ROBUST RELIABILITY in the MECHANICAL SCIENCES

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Abstract

Robust reliability is a new non-probabilistic theory of reliability of mechanical systems. It is based on convex information-gap models of uncertainty which express the gap between what *is known* and what *needs to be known.* Robust reliability is particularly suited to the types of fragmentary information characteristic of mechanical systems and structures.

The book is designed as an upper-level undergraduate or first-year graduate text of robust reliability of mechanical systems. It gives the student or engineer a working knowledge of robust reliability which will enable him to analyse the reliability of mechanical systems. Each chapter is introduced with a brief conceptual survey of the main ideas, which are then developed through examples. Problems at the end of each chapter give the reader the opportunity to strengthen his understanding.

From Reviews of *Robust Reliability in the Mechanical Sciences*

"The book may be well recommended to all scientists, practicing engineers and students who are interested in reliability of mechanical systems." Prof. L.Fryba, Czech Academy of Sciences. From *Journal of Sound and Vibration.*

"[A] particularly strong feature of the book is its extensive discussion of the motivation for developing robust reliability as a powerful alternative to the classical reliability theory." Prof. George J. Klir, Binghamton University --- SUNY. From *International Journal of General Systems.*

"Ben-Haim's stimulating and elegantly written book should make it possible to develop pilot applications for testing and assessment by potential users --- designers, code writers, insurers, and regulatory agencies. Given the incontestable limitations of other approaches, the approach developed by Ben-Haim should, in my opinion, be given thoughtful and informed consideration as a possibly useful complementary tool for investigating selected structural reliability problems." Dr. Emil Simiu, NIST Fellow, National Institute of Standards and Technology. From *Structural Safety.*

"Robust reliability methods are very useful for problems in which little information is available ... [which] is the case with many real life problems. Therefore, every reliability engineer should have these methods handy in his toolbox." Prof. E. Nikolaides, Virginia Polytechnic Institute. From *Structural Optimization.*