X-minors and X-spanning subgraphs

Jochen Harant

(joint work with Thomas Böhme, Matthias Kriesell,
Samuel Mohr, and Jens M. Schmidt)

Given a finite, undirected, and simple graph G and $X \subseteq V(G)$, let $\mathcal{H}$ be a partition of a subset of $V(G)$ into connected sets – called *bags* – such that each bag contains at most one vertex of X and X is a subset of the union of all bags. If M is a simple graph on the vertex set $\mathcal{H}$ such that there is an edge of G connecting two bags of $\mathcal{H}$ if these two bags are adjacent in M, then M is an *X-minor of G*. We consider the problem whether G has a highly connected X-minor if X cannot be separated in G by removing a few vertices of G. As an application of the achieved results, statements on the existence of special X-spanning subgraphs of G are presented, where a subgraph H of G is *X-spanning* if $X \subseteq V(H)$.