1120-05-77 **David Galvin*** (dgalvin1@nd.edu). *Long-range influence in colorings of the cube.*

Choose an independent set uniformly in the d-dimensional hypercube. The probability that a particular vertex, say $v_1 = (1, \ldots, 1)$, is in the independent set is roughly $1/4$ (though this is far from obvious). We also know that there is long-range influence: if we condition on $(0, \ldots, 0)$ being in the independent set, then the probability of v_1 being in the set changes dramatically, dropping to nearly 0 if d is odd and jumping to nearly $1/2$ if d is even.

Similar long-range influence results can be established if "independent set" is replaced by "proper q-colouring". I'll discuss these results, and highlight a question relating to mixing time of Glauber dynamics for sampling proper q-colourings of the cube, which we can resolve for $q = 3$ but remains open for $q > 3$. Partly joint work with John Engbers. (Received February 12, 2016)