

# **2024 10th Asia Conference on Mechanical Engineering and Aerospace Engineering (MEAE 2024)**

**Taichang, China  
18-20 October 2024**

**Pages 1-645**



**IEEE Catalog Number: CFP24VB5-POD  
ISBN: 979-8-3503-5226-9**

**Copyright © 2024 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP24VB5-POD
ISBN (Print-On-Demand):	979-8-3503-5226-9
ISBN (Online):	979-8-3503-5225-2

**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) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

## TABLE OF CONTENTS

Analysis Method of Flight Test Results of Large Aspect Ratio Wing Maneuvering Load Alleviation and CFD Simulation Verification .....	1
<i>Fan Jieli, Mao Kun, Wu Dawei, Si Jiangtao, Pan Lijun, Liu Yang</i>	
Effects of Higher Order Derivatives on Unsteady Aerodynamics of NACA0012 Airfoil Associated with Transonic Forced Motions .....	7
<i>Zhiguang Bao, Xinfang Li, Qing Zhang</i>	
Research on Dual Loop Control Algorithm Based on Pressure and Temperature in Wing Anti-Icing System .....	15
<i>Yuyi Zhang, Kun Lan, Honghao Pan, Yuqing Zhang</i>	
The Energy Source Selection of Conceptual Design of Small Fixed Wing Commercial Aircrafts with Zero Carbon Emission .....	20
<i>Zhiyu Chen</i>	
Analysis of the Impact of ADHF Configuration on Flap Parameters Optimization for Civil Aircraft .....	24
<i>Zhenhai Ma, Cangsong Liu, Dawei Wu</i>	
The Tradeoff Study of the Concept Design of the Wing Configuration of the Scaled Aircraft Model with Distributed Electric Propulsion Ducted Fans .....	29
<i>Zhiyu Chen</i>	
Design and Numerical Analysis of a Split-And-Recombined ‘(Y-H)’ Micromixer .....	33
<i>Md Readul Mahmud</i>	
Research on Test Method for Slat Skew of Aircraft .....	38
<i>Ying Li, Xiwen Tang</i>	
Selection of the Required Cooling Air Flow Through the Blades of the Axial Turbine at the Initial Design Stage .....	42
<i>G. M. Popov, A. Melnikov, E. S. Goriachkin, V. M. Zubanov, A. I. Scherban</i>	
Research on Modular Separation Surface Design of Large Aircraft Based on Key Feature Decomposition .....	47
<i>Haizhao Xu, Lijun Yang</i>	
Research on Door Opening of Civil Aircraft Under Unfavorable Attitude Based on Six-Degree-of-Freedom Platform .....	52
<i>Mingde Chang, Hongbiao Ding, Jiang Wu</i>	
Modeling and Simulation of Electrical System in More Electric Civil Aircraft Considering Faults .....	57
<i>Yang Xu</i>	
Research on Actuation Capability for NLG Forward Door for One Type Civil Aircraft .....	63
<i>Liu Leilei, Meng Qingtang, Chen Wenjie, Sun Erliang</i>	
Complex Aerodynamic Design of a Gas Turbine Multistage Axial Compressor Using Multilevel Mathematical Models .....	67
<i>E S Goriachkin, G M Popov, E D Gataullina, O V Baturin</i>	
Design and Research of a Bionic Butterfly Aircraft .....	75
<i>Tang Fulong, Li Chunhao</i>	

Preliminary Design of a Novel Multi-Stage Nose Cone for Hypersonic Aircraft Forebody .....	80
<i>Wei Li, Zonghan Yu, Fanshuo Meng, Lei Yu, Qingyu Yu, Xin Meng, Jiaxin Sun, Changkai Hao</i>	
Research on Structural Design and Aerodynamic Performance of Flapping-Wing Aircraft with X-Shaped Layout.....	85
<i>Yanhuan Zhang, Zhandong Li, Peng Zhang</i>	
Development of Bionic Butterfly Flight Vehicle and Preliminary Analysis of Lift Characteristics .....	90
<i>Jiarui Cao, Huihui Huang, Zonghan Yu, Wenhui Yan</i>	
Research on Aircraft Aerodynamic Modeling Method Based on Point Cloud Deep Learning .....	95
<i>Zhe Liu, Xiangyu Zhang, Shu Wang, Chengpeng Guo, Rongfeng Cui</i>	
Research on Testing and Analysis Methods for the Inlet System of Civil Aircraft Power Plant .....	100
<i>Yang Fei, Liu Hao, Jiang Jintao</i>	
Method for Measuring APU Inlet and Exhaust Sound Power Levels Under Constrained Testing Conditions .....	107
<i>Xixin Hao, Hao Liu, Tao Zhang, Fafu Zhang, Bo Li</i>	
Estimation of Aerodynamic Loads on the APU Inlet Door in Civil Aircraft .....	114
<i>Wang Han, Wang Runzhou, Zhou Chengsi, Sha Jingtian, Zhu Ting</i>	
Modal Simulation and Experimental Analysis of Inlet Measuring Rake with Complex Structure.....	120
<i>Ye Tao, Lin Tian, Qiangbo Zhang</i>	
Validation and Sensitivity Analysis of Temperature Distribution in Aircraft Air Management System Valve Structures .....	125
<i>Huayuan Liu, Shunliang Liu, Liangliang Jiang, Lei Wang, Danqi Peng, Jiacheng Liu</i>	
Study on the Impact of Relative Position Arrangements of the Integrated Duct of APU on the Aerodynamic Performance of Inlet System.....	130
<i>Ting Zhu, Runzhou Wang, Chengsi Zhou, Han Wang</i>	
Lifetime Prediction Method for Space Agencies by Combining Digital Twin and TimeGAN.....	135
<i>Tingting Zhang, Lilan Liu, Yan-Ning Sun, Zenggui Gao</i>	
Blade Angle Measurement Method for Automatic Pitch Propeller in Flight Testing .....	140
<i>Niu Hongwei, Zhai Yahao, Wang Ye</i>	
Research on Temperature Distribution of a Turbine Blade Based on Simulation Using PINNs .....	145
<i>Lu Qin</i>	
Study on Suction Cavitation Control in High-Pressure Hydraulic Systems of Civil Aircraft .....	150
<i>Qiang Liu, Liang Zhou</i>	
Design Optimization Approach of Functionally Graded Turbine Blisk .....	155
<i>Huan Li, Long Chen, Chuan-Hai Chen, Chengwei Fei</i>	
Development of a Fast Conceptual Parameter Analysis Tool for Passenger Aircraft .....	161
<i>Chenlizi Zhang, Changwei Zhou</i>	
Robust Locomotion Control for Lunar Exploration on Deformable Terrain .....	167
<i>Yang Zhang, Haoyang Lit, Yue Gao</i>	
Fire Protection Design of Civil Aircraft Hydraulic System Based on Temperature Control .....	172
<i>Ruihua Zhang, Liang Zhou</i>	

