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Descrizione fisica	1 online resource (XV, 150 p. 84 illus. in color.)
Collana	Mathematics and Visualization, , 1612-3786
Disciplina	006.60151
Soggetti	Mathematics Visualization Topology Optical data processing Algorithms Computer science - Mathematics Computer software Computer Imaging, Vision, Pattern Recognition and Graphics Discrete Mathematics in Computer Science Mathematical Software
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1. Introduction -- 2. Background: 2.1 Data representation -- 2.2 Topological abstractions -- 2.3 Algorithms and applications -- 3. Abstraction: 3.1 Efficient topological simplification of scalar fields -- 3.2 Efficient Reeb graph computation for volumetric meshes -- 4. Interaction: 4.1 Topological simplification of isosurfaces -- 4.2 Interactive editing of topological abstractions -- 5. Analysis: 5.1 Exploration of turbulent combustion simulations -- 5.2 Quantitative analysis of molecular interactions -- 6. Perspectives: 6.1 Emerging constraints -- 6.2 Emerging data types -- 7. Conclusion.
Sommario/riassunto	Combining theoretical and practical aspects of topology, this book delivers a comprehensive and self-contained introduction to topological methods for the analysis and visualization of scientific data. Theoretical concepts are presented in a thorough but intuitive manner,

with many high-quality color illustrations. Key algorithms for the computation and simplification of topological data representations are described in details, and their application is carefully illustrated in a chapter dedicated to concrete use cases. With its fine balance between theory and practice, "Topological Data Analysis for Scientific Visualization" constitutes an appealing introduction to the increasingly important topic of topological data analysis, for lecturers, students and researchers.
