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An approximation algorithm for finding the zero-forcing number of a graph

Consider the following graph process: Given a graph with vertices coloured black or white. At each step, if a black vertex has exactly one white neighbour, then this neighbour turns black. If the process turns all vertices black, then the initial set of black vertices is a zero-forcing set. The minimum size of a zero-forcing set in a graph G is called the zero-forcing number $z(G)$. We give an approximation algorithm that finds a zero-forcing set of size at most $(pw + 1)z(G)$, where pw is the path-width of G . This is joint work with Ben Cameron, Rogers Mathew, and Zhiyuan Zhang.