Data-Driven Based Dynamic Decoupling of Micro-Vibration Isolation System .....	176
<i>Yu Sun, Wenbao Cheng, Kaicheng Yu, Huazhou Kang</i>	
Magneto-Thermal Coupling Characteristic Analysis of Switched Reluctance Motor for Actuation System of Aircraft Electric Braking .....	181
<i>Yang Peng, Cheng Ying, Shi Wei, Li Bingchu</i>	
The Noise Reduction Loss Due to Head Movement in an Active Noise Control Headrest.....	188
<i>Hang Li, Hao Jiang, Jiancheng Tao</i>	
Design and Verification of Engine Fire Extinguishing Nozzle for Civil Aircraft.....	193
<i>Hanjie Du, Jinbiao Wang, Junming Gu</i>	
A Data-Driven Method for Aircraft Engine Model .....	198
<i>Minghua Wang, Huanyu Wang, Jie Shi, Linwen Li</i>	
Numerical Simulation of the Thermal State of the Turbine Nozzle Guide Vane of a Modern Gas Turbine Engine .....	203
<i>G. M. Popov, V. M. Zubanov, S. A. Melnikov, A. I. Scherban</i>	
Numerical Study on the Effect of Pulsed Jet on Scramjet Combustion Performance .....	211
<i>Yuqi Wang, Jianfeng Zhang, Leichao Yang, Wenzhong Jin</i>	
A New Modelling Method for a Turbojet Engine Based Vector Control Through a 1-Axis Force Measurement .....	222
<i>Yi Wang, Ziyao Wang, Tianyi Liu</i>	
Characteristics of Flashing Spary of Oxygen/Methane Engines in High-Altitude and Low-Pressure Environments.....	228
<i>Cheng Cheng, Zhiyong Gao, Jianfei Wei, Silong Zhang</i>	
Regression Equations for Estimating Axial Compressor Flow Path Dimensions at the First Design Steps .....	238
<i>O V Baturin, E D Gataullina, E S Goriachkin, V M Zubanov</i>	
Study on Aeronautical Matching of Propeller and Engine Based on Hybrid Dimension Simulation Method .....	243
<i>Wei Li, Xing Huang, Quanshen Fang, Mingdong Zhao</i>	
A Sensor Fault Tolerance Strategy Based on Hybrid Redundancy for Aeroengine Control System .....	249
<i>Zexi Jin, Jinxin Liu, Maojun Xu, Yuxuan Lan, Zhiping Song</i>	
Aeroengine Performance Optimization Control Method Based on Model-Free Adaptive Prediction Algorithm .....	254
<i>Wenkang Xia, Yingzhi Huang, Tong Li, Linfeng Gou</i>	
A Method for Determining the Risk Factor of Aircraft Engine Rotor Burst .....	262
<i>Zhaoxia Liu, Jingxin Liu, Demiao Yu, Qiaojun Chi</i>	
A New Method of Conceptual Design of the Flow Part of a Gas Turbine Engine .....	267
<i>Xin Liu, Oleg Baturin, Grigorii Popov, Valery Matveev</i>	
Analysis of Control Requirements for Engine Driven Pump in Civil Aircraft Hydraulic System .....	272
<i>Yufeng Zhou, Liang Zhou</i>	

Research on an Intelligent Fault Diagnosis System for Aircraft On-Board Equipment Based on Digital Twin Technology .....	277
<i>Shuang Wu, Tianxiao Wu, Yangxin Jiang, Tianyuan Zhang</i>	
A Novel Multi-Source Domain Knowledge Joint Transfer Network for Aero-Engine Bearing Fault Diagnosis.....	281
<i>Jianchu Pan, Zhenhao Yan, Weiping Nong, Bingqiang Zhou, Zenggui Gao, Lilan Liu</i>	
Model-Based Fault Diagnosis Method for Civil Aircraft Flight Control System.....	287
<i>Cheng Huihui, Sima Jun</i>	
High Temperature Transient Strain Measurement and Crack Fault Analysis of the Engine Tail Nozzle Regulating Plate .....	292
<i>Qiangbo Zhang, Jiang Dong, Hao Yu, Shuai Zhang, Huanhuan Liang, Hao Jia</i>	
General Design Guidelines for Civil Aircraft Latent Failure.....	299
<i>Shi Zhijian, Li Xiaofeng</i>	
Enhanced Isolation Forest Algorithm for Aero-Engine Fault Detection.....	303
<i>Jing Yang, Jianwen Li</i>	
Design of Intelligent Fault Diagnosis System for High Lift System Based on Machine Learning .....	309
<i>Yawen Cao</i>	
Study on the Foreign Objects Impact Fault Diagnosis of Aero-Engine Fan Rotor Based on Noise Signal.....	313
<i>Shuai Zhang</i>	
Multi Faults Detection Method for Flight Control System Based on Observers.....	318
<i>Xinyue Ma, Yue Zhang, Peng Wang</i>	
MDATS—A Multi-Domain Adaptive Classification Strategy for Mechanical Fault Detection.....	323
<i>Zesen Wang, Wenchao Huang, Yue Hu, Yang Gao</i>	
Large Aircraft Flap Actuator Disconnection Failure Test Technology Research.....	329
<i>Lu Jianguo, Xu Jianqi, Gao Yuxiang, Li Sanyuan</i>	
A Method for Extracting Fault Features of Total Pressure in Aero Engine Based on Improved Grasshopper Optimization Algorithm.....	334
<i>Zhongyuan Cai, Shiqi Jiang, Jijia Yan, Keyu Tian, Zhihong Zhang, Dundun Liu, Xiao Jiang Shi, Jingyu Zhang</i>	
Research on Aircraft Brake Sensor Fault Diagnosis Based on Joint Learning of Hybrid Features .....	340
<i>Shengjie Li, Hongxin Wang, Degang Xu, Linwen Li</i>	
Cross-Domain Intelligent Diagnosis of Mechanical Equipment Using Gauss-Wasserstein Distance .....	345
<i>Fucheng Yan, Liang Yu, Ran Wang</i>	
Simulation on Gear Retraction Braking Function of Aircraft Brake System.....	350
<i>Peng Xiao, Bing Li, Hong Yang, Weiming Lu</i>	
Research on the Design of Stiffness Test Fixtures for Civil Aircraft Landing Gear.....	354
<i>Chenxi Yin, Lei Li, Min Juan Chen, Yao Zhang</i>	
Method for Online Structural Health Monitoring Based on Single-Point Response and Neural Network.....	359
<i>Xu Yufan, Li Han, Guo Wenqi, Zhu Lixuan, Zou Shuang, Li Shuai, Fang Jie, Cai Guobiao</i>	

