WAAE 2026 Track 1 Description

Basic Information:

专栏题目 Title	中文：先进飞行器推进与机载能源系统 英文：Advanced Aircraft Propulsion and Energy Systems

专栏介绍和征稿主题
Introduction and topics

随着全球航空装备向电气化、低碳化、长航时与高可靠服役方向快速演进，全电飞机、分布式电推进、氢混动航空动力成为下一代航空器核心发展路线。近年来，依托宽禁带电力电子、固态储能、智能传感、数字孪生与人工智能技术飞速迭代，航空推进与机载能源系统研究逐步由传统机械驱动、经验设计，迈向多尺度建模、多源能量协同优化与全生命周期智能化管控的新阶段。围绕机载系统拓扑架构、功率变换、能量管理、故障诊断与适航验证开展系统性攻关，对航空装备节能减排、延寿优化与型号适航取证具备关键工程价值。

本专栏旨在汇集先进航空推进与机载能源领域前沿理论成果和工程落地案例，助推相关基础理论、算法方案与型号应用的学术互通，热忱欢迎海内外相关领域科研工作者踊跃投稿。

主要征稿主题：

多电/全电飞机电力系统、电推进系统、电力拓扑技术
涡轮-氢燃料电池混动推进系统建模与智能能量管理
机载大功率变流器设计、电热耦合分析与可靠性提升
机载新型储能器件建模、老化机理与剩余寿命预测
分布式电推进系统集成、仿真分析与硬件在环试验
航空电力系统、电磁兼容与机载适航认证关键技术
新型轻量化航空电力装备与先进电力电子新材料

Driven by the rapid global shift of aviation equipment toward electrification, low-carbon development, long-endurance flight and high-reliability service, all-electric aircraft, distributed electric propulsion and hydrogen hybrid propulsion have become core technical routes for next-generation aerial vehicles. Benefiting from the rapid advancement of wide-bandgap power electronics, solid-state energy storage, intelligent sensing, digital twin and artificial intelligence, research on aircraft propulsion and onboard energy systems has evolved from conventional mechanical configuration and empirical design into a new era featuring multi-scale modeling, coordinated multi-energy optimization and full-lifecycle intelligent management. Systematic research covering system topology, power conversion, energy management, fault diagnosis and airworthiness verification is of critical engineering significance for energy conservation, service-life extension and type certification of aviation platforms.

This special issue gathers cutting-edge theoretical findings and practical engineering cases in advanced aircraft propulsion and onboard energy systems to promote academic exchanges on fundamental theories, algorithm design and industrial applications. Prospective contributions from global researchers and engineers are highly welcome.

Topics for Submission:

Power systems, electric propulsion and topological technologies of more/all-electric aircraft
Modeling and intelligent energy management for turbo-hydrogen fuel cell hybrid propulsion systems
Design, electrothermal coupling analysis and reliability enhancement of high-power airborne converters
Modeling, aging mechanism and remaining useful life prediction of advanced onboard energy storage devices
System integration, numerical simulation and hardware-in-the-loop testing for distributed electric propulsion
Core technologies of electromagnetic compatibility and airworthiness qualification for airborne electrical systems
Lightweight aviation electrical equipment and innovative power electronic materials for aerospace applications

Track Chair(s):

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Organizer's Brief Biography

中文：吴宇，西北工业大学教授。2021 年获批国家级青年人才计划，2022 年获批上海市青年科技英才“扬帆计划”，2024 年度苏州市青年科学家。2009-2013 年本科毕业于西北工业大学自动化学院电气工程及其自动化专业、2013-2016 年硕士毕业于重庆大学电气工程学院电气工程专业、2016-2019 年博士毕业于法国勃艮第弗朗什孔泰大学 CNRS 法国国家科研中心 Femto-ST 研究所电气工程专业。主要研究方向为飞机电子电气系统、新能源储能与电力电子控制技术，目前发表高水平论文 10 余篇，英文专著 1 部，授权国家发明专利 10 余项。近年来主持国家海外高层次人才项目、江苏省姑苏创新创业领军人才、上海市青年科技英才-扬帆计划、国家自然基金委、航天一院/五院等多项科研项目，担任国家自然基金委函评专家、国家教育部人才计划评议专家、国家工信部人才计划评议专家，以及 IEEE Transactions on Industrial Electronics、Journal of Power Sources、Energy Conversion and Management 等 20 余本高水平期刊审稿人、《CJEE》与《电力工程技术》青年编委。

英文：Yu Wu, Professor at Northwestern Polytechnical University. He was selected for the National Young Talents Program in 2021, the Shanghai Sailing Program for Young Scientific Talents in 2022, and honored as Suzhou Young Scientist of 2024. He received his B.S. degree in Electrical Engineering and Automation from the School of Automation, Northwestern Polytechnical University (2009 – 2013), M.S. degree in Electrical Engineering from the School of Electrical Engineering, Chongqing University (2013 – 2016), and Ph.D. degree in Electrical Engineering from Femto-ST Institute, CNRS, University of Bourgogne Franche-Comté, France (2016 – 2019).

His research interests cover aircraft electrical and electronic systems, new-energy energy storage, and power electronic control technologies. To date, he has published more than 10 high-level journal papers, authored one English monograph, and obtained over 10 authorized Chinese invention patents.

He presides over multiple research projects including the National High-End Overseas Talents Project, Gusu Innovation & Entrepreneurship Leading Talent Program of Jiangsu Province, Shanghai Sailing Program, projects funded by the National Natural Science Foundation of China (NSFC), and research tasks from the First and Fifth Research Institutes of China Aerospace Science and Technology Corporation.

He works as a peer reviewer for NSFC projects, appraisal expert for talent programs sponsored by the Ministry of Education and MIIT of China. Meanwhile, he serves as an ad-hoc reviewer for over 20 prestigious journals such as IEEE Transactions on Industrial Electronics, Journal of Power Sources, Energy Conversion and Management, and Youth Editorial Board Member of Chinese Journal of Electrical Engineering (CJEE) and Electric Power Engineering Technology.

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Organizer's Brief Biography

中文：刘硕，河北大学建筑工程学院，教授/硕导。主要从事近场动力学理论及其应用、织物复合材料力学性能分析评价方法、晶体塑性力学等领域研究。主持中国科学技术协会青年人才托举工程项目、国家自然科学基金青年项目、河北省教育厅青年拔尖人才项目。以第一作者/唯一通讯作者在 Comput Methods Appl Mech Engrg、Int J Mech Sci、Compos Part A 等权威期刊发表 SCI 论文二十余篇，登记软件著作权 15 项，出版学术专著一部，担任科技导报青年编委、力学快报(英文版)青年编委。

英文： Shuo Liu, Professor / Master's Supervisor, College of Civil Engineering and Architecture, Hebei University. His research primarily focuses on peridynamic theory and its applications, analysis and evaluation methods for mechanical properties of fabric composite materials, crystal plasticity mechanics. He has presided over projects including the National Natural Science Foundation of China Youth Fund, the Young Elite Scientists Sponsorship Program by CAST, the funded by Science Research Project of Hebei Education Department. He has published more than twenty SCI-indexed papers in leading journals such as Computer Methods in Applied Mechanics and Engineering, International Journal of Mechanical Sciences, Composites Part A: Applied Science and Manufacturing. He has registered 15 software copyrights and published one academic monograph.He serves as a young editor for Science & Technology Review and a young editor for Theoretical and Applied Mechanics Letters (in English).