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ISBN	3-030-18383-1
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (231 pages)
Collana	Solid Mechanics and Its Applications, , 0925-0042 ; ; 258
Disciplina	515.35 004
Soggetti	Computer science - Mathematics Mechanics Mechanics, Applied Materials science Physics Engineering—Materials Computational Science and Engineering Solid Mechanics Materials Science, general Numerical and Computational Physics, Simulation Materials Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Foreword -- Preface -- Introduction -- Review of classical FEM formulations and discretizations -- Conduction properties -- Elasticity and thermoelasticity -- Piezoelectricity -- Porous media -- Second-order linear homogenization -- Filter-based homogenization -- Nonlinear Computational Homogenization -- Bibliography -- Appendices -- Index.
Sommario/riassunto	This monograph provides a concise overview of the main theoretical and numerical tools to solve homogenization problems in solids with finite elements. Starting from simple cases (linear thermal case) the problems are progressively complexified to finish with nonlinear

problems. The book is not an overview of current research in that field, but a course book, and summarizes established knowledge in this area such that students or researchers who would like to start working on this subject will acquire the basics without any preliminary knowledge about homogenization. More specifically, the book is written with the objective of practical implementation of the methodologies in simple programs such as Matlab. The presentation is kept at a level where no deep mathematics are required.