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	Autore	Benjamini Itai
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	Disciplina	519.2
	Soggetti	Geometry Probabilities Physics Statistics Mechanics Mechanics, Applied Graph theory Probability Theory and Stochastic Processes Mathematical Methods in Physics Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences Solid Mechanics Graph Theory
	Lingua di pubblicazione	Inglese
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	Livello bibliografico	Monografia
	Note generali	Bibliographic Level Mode of Issuance: Monograph
	Nota di contenuto	Isoperimetry and expansions in graphs -- Several metric notions -- The hyperbolic plane and hyperbolic graphs -- More on the structure of vertex transitive graphs -- Percolation on graphs -- Local limits of graphs -- Random planar geometry -- Growth and isoperimetric profile of planar graphs -- Critical percolation on non-amenable groups -- Uniqueness of the infinite percolation cluster -- Percolation perturbations -- Percolation on expanders -- Harmonic functions on graphs -- Nonamenable Liouville graphs.
	Sommario/riassunto	These lecture notes study the interplay between randomness and

geometry of graphs. The first part of the notes reviews several basic geometric concepts, before moving on to examine the manifestation of the underlying geometry in the behavior of random processes, mostly percolation and random walk. The study of the geometry of infinite vertex transitive graphs, and of Cayley graphs in particular, is fairly well developed. One goal of these notes is to point to some random metric spaces modeled by graphs that turn out to be somewhat exotic, that is, they admit a combination of properties not encountered in the vertex transitive world. These include percolation clusters on vertex transitive graphs, critical clusters, local and scaling limits of graphs, long range percolation, CCCP graphs obtained by contracting percolation clusters on graphs, and stationary random graphs, including the uniform infinite planar triangulation (UIPT) and the stochastic hyperbolic planar quadrangulation (SHIQ).