Implementation of Accurate Atmospheric Sound Attenuation Calculations in Aircraft Noise Certification Processes .....	365
<i>Zhen Zhang, Qiang Li, Xiaoliang Zhang, Yizhi Zhang</i>	
High-Frequency Vibration Response Analysis and Noise Reduction Optimization for an Underwater Vehicle Under Force Excitation .....	371
<i>Siyuan Wang, Haoyu Li, Haijun Wu</i>	
A Broadband Active Vibration Control Algorithm Based on Sensitivity Weighted and Filter Cascade.....	376
<i>Ningyuan Duan, Wenkun Fan, Li Zhang, Yujie Yao, Zongpeng Tong</i>	
Vibration Analysis and Flight Test of Landing Gear Door Structure for Civil Aircraft Based on Acceleration Measurement .....	380
<i>Jiasen Zhang, Yin Chen, Mingyi Wang, Haiquan Fang</i>	
Research on Vibration Control of Space Precise Tracking-Pointing Parallel Mechanism Based on Magnetorheological Damper .....	385
<i>Ya'Nan Lou, Haotian Wang, Xingyu Ren, Huilian Peng, Xinyu Zhang, Xiang Qi, Yong Yang, Hong Lin, Qun Zhang</i>	
Research on Active Control of Ship Pipeline Vibration by Unidirectional Inertial Actuator .....	391
<i>An Peng, Hengliang Wu, Zhigang Wang, Hongsai Huang, Mingsheng Wang, Jianping Shen</i>	
Requirement Change Impact Analysis Model for Civil Aircraft - the Topological Relationship Between the Itemized Requirement Model and the Design Data .....	395
<i>Junkai Huang, Dake Guo, Yi Wang, Xinyu Zhang</i>	
A Failure-Pass Model Based Method for Safety Analysis of Flight Control System .....	403
<i>Fang Di</i>	
Supersonic Aircraft Drag Reduction Optimization Design in a Wide Speed Range Based on the Adjoint Method .....	408
<i>Luo Xiao, Song Chao, Liu Hongyang, Zhou Zhu, Tang Yu</i>	
Aircraft Taxiing Drag Calculation and Flight Verification on Standing Water Runways .....	415
<i>Changqun Xu, Ruitao Liu, Boyan Shi</i>	
Model-Based Safety Analysis Methodology for Civil Aircraft Flight Control System .....	419
<i>Cheng Huihui, Sima Jun</i>	
Experimental Study on Performance of a Xenon Flow Controller.....	424
<i>Wang Zhaoli, Fan Xufeng, Shi Zhengwei, Wang Zhenxing, Li Xinguang, Li Hengjian</i>	
Particle Swarm Optimization in the Application of Civil Aircraft Flight Control System Monitor Design.....	429
<i>Wu Zhiqi</i>	
Adaptive Vibration Isolation of a Spacecraft Control Moment Gyro Employing a Variable Fluid Damper .....	434
<i>Wenlin Wang, Yang Ding, Ruxing Chen, Fei Zhang, Yong Liu, Haoyu Li</i>	
Analysis and Optimization of Force Fight Mitigation Control Law of Fly-By-Wire Flight Control System .....	439
<i>Miao Yu</i>	

