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**Cylinders' percolation in three dimensions.** (English) Zbl 1333.60205  
Probab. Theory Relat. Fields 163, No. 3-4, 613-642 (2015).

Summary: We study the complementary set of a Poissonian ensemble of infinite cylinders in  $\mathbb{R}^3$ , for which an intensity parameter  $u > 0$  controls the amount of cylinders to be removed from the ambient space. We establish a non-trivial phase transition, for the existence of an unbounded connected component of this set, as  $u$  crosses a critical non-degenerate intensity  $u_*$ . We moreover show that this complementary set percolates in a sufficiently thick slab, in spite of the fact that it does not percolate in any given plane of  $\mathbb{R}^3$ , regardless of the choice of  $u$ .

**MSC:**

**60K35** Interacting random processes; statistical mechanics type models; percolation theory

Cited in 5 Documents

**60K37** Processes in random environments

**Keywords:**

percolation; infinite cylinders; phase transition

**Full Text:** [DOI](#)

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