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Autore	Heydenreich Markus
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Descrizione fisica	1 online resource (XII, 285 p. 10 illus., 1 illus. in color.)
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Disciplina	530.13
Soggetti	Probabilities Statistics Probability Theory and Stochastic Processes Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences
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Livello bibliografico	Monografia
Nota di contenuto	Preface -- 1. Introduction and motivation -- 2. Fixing ideas: Percolation on a tree and branching random walk -- 3. Uniqueness of the phase transition -- 4. Critical exponents and the triangle condition -- 5. Proof of triangle condition -- 6. The derivation of the lace expansion via inclusion-exclusion -- 7. Diagrammatic estimates for the lace expansion -- 8. Bootstrap analysis of the lace expansion -- 9. Proof that = 2 and = 1 under the triangle condition -- 10. The non-backtracking lace expansion -- 11. Further critical exponents -- 12. Kesten's incipient infinite cluster -- 13. Finite-size scaling and random graphs -- 14. Random walks on percolation clusters -- 15. Related results -- 16. Further open problems -- Bibliography.
Sommario/riassunto	This text presents an engaging exposition of the active field of high-dimensional percolation that will likely provide an impetus for future work. With over 90 exercises designed to enhance the reader’s understanding of the material, as well as many open problems, the book is aimed at graduate students and researchers who wish to enter the world of this rich topic. The text may also be useful in advanced courses and seminars, as well as for reference and individual study. Part I, consisting of 3 chapters, presents a general introduction to

percolation, stating the main results, defining the central objects, and proving its main properties. No prior knowledge of percolation is assumed. Part II, consisting of Chapters 4–9, discusses mean-field critical behavior by describing the two main techniques used, namely, differential inequalities and the lace expansion. In Parts I and II, all results are proved, making this the first self-contained text discussing high-dimensiona l percolation. Part III, consisting of Chapters 10–13, describes recent progress in high-dimensional percolation. Partial proofs and substantial overviews of how the proofs are obtained are given. In many of these results, the lace expansion and differential inequalities or their discrete analogues are central. Part IV, consisting of Chapters 14–16, features related models and further open problems, with a focus on the big picture.