Design of BootLoader Software for Civil Aircraft Utility System Controller Based on ARM .....	444
<i>Jiayi Liang, Heming Xia, Zhong Wang, Zexuan Zuo</i>	
Research on a Gain Scheduler of Flight Control System to Satisfy Aircraft Handling Qualities Assessment.....	450
<i>Huanyu Wang, Wei Guo, Chao Zhang</i>	
Numerical Analysis and Experimental Verification of Flow Resistance Characteristics of Labyrinth Micro Flow Controller.....	454
<i>Haoliang Gou, Zhaoqi Zeng, Hui Liu, Heran Hu, Xudong Wang, Xiaohua Zang</i>	
Effects of Electric Power Control Methods on Hybrid Turbofan Dynamics .....	461
<i>Oskar Gurevich, Sergei Smetanin, Ivan Romashikhin</i>	
Review on Intelligent Control System of Aircraft Ground Dynamics Based on Digital Twin .....	466
<i>Jiyang Sun, Hongxin Wang, Yifan Shao, Shengjie Li</i>	
Numerical Helmholtz-Hodge Decomposition for Velocity Fields Via Fast Convolution.....	471
<i>Tianyu Li, Yang Zha, Weikang Jiang</i>	
Dynamics Modeling and Analysis of Airliner Landing Gear Light Brackets.....	476
<i>Haiquan Fang, Xiaolong Wang, Yuxiang Wu, Jiasen Zhang</i>	
Enhanced Calibration Method for Microwave Blade Tip Clearance Measurement .....	481
<i>Cunju Wei, Weitao Li, Yuyong Xiong, Zhike Peng, Guang Meng</i>	
Research on Thermomagnetic Convection for Enhancing Heat Transfer Based on LBM Method .....	486
<i>Yudi Wang, Zheng Dai, Haifeng Hu, Yi Zhao, Lingda Meng</i>	
Synergistic Analysis of Thermal-Magnetic Coupled Fields Based on the LBM Method.....	491
<i>Yudi Wang, Zheng Dai, Haifeng Hu</i>	
Simulation on High-Pressure Injecting Thermal Flow from Broken Bleed Pipe in a Compartment of a Civil Aircraft.....	496
<i>Jing Lu, Wen Yang, Feixiong Zeng, Chuang Li</i>	
A Transit Time Ultrasonic Flowmeter with a Simple Compensation Method for the Systematic Errors.....	501
<i>Qingyuan Liu, Jun Long, Chunyang Zhao, Wei Guan, Jintao Liu, Ping Wang, Xudong Wang, Yong Li</i>	
Allocation of Reliability for Civil Aircraft Based on the Combined Weighting Method .....	506
<i>Qihui Lu, Xinyu Jiang</i>	
Research on the Simplified Model and Operating Mechanism of the Typical Motion Mechanism of Civil Aircraft Boarding Doors .....	511
<i>Xiaohu Zeng, Yunlu Zhang</i>	
Analysis of Triple Comparison Monitor for Civil Aircraft Flight Control System Based on Simulator Verification .....	516
<i>Weiqiang Sheng</i>	
Research on Temperature Control of Aircraft Trolley Refrigeration System Based on Fuzzy Control .....	521
<i>Xueling Zhang, Xuhan Zhang, Chun Duan</i>	
Demonstration Method and Research on Allowable Fuel Grades for Civil Aircraft .....	526
<i>Congcong Li, Xuanzhe Tian</i>	

Reliability Prediction of Partially Observable Mechanical Equipment Under Variable Operating Conditions .....	530
<i>Yiwei Jiang, Jiangshan Jin, Ciwei Qin, Xiaolin Sang, Qingshun Zeng, Chen Kong</i>	
Development and Airworthiness Application of Brake System Model Based on Systems Engineering .....	536
<i>Yuling Yang, Linwen Li, Hongxin Wang, Haolei Ding</i>	
Modal Design and Simulation of Automatic Flight Envelope Protection for Civil Aircraft.....	540
<i>Yingxue Mei, Hui Shao, Chao Zhou, Guanglei Xu</i>	
Thrust Requirement Verification Method of Civil Aircraft Based on MBSE .....	545
<i>Minghua Wang, Huanyu Wang, Li Chen</i>	
Simulation Study on Continuous Propellant Supply and Laser Ignition .....	550
<i>Zhen Qu, Bo Zhao, Zhengwei Shi, Chongwu Guo, Lilei Miao</i>	
Matching Design Method of Over-Voltage Protection for Civil Aircraft Main Generation System.....	555
<i>Shangsong Li</i>	
Engineering Application of Modularization Concept in Aircraft EWIS Design.....	562
<i>Dandan Zhang, Xi Zhu</i>	
Study on the Factors Affecting Handle Force of Type-A Boarding Door.....	567
<i>Yunlu Zhang, Wenbin Zhang, Cuncun Jiang, Tao Li</i>	
Analysis and Design of Civil Aircraft Brake Cooling System Based on MBSE .....	572
<i>Weiming Lu, Hong Yang, Bing Li, Peng Xiao</i>	
Priority Evaluation of Civil Aircraft Design Optimization Based on Competitiveness Model .....	576
<i>Jianyang Zhang, Yunpeng Ding</i>	
Study on the Movement Mechanism and Reliability of Key Components in Type-C Boarding Doors .....	580
<i>Yunlu Zhang, Tao Li</i>	
Landing Gear Alert Design of Civil Aircraft Based on System Engineering .....	585
<i>Lingchen Zhou, Pianpian Zuo, Kai Li, Hongyu Zhu, Shupe He, Meihui Su</i>	
Research on the Layout Design of Dual Tanks for Large Firefighting Aircraft.....	590
<i>Yanqiao Zhang, Yang Wu, Yang Yang, Yang Xu</i>	
Optimization of Handle Operating Force for Boarding Door Skeleton Model Based on CATIA .....	596
<i>Cuncun Jiang, Wenbin Zhang, Weijie Zhu, Zhirui Fan, Yunlu Zhang</i>	
A Testing Method for Binaural Sensitivity to Sound Sources Under Different Sound Source Characteristics .....	602
<i>Yi Zhao, Zheng Dai, Yudi Wang, Haifeng Hu</i>	
Research on Calculation of Transverse Center of Gravity of Large Passenger Aircraft.....	606
<i>Yong Chen</i>	
Quantitative Analysis of the Disadvantages of the Tail Suspension Layout of Civil Regional Aircraft .....	610
<i>Xiyue Zhou</i>	
Bracket System Dynamic Modification and Vibration Isolation Design.....	615
<i>Yida Li, Jialiu Wang</i>	

