ALEXANDER HOLROYD, UBC and Microsoft
Finitary Colouring

Suppose that the vertices of Z^d are assigned random colours via a finitary factor of i.i.d. random vertex-labels. That is, the colour of vertex v is determined by a rule which examines the labels within a finite (but random and perhaps unbounded) distance R of v, and the same rule applies at all vertices. We investigate the tail behaviour of R if the coloring is required to be proper (that is, adjacent vertices receive different colours). Depending on the dimension and the number of colours, the optimal tail is either power law or super-exponential.