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Titolo	Advanced Finite Element Technologies / / edited by Jörg Schröder, Peter Wriggers
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016
ISBN	3-319-31925-6
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (239 p.)
Collana	CISM International Centre for Mechanical Sciences, Courses and Lectures, , 0254-1971 ; ; 566
Disciplina	620.00151535
Soggetti	Computer mathematics Applied mathematics Engineering mathematics Mechanics Mechanics, Applied Computational Mathematics and Numerical Analysis Mathematical and Computational Engineering Theoretical and Applied Mechanics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Least-squares mixed finite elements for hyperelasticity -- Discretization methods for solids undergoing finite deformations -- On the use of anisotropic triangles with mixed finite elements: application to an "immersed" boundary with the incompressible Stokes problem -- Stress-based finite element methods in linear and nonlinear solid mechanics -- Topics of mathematical fundamentals, mixed methods in elasticity, and plasticity -- Discontinuous Galerkin methods ND reduced order models.
Sommario/riassunto	The book presents an overview of the state of research of advanced finite element technologies. Besides the mathematical analysis, the finite element development and their engineering applications are shown to the reader. The authors give a survey of the methods and technologies concerning efficiency, robustness and performance aspects. The book covers the topics of mathematical foundations for

variational approaches and the mathematical understanding of the analytical requirements of modern finite element methods. Special attention is paid to finite deformations, adaptive strategies, incompressible, isotropic or anisotropic material behavior and the mathematical and numerical treatment of the well-known locking phenomenon. Beyond that new results for the introduced approaches are presented especially for challenging nonlinear problems.