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Zero Forcing Number of Random Regular Graphs

The zero forcing process is an iterative graph colouring process in which at each time step a coloured vertex with a single uncoloured neighbour can force this neighbour to become coloured. A zero forcing set of a graph is an initial set of coloured vertices that can eventually force the entire graph to be coloured. The zero forcing number is the size of the smallest zero forcing set. We explore the zero forcing number for random regular graphs. In particular, we propose and analyze a degree-greedy algorithm for finding small zero forcing sets using the differential equations method.