Research on Automatic Laying of Aircraft Pipelines Based on ACO.....	619
<i>Teng Yanggang, Li Shunli, Chen Yu, Zhang Haiyang, Hou Yanting, Ge Guilin</i>	
Trust Region Strategy for Damping Oscillation in Sequential Convex Programming for Trajectory Optimization.....	624
<i>Jingxian Zhu, Chao Shao, Yang Wang, Jianying Wang</i>	
Analysis of Human Factors Evaluation Index System for Civil Aircraft Maintenance Access Panel .....	629
<i>Haiyan Zhu, Bin Ren, Hao Cai, Xinai Zhang</i>	
G2 Continues Plane Curve Transition Method with Shape Reference .....	634
<i>Jixing Li, Baowen Xu, Xuedong Wang, Lihong Guo</i>	
Using Particle Swarm Optimization to Solve Level of Repair Analysis Problem .....	641
<i>Zheng Qing, Wu Hao</i>	
A Semi Supervised Domain Generalized Fault Diagnosis Network Based on a Small Amount of Labeled Data.....	646
<i>Liting Luo, Zhengyan Yang, Hongpeng Zhang, Jitong Ma</i>	
Neural Network Error Compensation Method for Analytical Redundancy of Angular Velocity.....	651
<i>Xinyue Ma</i>	
Malfunction Diagnoses of Bearings of Vibration Mill Based on Vibration Monitoring.....	656
<i>Lei Fu, Zhihang Zhang</i>	
Guidelines and Assessment Analysis for EWIS Maintainability Design.....	660
<i>Dandan Zhang, Xi Zhu</i>	
Continual Fault Diagnosis for Rotating Machinery with Fault-Type Increments Based on Adaptive Feature Consolidation Residual Network .....	665
<i>Yan Zhang, Junsong Cai, Lei Liu, Changqing Shen</i>	
Research on Reuse Civil Aircraft Virtual Maintenance Simulation Resources .....	670
<i>Yanbo Liu, Shilei Shen, Ruoxi Liang, Xucheng Wu, Hanqing Guo</i>	
Compliance Research on Electronic and Electrical System of Commercial Aircraft Auxiliary Fuel Tank System .....	675
<i>Yilin Liu, Tianlin Guan, Lijun Yao, Yang Yang, Hao Gong</i>	
Edge Sample Enhancement Method for Bearing Fault Recognition .....	679
<i>Lingfeng Li, Ge Xin, Qing Wang, Miaomiao Zhang</i>	
Research on HIC Impact Airworthiness Verification Method for Civil Aircraft Pilots .....	684
<i>Shi Meng, Wang Yang, Wu Zhibin, Li Qiang</i>	
Static Strength Reliability Study of Civil Aircraft Pressurized Cabin Door Stop Mechanism .....	689
<i>Linxi Xiang, Zhengzheng Zhu, Jinjin Xu, Xiongfei Lv, Chuangfeng Zhu, Junwei Fang</i>	
Study on Thermal Field Distribution of Civil Aircraft Wheel and Brake .....	694
<i>Xiaomei Wang, Fanghui Zhu</i>	
Development of Redundant Protection Device for the Civil Aircraft Electrical Power System Using FTA Method.....	698
<i>Chengnan Pu, Jiang Li, Ye Hong, Chengyu Zhang</i>	

Structure Deformation Analysis of Civil Aircraft During Wheels-Up Landing .....	703
<i>Jun Gao, Yang Wang, Zhibin Wu, Yuanzhe Zhu</i>	
Research on Reconfigurable Component Library for Digital Twin System of Aircraft Assembly Management .....	708
<i>Jun Li, Yingying Bao, Xiaoyu Chen, Hongxia Cai</i>	
Collision-Free Path Planning for Quality Inspection of Helicopter Components.....	713
<i>Hengyu Zhang, Weicai Zhang, Shangkun Yang, Guangping Wang, Guijiang Duan</i>	
Constructing Method of FOD Knowledge Graph Based on Civil Aircraft Assembly Process .....	717
<i>Xingchen Wu, Sheng Cheng, Weihong Guo, Jianxia Lu, Lilan Liu, Qijie Zhao</i>	
Machine Vision-Based Rivet Detection Method in Civil Aircraft Assembly Scenes .....	722
<i>Ji Chen, Sheng Cheng, Jianxia Lu, Jun Rao, Lilan Liu, Qijie Zhao</i>	
Cost Estimation and Control of 3D Printing Aviation Products .....	727
<i>Jin Shao, Mingde Chang, Hang Wang, Lei Wang, Wenbo Ma</i>	
Enhanced Weakly Supervised Learning Method for Anomaly Detection in Aerospace Product Manufacturing Processes.....	732
<i>Shixu Sun, Yingchao Liu, Lei Zhu, Xiaojiang Cai</i>	
System and Equipment Health Monitoring Design for Civil Aircraft Air Conditioning System.....	737
<i>Gao Banggan, Wang Dawei, Ji Yunda</i>	
Model and Data Driven Quality Control for Helicopter Structure Assembly Production Lines .....	742
<i>Kun Zeng, Hongtao Xiang, Guangping Wang, Yunpeng Li, Guijiang Duan</i>	
Real-Time Assembly Guidance System of Aero-Engine Based on Mixed Reality .....	747
<i>Chunping Chen, Wenjun Zhao, Nansong Wang, Hanzhong Xu</i>	
Two-Stage Segmentation Method for Quantifying Composite Micro-Cracks Based on Deformable Convolution and U-Net .....	753
<i>Wei Wang, Zhengyan Yang, Hongpeng Zhang, Jitong Ma, Liting Luo</i>	
Structural Improvement Design and Simulation Analysis of an Airborne Composite Material Antenna Skeleton .....	758
<i>Kexuan Li</i>	
Research on Stress Relaxation Life Prediction and Micro-Mechanism of Push Rod Spring .....	763
<i>Zhongsheng Qin, Lilan Liu, Yan-Ning Sun, Huiling Yuan, Hong Jiang, Zenggui Gao</i>	
The Influence of Clearance on the Fatigue Life of the Connecting Lug Between the Landing Gear Shock Strut and the Down Lock Release Actuator.....	769
<i>Li Ziyang</i>	
The Influence of the Inclination Angle of Oblique Tenons on the Stress-Strain Distribution of Tenon Joint Structures .....	776
<i>Jiali Chen, Zhongyu Yang, Yinli Feng</i>	
Handle Force Analysis Method of Civil Aircraft Door Mechanism .....	781
<i>Quan Zefen, Tong Ruiting, Yuan Qiangfei, Ma Yan</i>	
Research of the Handle Force in Civil Aircraft Sliding Windows.....	787
<i>Guoxin Li, Dawei Ma</i>	

