1.	Record Nr.	UNINA9910502997603321
	Titolo	Topological Methods in Data Analysis and Visualization VI : Theory, Applications, and Software / / edited by Ingrid Hotz, Talha Bin Masood, Filip Sadlo, Julien Tierny
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2021
	ISBN	3-030-83500-6
	Edizione	[1st ed. 2021.]
	Descrizione fisica	1 online resource (372 pages)
	Collana	Mathematics and Visualization, , 2197-666X
	Disciplina	514
	Soggetti	Information visualization
		Topology
		Computer graphics
		Computer science
		Geometry
		Algorithms
		Computer software
		Data and Information Visualization
		Computer Graphics
		Computational Geometry
		Mathematical Software
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	Scalar Field Topology–Algorithms and Applications -- W-Structures in Contour Trees -- Treemap Based Exploration of Merge Trees -- Notes on Percolation Analysis of Sampled Scalar Fields -- Distributed Task-Parallel Topology-Controlled Volume Rendering -- Topology-Based Tracking of Multi-Center Cyclones -- Using Contour Trees in the Analysis and Visualization of Radio Astronomy Data Cubes -- Topological Methods in Complex Fields–Flow Fields, Tensor Fields, and Multi-elds -- Objective Finite-Time Flow Topology from Flowmap Expansion and Contraction -- Coreline Criteria for Inertial Particle Motion -- Implicit Visualization of 2D Vector Field Topology for Periodic Orbit Detection -- Visually Evaluating Topological Equivalence

of Bounded Bivariate Fields -- Topological Feature Search in Time-Varying Multield Data -- Tensor Fields for Data Extraction from Chart Images: Bar Charts, Histograms, and Scatter Plots -- Topology for Geometric Data -- A Fast Approximate Skeleton with Guarantees for Any Cloud of Points in a Euclidean Space -- Topologically Robust B-Spline Reconstruction of Fibers from 3D Images -- Introduction to Vector Field Topology -- An Overview of the Topology ToolKit -- Implementing Persistence-Based Clustering of Point Clouds in the Topology ToolKit -- TopoInVis TTK Hackathon: Experiences, Lessons Learned, and Perspectives.

Sommario/riassunto	This book is a result of a workshop, the 8th of the successful TopoInVis workshop series, held in 2019 in Nyköping, Sweden. The workshop regularly gathers some of the world's leading experts in this field. Thereby, it provides a forum for discussions on the latest advances in the field with a focus on finding practical solutions to open problems in topological data analysis for visualization. The contributions provide introductory and novel research articles including new concepts for the analysis of multivariate and time-dependent data, robust computational approaches for the extraction and approximations of topological structures with theoretical guarantees, and applications of topological scalar and vector field analysis for visualization. The applications span a wide range of scientific areas comprising climate science, material sciences, fluid dynamics, and astronomy. In addition, community efforts with respect to joint software development are reported and discussed. .