2026 10th International Conference on RELIABILITY ENGINEERING

Hangzhou, China July 19-21, 2026

ICRE RELIABILITY ENGINEERING

Special Session 15

Secondary Risks, Cascading Effects, and Resilient Decision-Making in Complex Engineering and Infrastructure Systems

Goal

Complex engineering and infrastructure systems, such as transportation networks, high-speed rail systems, energy systems, and major engineering projects, are increasingly exposed to uncertainty, interdependence, and dynamic disturbances. In such systems, initial disruptions rarely remain isolated. Instead, they often trigger secondary risks, cascading failures, and unintended consequences through network coupling, operational interactions, resource constraints, and managerial responses. These follow-on effects may significantly degrade system performance, delay recovery, and amplify economic and social losses. This special session focuses on the modeling, assessment, and optimization of secondary risks and cascading effects in complex engineering and infrastructure systems. It aims to bridge perspectives from reliability and resilience analysis, complex network theory, engineering project management, planning and control, and optimization under uncertainty. Particular attention will be paid to how robustness, vulnerability, and resilience can be jointly analyzed when disturbances propagate across interconnected technical and managerial structures.

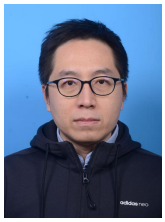
The session particularly welcomes recent advances in secondary risk scenario generation, including data-driven, simulation-based, and generative approaches for constructing plausible, diverse, and decision-relevant scenarios. It also encourages contributions on optimization of secondary risk response strategies, including preventive actions, adaptive interventions, and multi-stage decision models under uncertainty. By integrating methodological innovation with practical applications, this session seeks to advance a more comprehensive understanding of how secondary risks and cascading effects can be identified, generated, evaluated, and managed across engineering and infrastructure contexts. It aims to provide both theoretical insights and actionable guidance for improving the safety, resilience, and decision quality of complex real-world systems.

Topics

Topics of interest include, but are not limited to:

- Secondary risks and cascading effects in complex engineering systems
- Cascading failure modeling in transportation, high-speed rail, and infrastructure networks
- Project portfolio management and optimization under propagated uncertainties
- Secondary risk scenario generation methods
- Data-driven, simulation-based, and generative approaches for secondary risk scenario construction
- Optimization of secondary risk response plans under uncertainty
- Risk-informed optimization for secondary risk mitigation and resilience enhancement...

Chairs



Fei Zuo, Shenyang Aerospace University, China

Libiao Bai, Chang' an University, China

Yucheng Hao, Beijing Jiaotong University, China

Publication

We provide a good opportunity by presenting your updated research knowledge and also by publishing it in the conference proceedings. submitted paper will be peer reviewed by conference committees, and accepted papers will be included into conference proceedings which will be indexed by SCOPUS and Ei compendex.

Submission

1. Full paper (presentation and publication)
- The paper must be written in English.
- All submissions will undergo a peer-review process by the conference committee.
- The paper should be at least FIVE pages including all figures, tables, and references.
- The paper should be submitted as a PDF document in .pdf format.
- submitted paper must be unpublished.
- Accepted papers will be invited for oral presentation or poster presentation and will be included in the conference proceedings.

2. Abstract (presentation only)
- Abstracts will be considered for presentation (oral/poster) only without publication.
- The abstract must be written in English.
- Abstracts should be no more than 300 words and clearly outline the title, purpose, methods, and outcomes of the research or practice being described.
- All submissions will undergo a peer-review process by the conference committee.

* Welcome to submit the paper or abstract by Electronic submission system: https://www.zmeeting.org/submission/icre2026
More details about submission, please visit at: https://www.icre.org/sub.html

Conference Program

July 19, 2026 I CONFERENCE + SHORT COURSE
July 20, 2026 I TECHNICAL EXCELLENCE & TRIBUTE
July 21, 2026 I INNOVATION & FUTURE OUTLOOK
July 17-22, 2026 I Young Scholar Symposium + 2026 Beihang International Summer School

Conference Venue

Conference Venue:
Hangzhou International Innovation Institute of Beihang University
Address:
No. 166, Shuanghongqiao Street, Pingyao Town, Yuhang District, Hangzhou City

Hangzhou, China

Hangzhou, a renowned Jiangnan city blending millennia of heritage and poetic scenery, boasts three world cultural heritage sites. west Lake ripples with romance; Liangzhu Ruins hold ancient wisdom; the Grand canal carries folk vibes. Timeless song Dynasty elegance meets trendy fun, and delicious local cuisine delights the taste buds. A perfect mix of classic and modern, it awaits visitors from all over the world.

