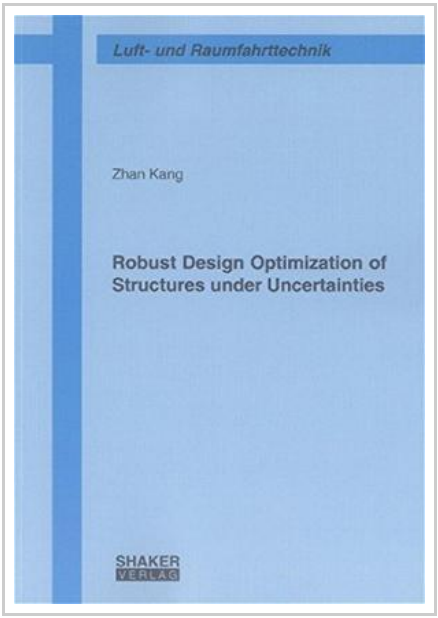

Robust Design Optimization of Structures under Uncertainties

By Zhan Kang

Shaker Verlag Jul 2005, 2005. Taschenbuch. Book Condition: Neu. 212x149x12 mm. Neuware - In this book, the formulation and the numerical method for the structural robust design are addressed. The theory and numerical techniques of structural optimization have seen a significant progress in the last two decades. Moreover, the rapidly increasing computational capabilities allows the structural optimal design to incorporate system uncertainty. The present study is intended to contribute to a better understanding of the structural optimization by putting emphasis on the design robustness in the presence of random noise under realistic conditions. Robust structural design offers reliable, quantifiable and efficient means to make products and processes insensitive to sources of variability. In this book, the robust parameter design is accomplished using structural optimization techniques. In the present study, the structural robust design problem is formulated as a multi-criteria optimization problem, in which not only the mean structural performance function but also its standard deviation is to be minimized. The second-order perturbation based stochastic finite element analysis is used for evaluating the mean value and the variance of the structural response in the robust design problem. The perturbation based approach is also extended to the stochastic analysis of path-dependent structures,...

Reviews

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