

1. Record Nr.	UNINA9910484873503321
Autore	Giacomin Giambattista
Titolo	Disorder and Critical Phenomena Through Basic Probability Models : École d'Été de Probabilités de Saint-Flour XL – 2010 // by Giambattista Giacomin
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2011
ISBN	9783642211560 3642211569
Edizione	[1st ed. 2011.]
Descrizione fisica	1 online resource (XI, 130 p. 12 illus.)
Collana	École d'Été de Probabilités de Saint-Flour ; ; 2025
Classificazione	82B4460K3560K3782B2760K0582D30
Disciplina	519.2
Soggetti	Probabilities Mathematics System theory Mathematical physics Probability Theory Applications of Mathematics Complex Systems Mathematical Methods in Physics Theoretical, Mathematical and Computational Physics
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 index.
Nota di contenuto	1 Introduction -- 2 Homogeneous pinning systems: a class of exactly solved models -- 3 Introduction to disordered pinning models -- 4 Irrelevant disorder estimates -- 5 Relevant disorder estimates: the smoothing phenomenon -- 6 Critical point shift: the fractional moment method -- 7 The coarse graining procedure -- 8 Path properties.
Sommario/riassunto	Understanding the effect of disorder on critical phenomena is a central issue in statistical mechanics. In probabilistic terms: what happens if we perturb a system exhibiting a phase transition by introducing a random environment? The physics community has approached this very broad question by aiming at general criteria that tell whether or not the addition of disorder changes the critical properties of a model: some of the predictions are truly striking and mathematically challenging. We

approach this domain of ideas by focusing on a specific class of models, the "pinning models," for which a series of recent mathematical works has essentially put all the main predictions of the physics community on firm footing; in some cases, mathematicians have even gone beyond, settling a number of controversial issues. But the purpose of these notes, beyond treating the pinning models in full detail, is also to convey the gist, or at least the flavor, of the "overall picture," which is, in many respects, unfamiliar territory for mathematicians.