Study on Damage Identification Method of Stepped Beams Based on Localized Resonant Acoustic Metamaterials .....	792
<i>Haibin Zhong, Xiongfeng Zhou, Ming Wang, Mingyao Li, Dongmei Wang</i>	
A Lightweight CNN-RPA Network for Guided Wave Based Real-Time Damage Detection in Composite Structure .....	797
<i>Wenqiang Bao, Jitong Ma, Zhengyan Yang</i>	
Energy Analysis of Piezoelectric Stacked Transducers for Damage Detection in Large-Scale Structures.....	802
<i>Yu Hu, Zhengyan Yang, Rui Xu, Jitong Ma</i>	
Simulation of Head Injuries with and Without Helmets with Varied Volume Fractions of Porous Shells: A Computational Approach.....	807
<i>Hafiz Muhammad Yasir Bhatti, Zartasha Mustansar</i>	
Damage Detection for Pressure Vessels Using a New Graph Neural Network Framework .....	813
<i>Xiaoqian Jiang, Chaojie Hu, Yue Hu, Yang Gao, Wensheng Su, Zhigang Xue</i>	
A Force Fight Balance Strategy in Civil Aircraft Control Surface Triple Redundant Actuating System .....	819
<i>Zeng Hanhan, Gu Zhichao, Huang Jian</i>	
Research and Analysis on the Configuration Management of Civil Aircraft Engineering Simulator Simulation Models .....	824
<i>Jiawei Yang, Wenfeng Qiao, Dianhuang Xie, Shengliang Wu, Xiaoyu Qu, Kui Xu</i>	
Study on Mooring Design Requirements for Civil Aircraft.....	828
<i>Hongyu Zhao, Li Wang, Wenwu Li</i>	
Experimental Study on the Influence of Acceleration on the Dynamic Characteristics of Rotor-SFD Systems.....	833
<i>Zhongyu Yang, Jiali Chen, Yinli Feng</i>	
Simulation and Test of a Special Configuration Subsonic Cascade .....	838
<i>Feng Du, Zhichao Yao, Yanan Xu, Zhenggui Zhou</i>	
Research on Seal Performance of Civil Aircraft Landing Gear Shock Absorbing System.....	843
<i>Chengjie Jiang, Xiaolan Cheng</i>	
Numerical Simulation on the Periodic Characteristics of a Special Cascade .....	850
<i>Feng Du, Hongxin Wang, Zhichao Yao, Yanan Xu</i>	
Research on the Modeling and Applications of Digital Mock-Up for Civil Aircraft.....	855
<i>Zhang Can, Zhang Chenlizi, Gu Jiayi, Chen Yu, Zhang Xinai, Wang Qinchao</i>	
Experimental Study on the Leakage Rate of Pressure Regulator Based on FTA .....	860
<i>Wang Zhaoli, Wang Zhenxing, Fan Xufeng, Li Hengjian, Li Xinguang, Li Wei</i>	
Airworthiness Requirements and Means of Compliance for Flightdeck Installed Physical Secondary Barriers on Transport Category Airplanes .....	864
<i>Yongpan Yang</i>	
Research and Design of Turbo-Spin Nozzle for Fuel-Water Mixing.....	869
<i>Bin Fang, Jixin Xiang, Jinbiao Wang, Yuanyuan Qu</i>	

Accounting for Geometric Variability Effects on the Performance of Ducted Fan Blades Using Neural Networks and Multifidelity Optimization.....	874
<i>Richard Amankwa Adjei, Salman Ijaz, Junyuan Jiang, Yiwei Wang</i>	
Research on Precision Electron Beam Welding Technology of Micro Mechanical Pump Under Strong Magnetic Field.....	884
<i>Chunyang Zhao, Kun Cai, Jintao Liu, Zhaopu Yao, Xiquan Liu, Zhen Qu, Yanming Wei</i>	
Decompression Load Analysis of Unpressurized Compartment in Civil Aircraft.....	891
<i>Yunda Ji, Dawei Wang</i>	
Fast Terminal Sliding Mode Control for a Maneuverable Vehicle with Prescribed Performance.....	895
<i>Xueying Zhang, Jiahong Song, Wei Li, Shiyao Li, Zhengxiang Sun</i>	
Dynamic Characteristics Analysis of the Helicopter-Airbag Wave Landing on Different Positions.....	901
<i>Bin Hou, Yantai Zhang, Zhi Sun</i>	
Geometric Modeling Techniques Based on Simplicial Complexes.....	906
<i>Baowen Xu, Bowen Zhang, Zhizhong Li</i>	
Modeling and Simulation Analysis of Spatial Two-Dimensional Turntable Based on Three-point Locking.....	914
<i>Wang Jiadeng, Xie Youjin, Huang Jing, Liu Chong, Cui Kai, Wei Yuxuan</i>	
Assessment of Factors Affecting Icing in Civil Aircraft Fuel Feed System and Safety Flight Advise.....	921
<i>Xiao H B, Chen Y Ch, Yin W H, Wang J B, Gao G T, Liu C Y, Liu D G</i>	
Research on Airworthiness Verification and Simulation Methods for Civil Aircraft Interrupted Landing.....	925
<i>Wang Xiaoyan, Tao Chao, Zhang Xinyu, Li Yueheng, Lu Sufen, Chen Mingqian</i>	
Passive Detection of Ice Formation on Tubular Structures Based on Flow-Induced Vibration.....	930
<i>Weizhen Li, Qihang Qin, Xun Wang</i>	
Research on Sky Light Simulation Algorithms for Aircraft Cockpit Light Design.....	936
<i>Weihong Guo, Shuge Xie, Zhen Ge, Tao Li, Xiaofeng Yuan, Hongxin Wang</i>	
Research on Airworthiness Certification for Narrow Runway Operation of Civil Aircraft.....	943
<i>Qiyu Cai, Xiaohui Zheng, Nan Gao</i>	
Field of View and Airworthiness Validation Methods for Hail Impact Windshields on Civil Airplanes.....	947
<i>Jun Jiang, Xinyang Zhu, Yiyuan Zheng</i>	
Research on Integrated Environmental Testing Methods for Civil Aircraft Functional Structures.....	951
<i>Ju Shichao</i>	
Numerical Simulation of Hail Impact on Fan Blade Test Piece Based on SPH Method.....	956
<i>Yahao Zhai, Hongwei Niu, Ming Li, Fan Guo</i>	
Simulation Study on Environmental Temperature of Civil Aircraft EE Compartment in Complex Scenarios.....	961
<i>Liu Mu, Yuan Jianxin, Ren Qiyang</i>	
Research on Mechanical and Thermal Design and Analysis of Quasi-2D Microsatellites.....	966
<i>Jun Wu, Chenyang Luo, Hongbing Wang, Zhu Sun, Guohua Zhou, Kaiwu Tu</i>	

