

## Embedding binary sequences into Bernoulli site percolation on $\mathbb{Z}^3$

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### **Abstract:**

We investigate the problem of embedding infinite binary sequences into Bernoulli site percolation on  $\mathbb{Z}^d$  with parameter  $p$ . In 1995, I. Benjamini and H. Kesten proved that, for  $d \geq 10$  and  $p = 1/2$ , all sequences can be embedded, almost surely. They conjectured that the same should hold for  $d \geq 3$ . We consider  $d \geq 3$  and  $p \in (p_c(d), 1 - p_c(d))$ , where  $p_c(d) < 1/2$  is the critical threshold for site percolation on  $\mathbb{Z}^d$ . We show that there exists an integer  $M = M(p)$ , such that, a.s., every binary sequence, for which every run of consecutive  $\{0s\}$  or  $\{1s\}$  contains at least  $M$  digits, can be embedded. Joint work with M. Hilário (UFMG), P. Nolin (ETH) and V. Sidoravicius (IMPA)