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Percolation in anisotropic, hyperbolic and small-world lattices and in explosive growth ROBERT ZIFF, University of Michigan — Percolation on a large variety of systems is discussed. A variety of lattices where exact and approximate solutions of the criticality condition, including anisotropic systems, are considered. Also, hyperbolic systems, such as the heptagonal lattice, are studied with respect to a crossing criterion for percolation to hold. Hierarchical small-world "Hanoi" lattices and randomized versions are considered as well. Finally, the effects of biased cluster growth by the "Achlioptas" process, and the resulting explosive cluster growth, are considered. The overall picture shows the richness and complexity of percolation processes, and the existence of many open problems.

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