

1067-05-2226

Emily Berger* (erb90@mit.edu). *Minimal Percolating Sets in the Hypercube and Related Graphs.*

We study the extremal problem of finding the minimal size of a percolating set in the hypercube, the square of the hypercube, and the augmented hypercube. Consider the following process of bootstrap percolation on a graph G . Let $S \subset V(G)$ denote a set of initially infected vertices. Throughout this process, some $v \in V(G)$ becomes infected only if it has r previously infected neighbors. We say S is an r -percolating set if all of $V(G)$ becomes infected by this process. We study, for fixed $r \geq 3$, how the size of a minimal r -percolating set varies with the dimension of G ; this process is well understood for $r < 3$. We provide asymptotic bounds and exact values in some cases. (Received September 22, 2010)