

## Title: Recent Research Progresses on Optimal System Reliability Design

Optimal system reliability design is an important research field in reliability engineering. Since the 1950s, extensive studies have been conducted on various aspects of this issue. This field remains highly active today due to the need to develop new generations of complex engineering systems, such as 5G telecom networks and high-performance computing clusters, which are expected to be highly reliable to meet the stringent, dynamic, and often real-time quality demands of system operators and end-users. Over the past five years, numerous new researches on optimal system reliability design have been published, addressing the theoretical challenges posed by the new engineering systems. This presentation will systematically review these works with the focus on theoretical advancements, including the models and methods for redundancy allocation problem, redundancy allocation under mixed uncertainty, joint reliability-redundancy allocation problem and joint redundancy allocation and maintenance optimization. Through analysis and discussions, we will outline future research directions.



### Short Bio:

Dr. Yan-Fu Li is currently the Director of the Institute for Quality & Reliability and a full professor at the Department of Industrial Engineering in Tsinghua University, China. From 2011 to 2016, he was a faculty member at CentraleSupélec in Université Paris-Saclay, France. His research areas mainly include system reliability and PHM with the applications onto various complex engineering systems. Dr. Li has published over 100 peer-reviewed high quality international journal papers. He is elected as the Highly Cited Chinese Researcher 2019-2022 by Elsevier and Top 2% Scientists Worldwide 2022 by Stanford University. He is the Principal Investigator (PI) of several government projects including the key project funded by National Natural Science Foundation of China and National Key R&D Program of China. He is also experienced in industrial research, the long-term partners include the top enterprises such as Huawei, China Southern Power Grid, etc. He has won multiple national society and international society search/paper awards. He is currently an Associate Editor of Reliability Engineering & System Safety, IEEE Transactions on Reliability, a senior member of IEEE and IISE. He is a vice president of the System Reliability Chapter of System Engineering Society of China.