Important Dates

Submission Deadline: May 15, 2026
Notification Deadline: June 10, 2026
Camera-ready Date: June 25, 2026

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Technical Suppot IEEE 75th anniversary Reliability Society

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哈爾濱工業大學 HARBIN INSTITUTE OF TECHNOLOGY

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2026 10th International Conference on RELIABILITY ENGINEERING

Hangzhou, China July 19-21, 2026

ICRE RELIABILITY ENGINEERING

特别专题 15

复杂工程与基础设施系统中的次生风险、连锁效应及韧性决策

专题目标

交通网络、高铁系统、能源系统及重大工程项目等复杂工程与基础设施系统，正日益面临不确定性、系统耦合与动态扰动的挑战。在这类系统中，初始事件很少孤立发生，往往会通过网络关联、业务交互、资源约束与管理决策等路径引发生次生风险、连锁失效及非预期后果。此类衍生效应会显著降低系统性能、延缓恢复进程，并放大经济与社会损失。

本特别专题聚焦复杂工程与基础设施系统中的次生风险与连锁效应建模、评估及优化，旨在融合可靠性与韧性分析、复杂网络理论、工程项目管理、规划与控制、不确定性优化等多学科视角，重点研究扰动在互联技术与管理结构中传播时，系统鲁棒性、脆弱性与韧性的协同分析方法。

专题尤其欢迎次生风险场景生成领域的最新研究成果，包括基于数据驱动、仿真模拟与生成式方法构建合理、多样且服务于决策的风险场景。同时也欢迎次生风险应对策略优化相关研究，包括预防性措施、自适应干预以及不确定性下的多阶段决策模型等。

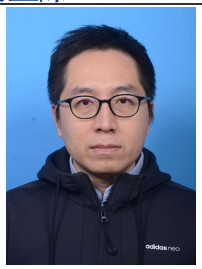
本专题通过方法创新与工程应用相结合，推动在工程与基础设施领域中对次生风险与连锁效应的识别、生成、评估与管理形成更全面的认知，为提升现实复杂系统的安全性、韧性与决策质量提供理论支撑与可落地的实践指导。

专题主题

征稿主题包括但不限于：

- 复杂工程系统中的次生风险与连锁效应
- 交通、高铁及基础设施网络的连锁失效建模
- 传播不确定性下的项目组合管理与优化
- 次生风险场景生成方法
- 基于数据驱动、仿真与生成式方法的次生风险场景构建
- 不确定性条件下次生风险应对方案优化
- 面向次生风险减缓与韧性提升的风险导向优化
- ...

专题主席



佐飞，沈阳航天航空大学，中国

白礼彪，长安大学，中国

郝羽成，北京交通大学，中国

会议出版

录用文章将被收录至ICRE 2026会议论文集，由IEEE出版，并被EI Compendex 和 Scopus 检索。

投稿方式

1). 上传文章到电子投稿系统：https://www.zmeeting.org/submission/icre2026
2). 或发送文章至会议邮箱：icre_conf@outlook.com
提示：
1. 全文投稿（含报告与出版）
- 稿件须以英文撰写。
- 所有投稿均由会议委员会进行同行评审。
- 稿件篇幅不少于 5 页，包含所有图表及参考文献。
- 稿件须以 PDF 格式提交。
- 投稿稿件须为未发表的原创成果。
- 录用稿件将受邀进行口头报告或海报展示，并收录至会议论文集。
2. 摘要投稿（仅作报告）
- 摘要仅用于申请报告资格（口头报告 / 海报展示），不纳入出版范围。
- 摘要须以英文撰写。
- 摘要字数不超过 300 词，须清晰阐明所涉研究或实践的标题、研究目的、研究方法及研究成果。
- 所有投稿均由会议委员会进行同行评审。
• 详细信息请见----https://icre.org/sub.html

会议日程

2026年7月19日- 签到注册
2026年7月20日- 开幕式+主旨报告+作者报告
2026年7月21日- 开幕式+主旨报告+作者报告
2026年7月12-25日- 青年学者论坛 + 2026北航国际暑期学校

会议地址

杭州市北京航空航天大学国际创新研究院（北京航空航天大学国际创新学院）

地址：杭州市余杭区瓶窑镇双红桥街166号

中国杭州

杭州，一座融千年文脉与诗画风光的江南名城，三大世界文化遗产勾勒其独特魅力。西湖碧波漾诗意，良渚遗址藏远古智慧，大运河流淌南北烟火。宋韵风雅浸润红墙古社，新潮玩法解锁别样体验，鲜醇杭帮菜抚慰味蕾。古典与现代交织，漫步街巷皆是惊喜，正静待八方游客前来探寻。

重要日期

投稿截止日期：2026年5月15日
审稿通知日期：2026年6月10日
注册截止日期：2026年6月25日

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