

# 2026 10<sup>th</sup> International Conference on RELIABILITY ENGINEERING

Hangzhou, China July 19-21, 2026

<http://icre.org/>

## Special Session 12

### Reliability and Resilience of Renewable Energy Systems under Uncertainty

#### Goal >>>>

The rapid transition toward low-carbon energy systems is driving the large-scale integration of diverse renewable and emerging energy carriers, including wind, solar, hydrogen, and energy storage. These renewable energy systems are inherently characterized by multi-source variability, operational uncertainty, and complex interactions across different energy domains. Meanwhile, renewable energy systems are increasingly interconnected with other critical infrastructures, such as transportation, aerospace, and industrial systems. This cross-domain integration, together with the growing penetration of power electronic devices and digital technologies, significantly increases system complexity and introduces new challenges in reliability, safety, and coordinated operation. In addition, renewable energy systems are exposed to a wide range of uncertainties and disturbances, including stochastic resource fluctuations, component degradation, extreme weather events, and cyber-physical threats. Ensuring reliable and resilient operation under such conditions has therefore become a critical challenge. Addressing these challenges requires advanced methodologies in reliability analysis, uncertainty quantification, resilience assessment, and Prognostics and Health Management (PHM). In particular, integrating component-level health awareness with system-level resilience enhancement is essential to enable adaptive, condition-aware, and risk-informed operation of renewable energy systems. This Special Session aims to provide a platform for researchers and practitioners to present recent advances in reliability, resilience, and PHM-oriented methodologies for renewable energy systems under uncertainty, covering both theoretical developments and real-world applications.

#### Topics >>>>

- Reliability modeling and assessment of renewable energy systems
- Resilience evaluation under uncertainty and extreme events
- Risk assessment and uncertainty quantification
- PHM, including condition monitoring, fault diagnosis, and RUL prediction
- Reliability of renewable generation, hydrogen, storage, and power electronic systems
- Cyber-physical reliability and security
- Data-driven and physics-informed approaches
- Lifecycle management and maintenance optimization
- Cross-domain applications in transportation, maritime, and aerospace systems.....

#### Chairs >>>>



Daogui Tang,  
Wuhan University of Technology, China



Jinduo Xing, Beijing University of Civil  
Engineering and Architecture, China



Hongping Wang, Beijing University of Posts  
and Telecommunications, 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.zmmeeting.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 12-25, 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 (Final Call): June 10, 2026  
Notification Deadline: June 25, 2026  
Camera-ready Date: June 30, 2026

Sponsors  Co-sponsors



杭州市北京航空航天大学国际创新研究院  
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HARBIN INSTITUTE OF TECHNOLOGY

Technical Support



Contact

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web: <http://www.icre.org>

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## 特别专题 12

### 不确定性条件下可再生能源系统的可靠性与韧性

#### 专题目标

低碳能源系统的快速转型，正推动风能、太阳能、氢能及储能等多元可再生与新能源载体大规模融入。这类可再生能源系统天然具有多源波动性、运行不确定性以及跨能源域复杂交互的特征。

与此同时，可再生能源系统与交通、航空航天、工业系统等其他关键基础设施的互联程度日益加深。这种跨越融合，加之电力电子设备与数字技术渗透率不断提升，显著增加了系统复杂度，并在可靠性、安全性与协同运行方面带来全新挑战。

此外，可再生能源系统面临各类不确定性与扰动，包括资源随机波动、部件性能退化、极端天气事件以及信息物理安全威胁。因此，在此类环境下保障系统可靠且具备韧性的运行已成为关键难题。

应对这些挑战，需要在可靠性分析、不确定性量化、韧性评估以及预测与健康管理（PHM）等领域采用先进方法。尤其重要的是，将部件级健康感知与系统级韧性提升相结合，以实现可再生能源系统的自适应、状态感知与风险知情运行。

本专题旨在为科研人员与行业从业者提供平台，展示不确定性环境下向可再生能源系统的可靠性、韧性及 PHM 相关方法的最新进展，涵盖理论创新与工程应用。

#### 专题主题

- 可再生能源系统可靠性建模与评估
- 不确定性与极端事件下的韧性评估
- 风险评估与不确定性量化
- 预测与健康管理（PHM），包括状态监测、故障诊断及剩余使用寿命预测
- 可再生发电、氢能、储能及电力电子系统可靠性
- 信息物理系统可靠性与安全
- 数据驱动与物理信息融合方法
- 全生命周期管理与维护优化
- 交通、船舶及航空航天系统中的跨域应用.....

#### 专题主席



唐道贵，武汉理工大学，中国



邢金朵，北京建筑大学，中国



王洪苹，北京邮电大学，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](mailto: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 & 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（最后一轮征稿）：2026年6月10日  
审稿通知日期：2026年6月25日  
注册截止日期：2026年6月30日