of ID Chip for Strain Measurement in Full Scale Aircraft Structure Strength Static Test	1443
<i>Jia Zuo, Gang Wang</i>	
Research of Weight Deduction in Full-scale Aircraft Static Strength Test.....	1448
<i>Liu bing, Zhang lei, Xia feng</i>	
A Method for Modify the Thermal Stress in the Wind Tunnel.....	1454
<i>Wang Ying, Wang Wei, Bu Junhui, Chen Ding</i>	
Experimental Investigation of Dynamic Properties of AerMet 100 Steel.....	1459
<i>Dayong Hu, Kangpei Meng, Hanlin Jiang</i>	
Test Particle Monte Carlo Simulation of Return Flux on Various geometric surfaces due to Ambient Scatter of Outgassing Molecules.....	1465
<i>Xuhong Jin, Fei Huang, Zhi Chen, Xiaoli Cheng</i>	
Study on The Process of Thin-walled Titanium Alloy Tube Bending	1471
<i>Guo Lei, Liu Xiaona</i>	
U-shaped Bolts Fracture Failure Analysis.....	1476
<i>Huanping Kong, Delin Liu, Tao Jiang</i>	
Evolution of Rolls-royce Air-cooled Turbine Blades and Feature Analysis.....	1482
<i>Li Xu, Sun Bo, You Hongde, Wang Lei</i>	
Effect of Angle between the Primary and Auxiliary Holes of an Anti-vortex Film Cooling Hole.....	1492
<i>Younggi Moon, Soon Sang Park, Jung Shin Park, Jae Su Kwak</i>	
Numerical Study on the Stability of Hypersonic Wake Flow over Blunt Body and Global Stability Analysis.....	1497
<i>Dehua Zhu, Qing Shen, Xiangjiang Yuan</i>	
Aerodynamic Performance of Micro Flexible Flapping Wing by Numerical Simulation.....	1506
<i>Yang Wengqing, Wang Liguang, Xue Dong, Song Bifeng</i>	
A Numerical Investigation of the Sparkjet Actuator in Multiple-shot Mode	1514
<i>Ly Yuanwei, Shan Yong, Zhang Jingzhou, Tan Xiaoming</i>	
High-performance Computing of Periodic Unsteady Flow Based on Time Spectral Method	1526
<i>Xie Lijun, Yang Yunjun, Liu Zhou, Zhou Weijiang</i>	
Oscillation Flow Induced by Underwater Supersonic Gas Jets from a Rectangular Laval Nozzle	1531
<i>He Miaosheng, Qin Lizi, Liu Yu</i>	
Experimental Validation on Lift Increment of a Flapping Rotary Wing with Boring-hole Design.....	1543
<i>Chen Long, Yan Wanfang, Wu Jianghao</i>	
Experimental Study of Surge and Rotating Stall Occurring in High-speed Multistage Axial Compressor	1548
<i>Changzheng Li, Siqi Xu, Zhiqi Hu</i>	
Numerical Prediction of Stability Derivatives for Complex Configurations	1561
<i>Fangjian Wang, Lan Chen</i>	
A Feature Extraction Method for Aircraft Engine Rotor Vibration Diagnosis.....	1576
<i>Cui Zhang, Keming Wang, Pengran Zhao</i>	
Experimental Investigation of Leading Edge Bluntness Effects on Hypersonic Two-dimensional Inlet.....	1582
<i>Zhang Hong-jun, Shen Qing</i>	
New Dynamic Stability Rig for Tri-sonic Wind-tunnel	1591
<i>Liu Jin, Chen Nong, Song Yuhui, Hu Jing, Xie Ke</i>	
Sensitive Flutter Parameters Analysis with Respect to Flutter-free Design of Compressor Blade	1597
<i>Sun Hai, Yang Lin, Li Hongxin</i>	
Study on Correlation of Aerodynamic Heating Data of a Combination Model	1604
<i>Sha Xin-guo, Chen Xing, Ji Feng, Su Peng-hui</i>	

Improving Quality of Wind Tunnel Test Data Through the MDOE	1610
<i>Zhang Jiang, Ma Handong, Qin Yongming</i>	
Experimental Studies on AeroThermodynamic Environments of the Interaction Area between the Wing and the Arc Board in Arc Wind Tunnel	1619
<i>Xu Kao, Chen Lianzhong, Liu Xiang</i>	
Development of Aerodynamic Design of Hypersonic Quiet Nozzles	1625
<i>Ruiqu Li, Junmou Shen, Jian Gong</i>	
Experimental Estimation on the Running Time of Gun Tunnel	1630
<i>Ruiqu Li, Jian Lin, Xing Chen</i>	
Author Index	