Micro-Vibration Control of CMG by DVA Considering Satellite Installation Boundary.....	971
<i>Minxiao Ying, Xubin Zhou, Zhiqiang Bian, Kaijun Wang, Qi Zeng, Xingtian Liu</i>	
Comparative Assessment of Aerodynamic Performance for Very Low Earth Orbit Satellites .....	975
<i>Manqi Xie, Youtao Xue, Yuxin Yang, Wenwen Zhao, Weifang Chen</i>	
Trajectory Planning and Control for an Underactuated CubeSat.....	980
<i>Mingchao Wang, Lijun Zong, Jianping Yuan</i>	
Research on Satellite Communication System Design and Verification of Civil Aircraft.....	987
<i>Yuan Shude, Yang Fan, Deng Xueyun, Lu Xiaogang</i>	
Reinforcement Learning-Based Strategy for Task Assignment in Multi-Satellite Games.....	992
<i>Xinhu Qi, Yue Gao, Zhijie Hu, Darui Sun, Yanbin Chen, Yanning Zhang</i>	
Orbit Design and Optimization of Small Thrust Spacecraft for Jupiter Exploration.....	997
<i>Wang Kai, Chen Danhe, Yang Zhihong</i>	
Airline Demand Forecast and Seat Inventory Control with Passenger Buy-Down Behavior.....	1003
<i>Meihua Lu</i>	
A Standardization Guideline About the Civil Aircraft Interior Placards .....	1008
<i>Lan Ding</i>	
Evaluation Method of Airport Turn Around Capacity of Civil Aircraft .....	1013
<i>Zhang Linshuai, Wang Zehan, Li Congcong, Mu Tengfei</i>	
Research on Safety Requirements Allocation of Key Interfaces of Civil Aircraft FBW Flight Control System.....	1018
<i>Lingling Hu, Zhishuai Tang</i>	
Research on Flight Control System Dispatch Item Analysis Technology for Civil Aircraft.....	1023
<i>Wu Zhiqi</i>	
Research and Practice of Systems Engineering Management Plan for Civil Aircraft .....	1028
<i>Liu Huang, Degang Liang</i>	
Simulation Analysis of Aircraft Emergency Evacuation .....	1033
<i>Liu Xin</i>	
Analysis of Dynamic Temperature and Humidity for Civil Aircraft in Hot and Humid Weather with Emergency Air Supply.....	1037
<i>Gao Banggan, Wang Dawei, Ji Yunda</i>	
Design and Research on Transportation Support for a Large Radar Antenna .....	1042
<i>Shumin Yu, Xi Chen, Xianghao Meng</i>	
Disturbance Rejection Control for High-Precision Pointing Mechanism of Space Laser Communication .....	1046
<i>Jiaqi Fan, Lei Liu, Qing Li</i>	
Research on Electrical and Electronic System Design of Commercial Aircraft Fuel System .....	1051
<i>Yilin Liu, Tianlin Guan, Lijun Yao, Kaiwei Jiang, Hao Gong</i>	
A Preliminary Compatibility Analysis Between LDACS and a Portable ADS-B Receiver .....	1057
<i>Mingyu Shi, Kai Guo, Siqi Huang, Zhipeng Wang, Zhiqiang Dan</i>	

Earth-Moon Space DRO Calculation Based on the Optimization Algorithm.....	1063
<i>Yujie Chen, Yanwei Zhu, Meichen Chan, Chenyuan Qiao, Haipeng Qiu, Chengming Zhang</i>	
Sound Source Localization of an Aircraft Cabin Using Probability Beamforming .....	1068
<i>Chenyi Zhao, Huayong Zhao, Jiaan Chen, Wenliang Zhong, Haiquan Wu, Zhenyu Huang</i>	
Structural Design of a Fixed High-Frequency Radar .....	1073
<i>Kexuan Li</i>	
AFDX Network Configuration Update Based on Batch Data Load.....	1078
<i>Rongshan Tang</i>	
An Enhanced LDACS Ranging Method Based on Improved Super-Resolution Delay Estimation .....	1083
<i>Minxi Wu, Kai Guo, Yandong Yang, Zhipeng Wang, Shujing Wang</i>	
Secure Transmission Technology Based on Air-To-Ground Aviation Networks.....	1089
<i>Guojian Wang, Guanglei Xu, Zhiming Zheng, Jianping Li</i>	
Sensor Signal Decoupling Modeling Based on Hierarchical Cascade Residual Network.....	1093
<i>Jinglong Bi, Kaihao Liang, Yue Hu, Yang Gao</i>	
Research and Implementation of Airborne Digital Audio Technology.....	1098
<i>Ze Chen, Zhixiao Li, Ximei Tu, Zhiming Zheng</i>	
RMS Calculation Model for Variable Frequency AC and FPGA Implementation .....	1105
<i>Yan Yang, Hongxin Wang</i>	
Demodulation of Composite Spectral Signals of FBG-EFPI Based High-Temperature-High- Pressure Sensors .....	1109
<i>Bixuan Ma, Ruiya Li, Jingui Yu, Leqiang Han, Zikun Lin, Xiangrong Zhao</i>	
Analysis of Cascading Impact of Angle of Attack Signal Failure in Flight Control System of Civil Aircraft .....	1114
<i>Miao Yu</i>	
Fast Cyclostationary Beamforming Algorithm Based on Snapshot Matrix for Localization of Cyclostationary Sound Sources .....	1119
<i>Mingjie Yu, Liang Yu, Chenyu Zhang, Ran Wang, Youhong Xiao</i>	
Human Factors in Unreliable Airspeed Events.....	1124
<i>Ruitao Liu, Changqun Xu, Xinyu Zhang</i>	
Methodology for Assessing the Operational Safety Performance of Civil Aircraft Manufacturers.....	1128
<i>Liu Xinyu</i>	
Information Registration Method for Three-Dimensional Body Data Measurement of Pilots.....	1133
<i>Long Liu, Qijie Zhao, Lilan Liu</i>	
The Effects of Different Interventions on Operators' Fatigue on Long-Haul Flights .....	1138
<i>Keke Zheng, Hongze Ruan</i>	
Performance Level Evaluation Model Based on ELM.....	1143
<i>Qian Mei, Dianhuang Xie, Linwen Li, Wei Wang</i>	
Study on Methodology for Analyzing Specific Risk to the Survivability of Civil Aircraft Systems.....	1148
<i>Xiaoyu Song</i>	

