Record Nr. UNINA9910810147503321 Autore El Hami Abdelkhalak Titolo Uncertainty and optimization in structural mechanics / / Abdelkhalak El Hami and Radi Bouchaib London,: Wiley, 2013 Pubbl/distr/stampa **ISBN** 9781118711903 1118711904 9781118711835 1118711831 9781299475922 1299475922 9781118711804 1118711807 Edizione [1st ed.] Descrizione fisica 1 online resource (145 pages) Collana **FOCUS Series** Altri autori (Persone) BouchaibRadi Disciplina 624.17 Soggetti Structural analysis (Engineering) Structural design Structural optimization Uncertainty (Information theory) Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Description based upon print version of record. Note generali Title Page; Contents; Preface; CHAPTER 1. UNCERTAINTY; 1.1. Nota di contenuto Introduction; 1.2. The optimization problem; 1.3. Sources of uncertainty; 1.4. Dealing with uncertainty; 1.4.1. Reliability optimization; 1.4.2. Robust optimization; 1.4.3. Multi-object optimization; 1.4.4. Stochastic optimization; 1.4.5. Worst-case scenario based optimization; 1.4.6. Non-probabilistic optimization; 1.4.7. Interval modeling; 1.4.8. Fuzzy sets; 1.5. Analyzing sensitivity; 1.5.1. Local sensitivity analysis; 1.5.2. Global sensitivity analysis; CHAPTER 2. RELIABILITY IN MECHANICAL SYSTEMS; 2.1. Introduction 2.2. A structure reliability problem; 2.3. Modeling a structure reliability problem; 2.3.1. A deterministic mechanical model; 2.3.2. Risks and

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## Sommario/riassunto

Optimization is generally a reduction operation of a definite quantity. This process naturally takes place in our environment and through our activities. For example, many natural systems evolve, in order to minimize their potential energy. Modeling these phenomena then largely relies on our capacity to artificially reproduce these processes. In parallel, optimization problems have quickly emerged from human activities, notably from economic concerns. This book includes the most recent ideas coming from research and industry in the field of optimization, reliability and the recognition of a