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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Chapter 1 Peridynamic theory -- Chapter 2 Peridynamic differential operator -- Chapter 3 Unified peridynamic approach -- Chapter 4 Weak form of peridynamic equilibrium and field equations -- Chapter 5 Coupling of peridynamics with finite elements -- Chapter 6 Coupled peridynamic and finite element analysis in the presence of initial strain -- Chapter 7 Peridynamics for multiphysics analysis -- Chapter 8 Ansys elements for peridynamic interactions -- Chapter 9 Ansys Menus for PD analysis -- Chapter 10 Implementation of PDDO in Ansys framework -- Chapter 11 Applications of field equations -- Chapter 12 Applications of peridynamics for static structural analysis -- Chapter 13 Coupled peridynamics and finite element method for static and transient structural analysis -- Chapter 14 Applications of coupled field equations -- Chapter 15 Peridynamics for failure prediction.
Sommario/riassunto	This book introduces a unified implementation of bond- and state-

based peridynamic theory (PD) within a commercial finite element framework, Ansys, utilizing its native elements. It details the implementation of the PD theory and its integration with traditional finite elements. The primary objective is to equip students, researchers, and practicing engineers with both theoretical and practical knowledge of the PD theory, along with the skills necessary for analyzing engineering problems using Ansys. The book demonstrates that, unlike the conventional finite element method (FEM), the PD theory is highly suitable for progressive failure analysis, the multi-scale analysis of materials involving fracture and failure, and multi-physics analysis, including electromigration, corrosion, and electrodeposition. Additionally, it provides a step-by-step illustration of the specific procedures in the pre-processing, solution, and post-processing phases of the analysis through the Graphical User Interface (GUI) for various applications. The book is designed to be introductory and self-contained, minimizing the need for additional reference material. Describes an implementation of PD theory and its coupling to finite element method in Ansys, using its native elements; Utilization of Ansys through both the Graphics User Interface (GUI) and the Ansys Parametric Design Language (APDL); Explains the process for solving problems in various applications with the Ansys GUI, includes Ansys input files.