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	Descrizione fisica	1 online resource (XII, 284 p. 103 illus., 58 illus. in color.)
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	Nota di contenuto	Introduction -- Fundamentals of interval number theory -- Mathematical transformation models of nonlinear interval optimization -- Interval optimization based on hybrid optimization algorithms -- Interval optimization based on interval structural analysis -- Interval optimization based on sequential linear programming -- Interval optimization based on surrogate models -- Interval multidisciplinary optimization design -- Interval optimization based on a novel interval possibility degree model -- Interval optimization considering parameter dependences -- Interval multi-objective optimization design -- Interval optimization considering tolerance design -- Interval differential evolution algorithm.
	Sommario/riassunto	This book systematically discusses nonlinear interval optimization design theory and methods. Firstly, adopting a mathematical programming theory perspective, it develops an innovative mathematical transformation model to deal with general nonlinear interval uncertain optimization problems, which is able to equivalently convert complex interval uncertain optimization problems to simple deterministic optimization problems. This model is then used as the basis for various interval uncertain optimization algorithms for engineering applications, which address the low efficiency caused by double-layer nested optimization. Further, the book extends the nonlinear interval optimization theory to design problems associated

with multiple optimization objectives, multiple disciplines, and parameter dependence, and establishes the corresponding interval optimization models and solution algorithms. Lastly, it uses the proposed interval uncertain optimization models and methods to deal with practical problems in mechanical engineering and related fields, demonstrating the effectiveness of the models and methods.