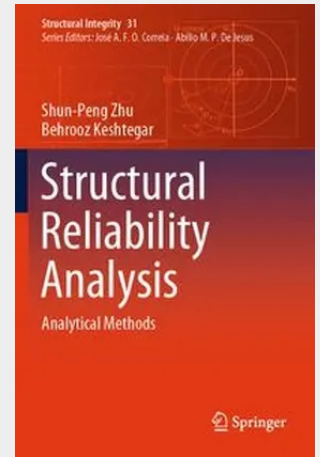


Structural Reliability Analysis

Analytical Methods

This book delves into structural reliability analysis across seven comprehensive chapters. Beginning with foundational methods and key definitions, it transitions into FORM-based formulations, such as the HL-RF method and its variants, with a focus on convergence control and stability enhancement. The subsequent chapters cover gradient methods and directional conjugate gradient formulations, addressing challenges like instability control and search direction vector adjustments. A novel optimization model for Most Probable Point (MPP) search in the original space for interval-based random variables is introduced, offering a cutting-edge approach to uncertainty optimization. The book concludes with second-order reliability analysis methods and forward-looking discussions on emerging analytical perspectives in the field.

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