

Special Session I

Special Session Basic Information:

专栏题目 Session Title	中文：复杂网络韧性评估及优化 英文：Resilience Assessment and Optimization of Complex Networks
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专栏介绍和征稿主题 Introduction and topics

中文：

随着交通、能源及通信等系统复杂性的日益增加，其在随机故障或蓄意攻击下的韧性已成为关键研究方向。本专题旨在汇集该领域的最新研究成果，探讨复杂网络韧性的量化评估模型、动态演化规律、恢复策略优化以及相关应用。

征稿主题包括但不限于：

- 1) 复杂网络韧性量化评估方法
- 2) 级联失效下的基础设施网络韧性建模
- 3) 针对蓄意攻击的预防性保护策略优化
- 4) 关键信息物理系统的可靠性与韧性管理
- 5) 灾后系统功能的动态恢复路径规划与调度
- 6) 结合机器学习与数字孪生的网络韧性预测

英文：

With the increasing complexity of systems such as transportation, energy, and communication, resilience against random failures or deliberate attacks has become a critical research direction. This special session aims to gather the latest research findings in this field, exploring quantitative assessment models, dynamic evolution laws, restoration strategy optimization, and related applications. Topics of interest include, but are not limited to:

- 1) Quantitative assessment methods for complex network resilience
- 2) Resilience modeling of infrastructure networks under cascading failures
- 3) Optimization of preventive protection strategies against deliberate attacks
- 4) Reliability and resilience management of critical Cyber-Physical Systems
- 5) Dynamic recovery path planning and scheduling of post-disaster system functions
- 6) Resilience prediction of networks combining machine learning and digital twins

Special Session Chair(s):

	姓名 Name	彭锐/Rui Peng
	称谓 Prefix	教授/Prof.
	部门 Department	经济与管理学院/College of Economics and Management
	单位 Organization	北京工业大学/Beijing University of Technology
	城市/地区 City/Region	北京

Organizer's Brief Biography

中文：彭锐，男，汉族，1988年01月出生，中共党员，博士研究生，教授，博士生导师。现任北京工业大学经济与管理学院教师。主要从事能源系统可靠性建模与优化、能源风险与能源政策等交叉学科研究，发表160多篇SCI论文，其中100多篇为JCR一区，所发表期刊多为可靠性，工业工程，运筹，风险领域的国际知名期刊，如Reliability Engineering & System Safety, IEEE Transactions on Reliability, IISE Transactions, European Journal of Operational Research, Risk Analysis等。以第一作者发表三本中文专著，和两本Springer出版社出版的英文专著。2018-2025年连续八年入选Elsevier中国高被引学者。2019-2024年连续六年入选全球前2%顶尖科学家，2022-2024连续三年入选Scholar GPS全球前0.05%顶尖学者。国际期刊ICCK Transactions on Systems Safety and Reliability主编，SCI一区期刊Reliability Engineering & System Safety编委。Nature旗下SSCI一区期刊Humanities and Social Science Communications编委。SCI期刊Quality & Reliability Engineering International编委。主持或参与约十项国家自然科学基金项目或国家重点研发计划项目。

英文：Rui Peng is a Professor and Doctoral Supervisor at College of Economics and Management, Beijing University of Technology. His research primarily focuses on reliability modeling and optimization of energy systems, energy risk, and energy policy. He has published over 160 SCI-indexed papers, with more than 100 in JCR Q1 journals, including Reliability Engineering & System Safety, IEEE Transactions on Reliability, IISE Transactions, European Journal of Operational Research, and Risk Analysis. He has authored three Chinese monographs and two English monographs published by Springer. Prof. Peng has been recognized as an Elsevier Highly Cited Chinese Researcher for eight consecutive years (2018-2025) and ranked among the World's Top 2% Scientists for six consecutive years (2019-2024). He serves as the Editor-in-Chief of ICCK Transactions on Systems Safety and Reliability and an Editorial Board Member for Reliability Engineering & System Safety and Humanities and Social Science Communications. He has presided over or participated in approximately ten projects funded by the National Natural Science Foundation of China (NSFC) or the National Key Research and Development Program of China.

	姓名 Name	陈志伟/Zhiwei Chen
	称谓 Prefix	副教授/Assoc. Prof.
	部门 Department	人工智能学院/School of Artificial Intelligence 无人系统技术研究院/Institute of Unmanned System Technology
	单位 Organization	西北工业大学/Northwestern Polytechnical University
	城市/地区 City/Region	西安/Xi'an

Organizer's Brief Biography

中文：陈志伟，无人系统技术研究院/人工智能学院副教授，博士生导师，陕西省青年人才，全国重点实验室设计评估部部长，西工大优秀青年教师。主要从事无人集群/体系可靠性与韧性、集群智能博弈、低空智能网联体系安全韧性等方向研究。近5年，以第一/通讯作者发表论文30余篇，出版专著、教材2部，先后主持了国自然（面上、重点联合项目子课题、青年），国家级军口纵向，技术基础科研等10余项纵向课题，教改项目2项。担任陕西省航空学会智能无人系统专委会总干事、中国运筹、指控、航空学会等学术组织青年委员、《中国安全科学学报》《火力与指挥控制》《西交大学学报》等期刊青年编委，入选陕西省三秦英才计划青年人才，秦创原引用高层次创新创业人才。

英文：Zhiwei Chen, Young Talent of Shaanxi Province, Associate Professor, and Doctoral Supervisor at the Institute of Unmanned System Technology and the School of Artificial Intelligence, Northwestern Polytechnical University (NWPUP), where he also serves within the National Key Laboratory of Unmanned Aerial Vehicle Technology. His research focuses on the reliability and resilience of systems-of-systems, swarm intelligent game theory, and the resilience of low-altitude intelligent networks. Over the past five years, he has published more than 30 papers as first or corresponding author, authored two monographs and textbooks, and led 16 government-funded vertical projects, including grants from the National Natural Science Foundation of China (General Program, Key Program sub-projects, and Youth Science Fund). He serves as a committee member for the Reliability Committees of CICC, ORSC, and SESC. Additionally, he is a young editorial board member for journals such as the Journal of Safety Science and Technology, Fire Control & Command Control, and the Journal of Xi'an Jiaotong University.

	姓名 Name	吴蓓/Bei Wu
	称谓 Prefix	副教授/Assoc. Prof.
	部门 Department	管理学院/School of Management
	单位 Organization	西北工业大学/Northwestern Polytechnical University
	城市/地区 City/Region	西安/Xi'an

Organizer's Brief Biography

中文：吴蓓，西北工业大学管理学院副教授、博士生导师。主要研究方向为系统韧性、可靠性与维修性管理。在 IISE Transactions, IEEE TEM, NRL 及《系统工程理论与实践》等国内外权威期刊发表论文 44 篇（SCI 收录 38 篇）。主持国家自然科学基金面上、青年项目等。

英文：Bei Wu is an Associate Professor and Ph.D. Supervisor at School of Management, Northwestern Polytechnical University. Her research focuses on system resilience, reliability, and maintainability management. She has published 44 papers (38 indexed by SCI) in prestigious journals such as IISE Transactions, IEEE TEM, and Naval Research Logistics. She has presided government-funded projects, including grants from the National Natural Science Foundation of China (General Program and Youth Program).