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The second term for two-neighbour bootstrap percolation in two dimensions

In two-neighbour bootstrap percolation on $[n]^2$ vertices with at least two infected neighbours are iteratively infected. Initial infections are binomial with parameter p . Motivation comes from connections to the Ising and Fredrickson-Andersen models.

We seek the location $p_c(n)$ of the transition of complete infection. Successively better bounds were given in a founding work of Aizenman and Lebowitz, a breakthrough of Holroyd and, a decade ago, by Gravner and Holroyd and Gravner, Holroyd and Morris. In this work we improve on GHM to match the bound of GH, thus proving

$$p_c(n) = \frac{\pi^2}{18 \log n} - \frac{\Theta(1)}{(\log n)^{3/2}}.$$

Joint with Robert Morris.