



# Computational Contact and Impact Mechanics: Fundamentals of Modeling Interfacial Phenomena in Nonlinear Finite Element Analysis

By Tod A. Laursen

Springer. Hardcover. Book Condition: New. Hardcover. 454 pages. Dimensions: 9.3in. x 6.2in. x 1.2in. 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. , 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....

## Reviews

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