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Design optimization under uncertainty and speed ...
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Structural design optimization considering uncertainties ...
568 Structural design optimization considering uncertainties on the experience of the engineer, or via an automated manner by using optimization methods that lead to optimum structural designs. Strictly speaking, optimal means that for the formulation considered, no better solution exists. Taking into account the

STRUCTURAL OPTIMIZATION UNDER UNCERTAINTIES CONSIDERING ...
optimization (NTRBO) approach to the reliable active controller design of structural vibration considering convex uncertainties." Structural Control & Health Monitoring, 25(12), c2269, (IF: 3.740) (CEE & RSO Tier 1, SCI Q1) # 27. Maheshwari M^, Yang YW, Upadrashta D^ and Chaturvedi T^ (2018). "A rotation

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Multidisciplinary Structural Optimization Considering ...
Uncertainties play a dominant role in the design and optimization of structures and infrastructures. In optimum design of structural systems due to variations of the material, manufacturing variations, variations of the external loads and modelling uncertainty, the parameters of a structure, a structural system and its environment are not given, fi

Structural optimization under uncertainties considering ...
Since robust optimization problems are usually formulated in the form of Bi-level program and the lower level optimization problem must be solved many times to find the worst-case scenario of uncertainty and the corresponding structural response, it can be expected that the computational effort involved in the robust optimization with geometry uncertainties will be much larger than that when ...

Structural Design Optimization Considering Uncertainties
Uncertainties play a dominant role in the design and optimization of structures and infrastructures. In optimum design of structural systems due to variations of the material, manufacturing variations, variations of the external loads and modelling uncertainty, the parameters of a structure, a structural system and its environment are not given, fixed coefficients, but random variables with a ...

Structural Design Optimization Considering Uncertainties
In engineering applications the uncertainties of the structural parameters are inherent and the scatter from their nominal ideal values is in most cases unavoidable. These uncertainties play a dominant role in structural performance and the reliability-based design optimization is a useful method to assess the uncertainty influence. Compared to the basic deterministic-based optimization ...

Reliability-Based Robust Design Optimization of Structures ...
Structural optimization is also widely used to identify an admissible design with optimal performance. However, it is important to remember that real mechanical problems exhibit uncertainties in practice that might entail challenges when searching for admissible and/or optimal design solutions.

Multidisciplinary Structural Optimization Considering ...
Multidisciplinary Design Optimization • The system model contains three main modules, each with it's own ... uncertainties not considered in the design process. Bill Nadir, 5/3/2004 Page 17 Benefits of Considering ... Multidisciplinary Structural Optimization Considering Uncertainty Author: Bill Nadir Subject:

Design optimization and uncertainty analysis of SMA ...
This paper investigates the structural design optimization to cover both the reliability and robustness under uncertainty in design variables. The main objective is to improve the efficiency of the optimization process. To address this problem, a hybrid reliability-based robust design optimization (RRDO) method is proposed. Prior to the design optimization, the Sobol sensitivity analysis is ...

Structural Design Optimization Considering Uncertainties ...
Uncertainties play a dominant role in the design and optimization of structures and infrastructures. In optimum design of structural systems due to variations of the material, manufacturing ...

On the consideration of uncertainty in design ...
design optimization considering parametric uncertainty for a single-degree-of-freedom linear piezoelectric EH. The simu-lation results from their study demonstrated that, for both harmonic and random excitations, the optimized EH with the consideration of the parametric uncertainties is more robust in

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studies [23,24] has inspired related design optimization efforts [25,26]. The current work builds upon those past efforts by presenting a comprehensive method for determining optimized design con?gurations of the VGC while considering structural sensitivity to variation in design uncertainties. Although this method is demonstrated by

Structural Optimization Design Considering Reliability ...
Design optimization of steel structures considering uncertainties. Author links open overlay panel M. Papadrakakis N.D. Lagaros V ... In a robust design structural sizing optimization problem an additional objective function is considered which is related to the influence of the random nature of some structural parameters on the ...

Robust structural topology optimization considering ...
considering simply the structural performance of the design in the optimization process for one set of requirements. Conventional structural performance metrics considered are stress, mass, deformation, or natural frequencies. Another important aspect to be considered in structural optimization is uncertainty. Robust design or reliability-based ...

Design optimization of steel structures considering ...
STRUCTURAL OPTIMIZATION UNDER UNCERTAINTIES CONSIDERING REDUCED-ORDER MODELING Silvana M. B. Afonso1, Renato de S. Motta2 1,2Departamento de Engenharia Civil 1,2Universidade Federal de Pernambuco, Rua Acadêmico Hélio Ramos, s/n -Cid.Universitária, Recife - Brasil. 21renatodesiqueira@hotmail.com; smb@ufpe.br In most engineering applications, the traditional optimization approach is to ...

Structural Design Optimization Considering Uncertainties
Typically, uncertainties play a dominant role during the design and optimization procedure of structures and products. This book presents the latest research findings in the scientific field of structural optimization considering uncertainties.