

2026 10th International Conference on RELIABILITY ENGINEERING

Hangzhou, China July 19-21, 2026

<http://icre.org/>

Special Session 11

Resilience of Oil and Natural Gas Pipeline Network Systems to Multi-Source Hazards and Cascading Failures

Goal >>>>

Oil and natural gas pipeline network systems are critical national and transnational energy transportation infrastructures, serving as the core lifeline of energy security, supporting industrial production, domestic energy supply and stable socio-economic operation, with irreplaceable importance in the global energy supply chain. Long-term operation in complex and harsh environments exposes these systems to multi-source threats, including geological disasters, extreme weather, corrosion and aging, third-party damage, and cyber security attacks brought by the digital transformation of pipeline systems. These threats may not only cause sudden accidents such as pipeline leakage and explosion, but also trigger cascading failures of the interconnected network, resulting in severe casualties, environmental pollution and regional energy supply disruptions. In this context, traditional reliability analysis and risk assessment methods can hardly fully cover the dynamic evolution of multi-source coupled hazards, and the full-life cycle resilience management of pipeline systems faces new challenges, calling for proper addressing of the convergence of safety and security concerns to ensure the disaster- and attack-resilient operation of oil and natural gas pipeline network systems.

The aim of this special session is to provide a forum for researchers, engineers and industry practitioners to discuss how to develop condition monitoring, risk early warning, resilience assessment, protection, mitigation and emergency recovery strategies that can be implemented on oil and natural gas pipeline network systems to maintain safe and stable operation in the presence of multi-source hazards, cascading failures and malicious attacks, and comprehensively enhance the resilience of oil and natural gas pipeline network systems to such threats.

Topics >>>>

- Integrated Risk Assessment & Resilience Metrics
- Climate Change Adaptation & Geohazard Response
- Cyber-Physical Security and Malicious Threats
- Aging Infrastructure and Failure Prevention
- Failure Dynamics and Network Reconfiguration
- Advanced Monitoring and Intelligent Resilience Enhancement
-

Chairs >>>>



Enrico Zio,
Politecnico di Milano, Italy
& Mines Paris PSL Research University, France



Huai Su,
China University of Petroleum, Beijing, China



Zhaoming Yang,
China University of Petroleum, Beijing, 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 | CONFERENCE
July 20, 2026 | CONFERENCE + COURSE + TRACKS
July 21, 2026 | TECHNICAL EXCELLENCE & TRIBUTE
July 17-22, 2026 | Young Scholar Symposium + 2026 Beihang International Summer School

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

Sponsors  Co-sponsors



Technical Support



Contact

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Email: icre_conf@outlook.com
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特别专题 11

油气管道网络系统对多源灾害及连锁故障的韧性

专题目标 >>>>

油气管道网络系统是重要的国家及跨国能源输送基础设施，是能源安全的核心生命线，支撑着工业生产、民生能源供给与社会经济稳定运行，在全球能源供应链中具有不可替代的重要地位。这类系统长期在复杂恶劣环境中运行，面临多源威胁，包括地质灾害、极端天气、腐蚀老化、第三方破坏，以及管道系统数字化转型带来的网络安全攻击。这些威胁不仅可能引发管道泄漏、爆炸等突发事件，还会触发互联网络的连锁失效，造成重大人员伤亡、环境污染与区域能源供应中断。

在此背景下，传统可靠性分析与风险评估方法难以全面覆盖多源耦合灾害的动态演化过程，管道系统全生命周期韧性管理面临新挑战，亟需统筹解决安全与安保融合问题，保障油气管道网络系统具备抗灾、抗攻击的韧性运行能力。

本专题旨在为科研人员、工程师与行业从业者提供交流平台，探讨如何在油气管道网络系统上实施的状态监测、风险预警、韧性评估、防护、减缓及应急恢复策略，使其在多源灾害、连锁失效与恶意攻击下保持安全稳定运行，全面提升油气管道网络系统应对此类威胁的韧性水平。

专题主题 >>>>

- 综合风险评估与韧性指标
- 气候变化适应与地质灾害应对
- 信息物理安全与恶意威胁防范
- 基础设施老化与失效防控
- 失效动力学与网络重构
- 先进监测与智能韧性提升
-

专题主席



Enrico Zio, 米兰理工大学, 意大利 & 巴黎矿业学院, PSL 研究型大学, 法国



苏怀, 中国石油大学(北京), 中国 杨兆铭, 中国石油大学(北京), 中国



会议出版 >>>>

会议收录的文章将出版在会议论文集集中出版，并提交EI Compendex, Scopus等其他检索机构审核检索。

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、研究方法及其研究成果。
- 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

Contact

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