Research on Risk Management Methods and Processes for Civil Aircraft Operation Safety .....	1154
<i>Ni Cheng</i>	
On the Observability for Visual-LiDAR 3D Sensing of Noncooperative Space Targets.....	1158
<i>Qier An, Jianfa Wu, Chunling Wei</i>	
Research on Bolt Joint Looseness Detection and Imaging Based on Flow-Induced Ambient Noise .....	1163
<i>Boyu Cai, Qihang Qin, Xun Wang</i>	
Reinforcement Learning-Based Solar Sail Trajectory Design.....	1169
<i>Hao Yuan, Zikai Zhong, Jie Wang, Qing Luo</i>	
Sate-DDRNet: A Lightweight Dual-Branch Semantic Segmentation Network for Spacecraft Inspection .....	1179
<i>Buer Song, Han Pan, Xuyang Zhang, Weizhi Qu</i>	
Research on Defect Detection of Curved Specimen by Curved Rigid Coil Array .....	1185
<i>Zhili Xiao, Mingwei Yang, Xiaohui Li</i>	
Picard-Chebyshev-Based Improved Sequential Convexification Method for Reentry Trajectory Planning.....	1190
<i>Yunhao Luo, Qiang Li, Shijie Xu, Haizhao Liang</i>	
Zero-Shot Remote Sensing Image Classification Algorithm Based on Improved CLIP Model.....	1196
<i>Cheng Xu, Zhengyu Ou, Junjie Wang, Zandong Han</i>	
Machine Learning-Based Recognition of Cavitation Regimes in a Venturi Tube .....	1200
<i>Teng Liu, Weibin You, Xun Sun</i>	
Health Monitoring of Bolted Structures Based on Multivariate Information Fusion and Attention- Convolutional Neural Network .....	1205
<i>Yulong Xiao, Zihao Zhang, Jiayi Zhou, Yankun Li</i>	
A Novel Bolt Looseness Detection Method Based on Dynamic Mode Decomposition and Multi- Sensor Information Fusion .....	1210
<i>Zihao Zhang, Yulong Xiao, Yankun Li, Shancheng Cao</i>	
Motion Planning of Rope Driven Snake Manipulator for Aircraft Fuel Tank Inspection Based on Ant Colony Optimization .....	1215
<i>Xiao Zhu, Haiyu Gu, Liang Ma, Yang Zhao, Cheng Wei</i>	
Incomplete Continuous Rolling Digital Number Recognition Based on Computer Vision.....	1220
<i>Youxuan Xiao, Huanyu Wang, Kai Zheng, Bin Gao</i>	
Simulation Analysis of Double Igniters Y-Type Three-Way Structure Flow Field of Launch Vehicle.....	1228
<i>Zhang Jingyu, Liu Yang, He Kun, Li Xuefei, Niu Lei, Dong Haiping</i>	
Identification of the Workload Levels of Pilots During Flight Using Eye Movement Data Measured in an Aircraft Cockpit Model.....	1235
<i>Yun Wei, Zheng Dai</i>	
LGMOD-UAV: A Lightweight Deployment System for Ground Micro-Object Detection by UAV .....	1240
<i>Hui Zhao, Huarui Bian, Lei Zhang, Jiangtao Chen, Lei Zhang, Jixin Wang, Ruifeng Wang, Xuemei Zhang, Sha Qi, Yixiao Tan</i>	

Investigation of Civil Aircraft Model-Based Functional FMEA Approach with Precise Measurement .....	1246
<i>Peng Lu, Qingqing Meng, Yunlu Gu, Keke Zheng</i>	
Research on Monitoring of Rudder Jam in Civil Aircraft Based on Simulator Verification.....	1251
<i>Weiqiang Sheng</i>	
Adaptive Control Technology for Shaft Alignment of Ship Propulsion Systems.....	1256
<i>Wenkun Fan, Zongpeng Tong, Ningyuan Duan, Mingsheng Wang, Lu Hu, Runxin Chang</i>	
Optimal Endurance Prediction for a Battery-Powered Unmanned Aerial Vehicle with High Aspect Ratio Wings .....	1260
<i>Yu Xia, Richard Amankwa Adjei, Salman Ijaz, Yang Zhang, Yuhao Shi</i>	
Dynamic Response of Civilian Aircraft Structures Under the Action of Directional Blasting Devices in Pressurized Environment .....	1269
<i>Yang Xiang, Yin Weiming, Zhou Wenjie, Zhao Junfeng</i>	
Structure Health Monitoring Based on AE Method During Full Scale Aircraft Fatigue Test Under Flight Loading Conditions.....	1274
<i>Jianfei Feng, Minjuan Chen, Qiuxiang Yu</i>	
Time Performance Estimation Method for Civil Aircraft ETOPS Time-Limited Systems.....	1279
<i>Ximei Dai, Zhouwei Fan, Meng Zhao</i>	
Airworthiness Certification of Smoke Detectors for Transportation Aircraft.....	1284
<i>Wang Bin, Zhao Yun</i>	

**Author Index**