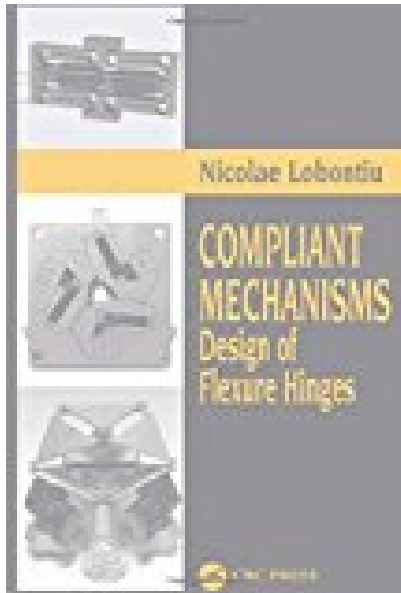


Compliant Mechanisms Design of Flexure Hinges



BOOK DETAILS

- Author : Nicolae Lobontiu
- Pages : 424 Pages
- Publisher : CRC Press
- Language : English
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BOOK SYNOPSIS

Flexure hinges hold several advantages over classical rotation joints, including no friction losses, no need for lubrication, no hysteresis, compactness, capacity to be utilized in small-scale applications, ease of fabrication, virtually no assembly, and no required maintenance. *Compliant Mechanisms: Design of Flexure Hinges* provides practical answers to the present and future needs of efficient design, analysis, and optimization of devices that incorporate flexure hinges. With a highly original approach the text: Discusses new and classical types of flexure hinges (single-, two- and multiple-axis) for two- and three-dimensional applications Addresses a wide range of industrial applications, including micro- and nano-scale mechanisms Quantifies flexibility, precision of rotation, sensitivity to parasitic loading, energy consumption, and stress limitations through closed-form compliance equations Offers a unitary presentation of individual flexure hinges as fully-compliant members by means of closed-form compliance (spring rates) equations Fully defines the lumped-parameter compliance, inertia and damping properties of flexure hinges Develops a finite element approach to compliant mechanisms by giving the elemental formulation of new flexure hinge line elements Incorporates more advanced topics dedicated to flexure hinges including large deformations, buckling, torsion, composite flexures, shape optimization and thermal effects *Compliant Mechanisms: Design of Flexure Hinges* provides practical answers and directions to the needs of efficiently designing, analyzing, and optimizing devices that include flexure hinges. It contains ready-to-use plots and simple equations describing several flexure types for the professional that needs quick solutions to current applications. The book also provides self-contained, easy-to-apply mathematical tools that provide sufficient guidance for real-time problem solving of further applications.

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