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Polynomial method and graph bootstrap percolation

We introduce a simple method for proving lower bounds for the size of the smallest percolating set in a certain graph bootstrap process. We apply this method to determine the sizes of the smallest percolating sets in multidimensional tori and multidimensional grids (in particular hypercubes). The former answers a question of Morrison and Noel [MN], and the latter provides an alternative and simpler proof for one of their main results.