

A Reliability Based Multidisciplinary Design Optimization

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A Reliability Based Multidisciplinary Design

A novel methodology of reliability-based multidisciplinary design optimization under hybrid interval and fuzzy uncertainties - ScienceDirect.

A novel methodology of reliability-based multidisciplinary

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Reliability-Based Optimization (RBO) for engineering design deals mainly with two design attributes, the cost and the reliability of the design. The reliability considerations are typically driven by the probabilities of failure due to component failure events or a system failure event.

Reliability-Based Optimization for Multidisciplinary ...

In this paper, a subset simulation-based reliability analysis (SSRA) approach is combined with multidisciplinary design optimization (MDO) to improve the computational efficiency in reliability-based MDO (RBMDO) problems.

Reliability-Based Multidisciplinary Design Optimization ...

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Recently, solving the complex design optimization problems with design uncertainties has become an important but very challenging task in the communities of reliability-based design optimization (RBDO) and multidisciplinary design optimization (MDO).

Reliability-Based Multidisciplinary Design Optimization ...

Considering the coupling among aerodynamic, heat transfer and strength, a reliability based multidisciplinary design optimization method for cooling turbine blade is introduced. Multidisciplinary analysis of cooling turbine blade is carried out by sequential conjugated heat transfer analysis and strength analysis with temperature and pressure interpolation.

Reliability based multidisciplinary design optimization of

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The influence of uncertainty factors must be considered to ensure the reliability of the optimized design results, and reliability-based multidisciplinary design optimization (RBMDO) needs to be performed [4, 5]. Uncertainties can be categorized as aleatory and epistemic [6, 7]. Aleatory or objective uncertainties arise from the inherent randomness of a system.

Evidence-Based Multidisciplinary Design Optimization with ...

Reliability-Based Multidisciplinary Design Optimization Using Subset Simulation Analysis and Its Application in the Hydraulic Transmission Mechanism Design The Monte Carlo simulation (MCS) can provide high reliability evaluation accuracy.

Reliability-Based Yan-Feng Li Multidisciplinary Design ...

An efficient strategy for reliability-based multidisciplinary design optimization of twin-web disk with non-probabilistic model 1. Introduction. As the turbine inlet temperature is continuously increasing, twin-web turbine disk (TWD) with a hollow... 2. Non-probabilistic uncertain methods. Evidence ...

An efficient strategy for reliability-based ...

Abstract. Reliability-Based Optimization (RBO) for engineering design deals mainly with two design attributes, namely the

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merit, for example cost, and the reliability of the design. In this work the class of design problems which are considered, are designs characterized by a minimum merit function and that satisfy certain reliability constraints. The reliability constraints are typically constraints on the probabilities of failure due to component failure events or a system failure event.

Reliability-Based Optimization for Multidisciplinary ...

Multi-disciplinary design optimization (MDO) is a field of engineering that uses optimization methods to solve design problems incorporating a number of disciplines. It is also known as multidisciplinary system design optimization (MSDO). MDO allows designers to incorporate all relevant disciplines simultaneously. The optimum of the simultaneous problem is superior to the design found by optimizing each discipline sequentially, since it can exploit the interactions between the disciplines. However

Multidisciplinary design optimization - Wikipedia

The reliability-based multidisciplinary design and optimization is of significance for increasing the quality and economic efficiency in many industrial designs. However, the intensive coupled ...

A sequential reliability assessment and optimization ...

A new reliability-based multidisciplinary design optimization (RBMDO) framework is proposed by combining the single-loop-based reliability analysis (SLBRA) method with multidisciplinary feasible ...

(PDF) An Efficient Method for Reliability-based ...

Complex mechanical system is usually composed of several subsystems, which are often coupled with each other. Reliability-based multidisciplinary design optimization (RBMDO) is an efficient method to design such complex system under uncertainties. However, the present RBMDO methods ignored the correlations between uncertainties.

Reliability-Based Multidisciplinary Design Optimization ...

The reliability-based multidisciplinary design and optimization is of significance for increasing the quality and economic efficiency

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in many industrial designs. However, the intensive coupled multidisciplinary analysis and reliability assessment make it impractical for real engineering problems due to the unacceptable computational cost. In this paper, we studied different active learning ...

A sequential reliability assessment and optimization ...

Compared with the conventional single web disk, the twin-web disk has been designed as the future trend of the high-pressure turbine disk by the US Integrated High Performance Turbine Engine Techno... Reliability-based multidisciplinary design and optimization for twin-web disk using adaptive Kriging surrogate model - Mengchuang Zhang, Wenxuan Gou, Qin Yao, 2016.

Reliability-based multidisciplinary design and ...

Summary This chapter contains sections titled: Introduction Numerical methods in RBDO Semi-analytic methods in RBDO Academic applications An industrial application: RBDO of an intake port An indust...

Reliability-based Design Optimization (RBDO ...

Then with multidisciplinary design optimization (MDO), optimal system designs can be automatically identified with desired system reliability and reduced cost. If successful, the results of this research will impact broad areas of engineering design and will be applicable to wide engineering applications, ranging from large defense and civil systems to small integrated circuit systems.

NSF Award Search: Award#1234855 - Reliability-Based ...

Our proposed Reliability-Based Multidisciplinary Design Analysis and Optimization (RB-MDAO) will apply to the overall cyber-physical system, not just to individual components or within particular disciplines.

Reliability-Based Multidisciplinary Design Analysis and ...

At the design level, mathematical formulations of reliability-based design model that can be solved efficiently are sought by means of the inverse reliability strategy. With the ability of facilitating distributed computations, the overall reliability -

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based multidisciplinary systems design is performed through a sequential single -loop procedure

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