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Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (VII, 228 p. 109 illus., 70 illus. in color.)
Collana	CISM International Centre for Mechanical Sciences, Courses and Lectures, , 0254-1971 ; ; 585
Disciplina	620.1
Soggetti	Mechanics Mechanics, Applied Mathematical models Surfaces (Physics) Interfaces (Physical sciences) Thin films Materials—Surfaces Solid Mechanics Mathematical Modeling and Industrial Mathematics Surface and Interface Science, Thin Films Surfaces and Interfaces, Thin Films
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Multi-scale approaches in interface mechanics -- Physics of contact across scales: nano-, meso-, macro-scale -- Computational methods for finite deformation contact mechanics -- Wear, lubrication and micromechanics of interfaces modeling and simulation of contact -- Emerging computational techniques in contact and interface mechanics -- Multiphysics, discrete elements and granular media. .
Sommario/riassunto	The book conveys modern techniques and the latest state-of-the-art with regard to the most fundamental aspects of computational contact mechanics. However, since contact can readily be interpreted as a special type of interface problem, it seems advisable not to isolate contact mechanics, but rather to address it in the context of a broader

class of problems denoted as computational interface mechanics. The book gives a clear understanding of the underlying physics of interfaces, and a comprehensive insight into the current state-of-the-art and selected cutting-edge research directions in the computational treatment of interface effects. It focuses on the modeling of friction, wear, lubrication, cohesive interfaces, grain boundaries, phase boundaries, fracture, thermo-mechanics and particulate contact (e.g. granular media). Also the most important computational aspects are addressed, including discretization techniques for finite deformations, solution algorithms for single- and multi-processor computing environments, multi-scale approaches, discrete element models and multi-physics problems including contact and interface constraints. Among the computational techniques covered in this book are finite element (FEM) and boundary element (BEM) methods, atomistic models, molecular dynamics (MD), discrete element methods (DEM), coupling approaches for multi-scale simulations, and tools for an efficient automated FEM code generation.