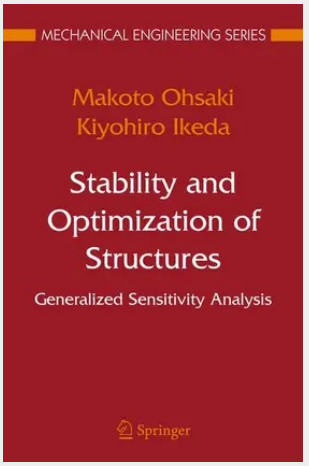
Ohsaki / Ikeda

Stability and Optimization of Structures

Generalized Sensitivity Analysis



is the first book to address issues of structural optimization against nonlinear buckling. Through the investigation of imperfection sensitivity, worst imperfection and random imperfection based on concrete theoretical framework, it is shown that optimization against buckling does not necessarily produce an imperfection-sensitive structure.

This book offers the reader greater insight into optimization-based and computer-assisted stability design of finite-dimensional structures. Using the unified approach to parameter sensitivity analysis, it connects studies of elastic stability, computational mechanics and applied mathematics. Optimization based on stability theory is presented and explained, with 140 figures to illustrate applications in the framework of finite element analysis.

This book serves as an illustrative introduction for professional structural and mechanical engineers, graduate students in engineering, as well as applied mathematicians in the field.

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160,49 €
149,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9780387681832
Medium: Buch
ISBN: 978-0-387-68183-2
Verlag: Springer
Erscheinungstermin: 10.07.2007
Sprache(n): Englisch
Auflage: Erscheinungsjahr 2007
Serie: Mechanical Engineering Series
Produktform: Gebunden
Gewicht: 554 g
Seiten: 269
Format (B x H): 160 x 241 mm