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Nota di contenuto	Cover -- Title -- Copyright -- Foreword -- Table of Contents -- Preface -- 1. Introduction -- 2. Structural Mechanics -- 3. Nonlinear Analysis -- 4. Trusses and Cables -- 5. Beams -- 6. Plates and Shells -- 7. Membranes -- 8. Advanced Topics -- Appendix A. Contents of the CD -- Appendix B. User's Guide -- Index.
Sommario/riassunto	This book provides new methods and advanced experimental techniques for the design, analysis, and testing of highly flexible deployable/inflatable structures (HFSs), including systematic nonlinear modeling approaches, newly developed geometrically exact structural theories, numerically exact solution methods, fully nonlinear finite element techniques, and non-contact techniques for static and dynamic testing. Chapter 1 summarizes characteristics of HFSs, points out challenging modeling and analysis issues, and presents state-of-the-art measurement systems that are appropriate for testing HFSs. Chapter 2 presents the fundamentals of structural mechanics to prepare the reader for geometrically exact modeling of HFSs. Chapter 3 presents the fundamentals of nonlinear finite element analysis and the multiple shooting method of solving nonlinear ordinary differential equations for numerically exact solutions. The book then proceeds in treating differential structural systems from simple 1D systems (trusses

and cables in chapter 4, and beams in chapter 5), to 2D systems (plates and shells in chapter 6, and membranes in chapter 7), and to complex systems (smart structures in chapter 8). The author uses the lowest possible level of mathematical complexity to convey concepts. In addition to more than 350 descriptive illustrations, the accompanying DVD contains computer programs and digital movies of experiments. These computer codes and visual tools aid the reader in quickly developing a basic understanding. The text, chapter questions, solutions manual, and accompanying DVD will support a one-semester graduate-level course.