

Institut für Diskrete Mathematik

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Target Set Selection Parameterized by Clique-Width and Maximum Threshold

TIM HARTMANN

(Lehrstuhl für Informatik 1, RWTH Aachen)

The Target Set Selection problem takes as an input a graph G and a non-negative integer threshold $thr(v)$ for every vertex v . A vertex v can get active as soon as at least $thr(v)$ of its neighbors have been activated. The objective is to select a smallest possible initial set of vertices, the target set, whose activation eventually leads to the activation of all vertices in the graph.

We show that Target Set Selection is in FPT when parameterized with the combined parameters clique-width of the graph and the maximum threshold value. This generalizes all previous FPT-membership results for the parameterization by maximum threshold, and thereby solves an open question from the literature. We stress that the time complexity of our algorithm is surprisingly well-behaved and grows only single-exponentially in the parameters.

Bettina Klinz und Stefan Lendl