



## **The 14th International Conference on Quality, Reliability, Risk, Maintenance, and Safety Engineering (QR2MSE2024)**

**July 24-27, 2024, Harbin, Heilongjiang, China**

### **Special Session on: Efficient uncertainty modeling and reliability assessment methods for engineering structures**

Uncertainty modeling and reliability assessment are of great significance for engineering structural design and maintenance. In recent years, with the increasing complexity of practical structures and systems, physics-based computational models inevitably involve various uncertainties and become more and more time-consuming. To obtain the target performance of structures and systems, there is a great demand for developing efficient approaches, which could construct accurate uncertainty models and assess the reliability with high credibility in different situations.

This special session is dedicated to recent advances in the fields of uncertainty modeling and reliability assessment. Topics of interest include but are not limited to the following:

- Physics-based and data-driven uncertainty modeling
- Model validation and verification under uncertainty
- Model calibration under uncertainty
- Reliability analysis for high-dimensional problems
- Structural reliability assessment under multi-failure modes
- System reliability analysis methods
- Rare-event failure probability estimation
- Machine learning techniques (e.g., deep learning) for reliability assessment

**Chair: Baisong Pan, Zhejiang University of Technology, China (E-mail: panbsz@zjut.edu.cn)**



Baisong Pan received the Ph.D. degree in mechanical engineering from Zhejiang University of Technology, Hangzhou, China, in 2007. From 2009 to 2010, he was a visiting scholar at Missouri University of Science and Technology. He is currently a Professor at the College of Mechanical Engineering, Zhejiang University of Technology. His main research interests include intelligent manufacturing, reliability and quality engineering, etc. He has published more than 60 papers in journals and conferences. He is the dean of Taizhou Research Institute, an expert of the Zhejiang Intelligent Manufacturing Expert Committee, etc.

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Yongyong Xiang received the Ph.D. degree in mechanical engineering from Zhejiang University of Technology, Hangzhou, China, in 2021. From 2017 to 2019, he was a joint Ph.D. student (sponsored by CSC) in the Design for Reliability and Robustness Lab of MST and IUPUI. He is currently an Assistant Professor at the College of Mechanical Engineering, Zhejiang University of Technology. His main research interests include uncertainty quantification and analysis, reliability design, and model calibration. He has published over 20 papers in journals, such as CMAME, AMM, and SMO.