

1. Record Nr.	UNINA9910484788603321
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Titolo	Topological Complexity of Smooth Random Functions : École d'Été de Probabilités de Saint-Flour XXXIX-2009 // by Robert Adler, Jonathan E. Taylor
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2011
ISBN	9783642195808 3642195806
Edizione	[1st ed. 2011.]
Descrizione fisica	1 online resource (VIII, 122 p. 15 illus., 9 illus. in color.)
Collana	École d'Été de Probabilités de Saint-Flour ; ; 2019
Altri autori (Persone)	TaylorJonathan
Disciplina	519.23
Soggetti	Geometry Statistics Statistical Theory and Methods
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and indexes.
Nota di contenuto	1 Introduction -- 2 Gaussian Processes -- 3 Some Geometry and Some Topology -- 4 The Gaussian Kinematic Formula -- 5 On Applications: Topological Inference -- 6 Algebraic Topology of Excursion Sets: A New Challenge.
Sommario/riassunto	These notes, based on lectures delivered in Saint Flour, provide an easy introduction to the authors' 2007 Springer monograph "Random Fields and Geometry." While not as exhaustive as the full monograph, they are also less exhausting, while still covering the basic material, typically at a more intuitive and less technical level. They also cover some more recent material relating to random algebraic topology and statistical applications. The notes include an introduction to the general theory of Gaussian random fields, treating classical topics such as continuity and boundedness. This is followed by a quick review of geometry, both integral and Riemannian, with an emphasis on tube formulae, to provide the reader with the material needed to understand and use the Gaussian kinematic formula, the main result of the notes. This is followed by chapters on topological inference and random algebraic topology, both of which provide applications of the main results.

