

## Reversion probabilistic zero forcing: a discrete-time contact process

Zachary Brennan\*, Iowa State University

Probabilistic zero forcing (PZF) is a graph coloring process in which blue vertices infect (color blue) white vertices with a probability proportional to the number of neighboring blue vertices. This talk introduces reversion probabilistic zero forcing (RPZF), which shares the same infection dynamics as PZF but also allows for blue vertices to revert to being white in each round. RPZF behaves as a discrete-time analog of the “contact process,” a family of continuous-time growth models. We establish a tool which, given a graph’s RPZF Markov transition matrix, calculates the probability that the graph turns all white or all blue as well as the time at which this is expected to occur. For specific graph families we produce a threshold number of blue vertices for the graph to become entirely blue in one step with high probability.

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