



Computational Contact and Impact Mechanics

By *Tod A. Laursen*

Download now

Read Online 

Computational Contact and Impact Mechanics By Tod A. Laursen

Many physical systems require the description of mechanical interaction across interfaces if they are to be successfully analyzed. Examples in the engineered world range from the design of prosthetics in biomedical engineering (e. g. , hip replacements); to characterization of the response and durability of head/disk interfaces in computer magnetic storage devices; to development of pneumatic tires with better handling characteristics and increased longevity in automotive engineering; to description of the adhesion and/or relative slip between concrete and reinforcing steel in structural engineering. Such mechanical interactions, often called contact/impact interactions, usually necessitate at minimum the determination of areas over which compressive pressures must act to prevent interpenetration of the mechanical entities involved. Depending on the application, frictional behavior, transient interaction of interfaces with their surroundings (e. g. , in intermittent stick/slip), thermo-mechanical coupling, interaction with an intervening lubricant and/or fluid layer, and damage of the interface (i. e. , wear) may also be featured. When taken together (or even separately!), these features have the effect of making the equations of mechanical evolution not only highly nonlinear, but highly nonsmooth as well. While many modern engineering simulation packages possess impressive capabilities in the general area of nonlinear mechanics, it can be contended that methodologies typically utilized for contact interactions are relatively immature in comparison to other components of a nonlinear finite element package, such as large deformation kinematics, inelastic material modeling, nonlinear equation solving, or linear solver technology.

 [Download Computational Contact and Impact Mechanics ...pdf](#)

 [Read Online Computational Contact and Impact Mechanics ...pdf](#)

Computational Contact and Impact Mechanics

By Tod A. Laursen

Computational Contact and Impact Mechanics By Tod A. Laursen

Many physical systems require the description of mechanical interaction across interfaces if they are to be successfully analyzed. Examples in the engineered world range from the design of prosthetics in biomedical engineering (e. g. , hip replacements); to characterization of the response and durability of head/disk interfaces in computer magnetic storage devices; to development of pneumatic tires with better handling characteristics and increased longevity in automotive engineering; to description of the adhesion and/or relative slip between concrete and reinforcing steel in structural engineering. Such mechanical interactions, often called contact/impact interactions, usually necessitate at minimum the determination of areas over which compressive pressures must act to prevent interpenetration of the mechanical entities involved. Depending on the application, frictional behavior, transient interaction of interfaces with their surroundings (e. g. , in intermittent stick/slip), thermo-mechanical coupling, interaction with an intervening lubricant and/or fluid layer, and damage of the interface (i. e. , wear) may also be featured. When taken together (or even separately!), these features have the effect of making the equations of mechanical evolution not only highly nonlinear, but highly nonsmooth as well. While many modern engineering simulation packages possess impressive capabilities in the general area of nonlinear mechanics, it can be contended that methodologies typically utilized for contact interactions are relatively immature in comparison to other components of a nonlinear finite element package, such as large deformation kinematics, inelastic material modeling, nonlinear equation solving, or linear solver technology.

Computational Contact and Impact Mechanics By Tod A. Laursen Bibliography

- Sales Rank: #4369696 in Books
- Brand: Brand: Springer
- Published on: 2003-05-12
- Original language: English
- Number of items: 1
- Dimensions: 6.14" h x 1.13" w x 9.21" l, 1.78 pounds
- Binding: Hardcover
- 454 pages

 [Download Computational Contact and Impact Mechanics ...pdf](#)

 [Read Online Computational Contact and Impact Mechanics ...pdf](#)

Editorial Review

From the Back Cover

This book comprehensively treats the formulation and finite element approximation of contact and impact problems in nonlinear mechanics. Intended for students, researchers and practitioners interested in numerical solid and structural analysis, as well as for engineers and scientists dealing with technologies in which tribological response must be characterized, the book includes an introductory but detailed overview of nonlinear finite element formulations before dealing with contact and impact specifically. Topics encompassed include the continuum mechanics, mathematical structure, variational framework, and finite element implementations associated with contact/impact interaction. Additionally, important and currently emerging research topics in computational contact mechanics are introduced, encompassing such topics as tribological complexity, conservative treatment of inelastic impact interaction, and novel spatial discretization strategies.

Users Review

From reader reviews:

Roger Cooper:

Book is definitely written, printed, or outlined for everything. You can recognize everything you want by a guide. Book has a different type. We all know that that book is important thing to bring us around the world. Close to that you can your reading ability was fluently. A book Computational Contact and Impact Mechanics will make you to possibly be smarter. You can feel far more confidence if you can know about everything. But some of you think that open or reading the book make you bored. It is not make you fun. Why they could be thought like that? Have you trying to find best book or suitable book with you?

Patrick Myers:

Hey guys, do you desires to finds a new book to study? May be the book with the name Computational Contact and Impact Mechanics suitable to you? The book was written by well-known writer in this era. The actual book untitled Computational Contact and Impact Mechanics is the main one of several books in which everyone read now. This kind of book was inspired many men and women in the world. When you read this e-book you will enter the new dimensions that you ever know just before. The author explained their thought in the simple way, therefore all of people can easily to comprehend the core of this e-book. This book will give you a lot of information about this world now. So you can see the represented of the world within this book.

Kathryn Hill:

Reading a e-book can be one of a lot of task that everyone in the world really likes. Do you like reading book therefore. There are a lot of reasons why people fantastic. First reading a reserve will give you a lot of new information. When you read a e-book you will get new information since book is one of a number of ways to share the information as well as their idea. Second, reading through a book will make anyone more

imaginative. When you reading a book especially fictional works book the author will bring someone to imagine the story how the character types do it anything. Third, you can share your knowledge to others. When you read this Computational Contact and Impact Mechanics, it is possible to tells your family, friends and also soon about yours guide. Your knowledge can inspire average, make them reading a e-book.

Cheryl Lopez:

Reading a book being new life style in this year; every people loves to examine a book. When you study a book you can get a wide range of benefit. When you read publications, you can improve your knowledge, simply because book has a lot of information in it. The information that you will get depend on what kinds of book that you have read. If you wish to get information about your study, you can read education books, but if you want to entertain yourself you can read a fiction books, this kind of us novel, comics, and soon. The Computational Contact and Impact Mechanics provide you with new experience in reading a book.

Download and Read Online Computational Contact and Impact Mechanics By Tod A. Laursen #J9I1WZYQF6A

Read Computational Contact and Impact Mechanics By Tod A. Laursen for online ebook

Computational Contact and Impact Mechanics By Tod A. Laursen Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Computational Contact and Impact Mechanics By Tod A. Laursen books to read online.

Online Computational Contact and Impact Mechanics By Tod A. Laursen ebook PDF download

Computational Contact and Impact Mechanics By Tod A. Laursen Doc

Computational Contact and Impact Mechanics By Tod A. Laursen Mobipocket

Computational Contact and Impact Mechanics By Tod A. Laursen EPub

J9I1WZYQF6A: Computational Contact and Impact Mechanics By Tod A. Laursen