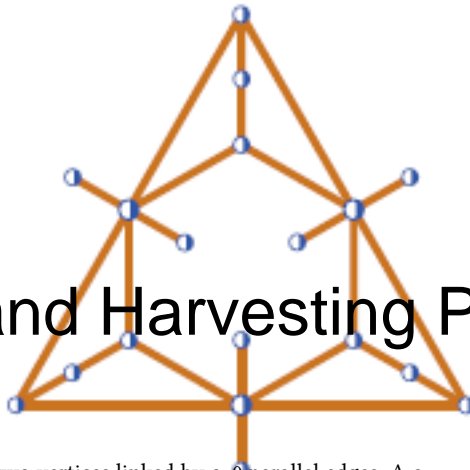


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Hitting and Harvesting Pumpkins



Content :

The "c-pumpkin" is the graph with two vertices linked by $c > 0$ parallel edges. A c-pumpkin-model in a graph G is a pair A, B of disjoint subsets of vertices of G , each inducing a connected subgraph of G , such that there are at least c edges in G between A and B . We focus on covering and packing c-pumpkin-models in a given graph: On the one hand, we provide an FPT algorithm running in time $2^{O(k)} n^{O(1)}$ deciding, for any fixed $c > 0$, whether all c-pumpkin-models can be covered by at most k vertices. This generalizes known single-exponential FPT algorithms for Vertex Cover and Feedback Vertex Set, which correspond to the cases $c=1, 2$ respectively. On the other hand, we present a $O(\log n)$ -approximation algorithm for both the problems of covering all c-pumpkin-models with a smallest number of vertices, and packing a maximum number of vertex-disjoint c-pumpkin-models.

Joint work with Christophe Paul, Ignasi Sau, Saket Saurabh, and Stéphan Thomassé.

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