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Soggetti	Mathematical physics Earth sciences Graph theory Physics Catalysis Condensed matter Theoretical, Mathematical and Computational Physics Earth Sciences Graph Theory Classical and Continuum Physics Phase Transitions and Multiphase Systems
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Nota di contenuto	Bootstrap Percolation -- Conduction and Diffusion in Percolating Systems -- Continuum Percolation -- Correlated Percolation -- Elastic Percolation Networks -- Invasion Percolation -- Networks, Flexibility and Mobility in -- Percolation in Complex Networks, and Faults and Fractures in Rock -- Percolation, Introduction to -- Lattices, Efficient Simulation of Large -- Percolation Phase Transition -- Percolation and Polymer Morphology and Rheology -- Percolation in Porous Media -- Percolation Thresholds, Exact -- Properties, Fractals, and the Renormalization Group Approach to Percolation.
Sommario/riassunto	Percolation theory describes the effects of the connectivity of microscopic or small-scale elements of a complex medium to its macroscopic or large-scale properties. It also describes the conditions

under which there may be a continuously connected path of local elements across the medium. The point at which the path is formed is called the percolation threshold. Percolation theory also predicts that many macroscopic properties of complex media follow universal power laws near the percolation threshold that are independent of many microscopic features of such media. There are many applications of percolation theory across the natural sciences, from porous materials, to composite solids, complex networks, and biological systems. This book presents the essential elements of percolation theory, covers the problem of calculating the exponents that characterize the power laws that the percolation quantities follow near the percolation threshold, provides a clear description of the geometry of percolation clusters of the connected paths, and addresses several variations of percolation theory. In particular, bootstrap percolation, explosive percolation, and invasion percolation are featured, which expand the range of natural systems to which percolation may be applicable. In addition, coverage includes several important applications of percolation theory to a range of phenomena, ranging from electrical conductivity, thermopower, the Hall effect, and photoconductivity of disordered semiconductors, to flow, transport and reaction in porous media, geochemistry, biology, and ecology.