Special Issue

Structural Strength, Life Reliability and Design Optimization of Aircraft Engines

Message from the Guest Editors

With the increasing complexity of modern aero-engines and their extreme service environments, conventional deterministic design approaches are no longer sufficient to meet the stringent demands of performance, durability, and risk control. This Special Issue aims to provide a comprehensive forum for the dissemination of recent advances in structural strength analysis, life reliability assessment, and optimization methodologies tailored to aircraft engine systems. We particularly welcome contributions that address the modeling and prediction of structural failure mechanisms under thermo-mechanical loading, incorporating uncertainty quantification and probabilistic methods into reliability-based design. Studies leveraging surrogate modeling, correlation analysis, and advanced optimization algorithms—such as topology optimization and multi-disciplinary design optimization (MDO)—are of strong interest. The integration of computational efficiency with high-fidelity physics-based models and the development of robust, uncertainty-aware design frameworks will be central themes of this issue.

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Deadline for manuscript submissions

31 December 2025

Aerospace

an Open Access Journal by MDPI

Impact Factor 2.2
CiteScore 4.0

mdpi.com/si/240578

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Aerospace adheres to rigorous peer-review as well as editorial processes and publishes high quality manuscripts that address both the fundamentals and applications of aeronautics and astronautics. Our goal is to enable rapid dissemination of high impact works to the scientific community.

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