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Graph searching and a min-max theorem for tree-width. (English) Zbl 0795.05110
J. Comb. Theory, Ser. B 58, No. 1, 22-33 (1993).

Summary: The tree-width of a graph G is the minimum k such that G may be decomposed into a “tree-structure” of pieces each with at most $k + 1$ vertices. We prove that this equals the maximum k such that there is a collection of connected subgraphs, pairwise intersecting or adjacent, such that no set of $\leq k$ vertices meets all of them. A corollary is an analogue of LaPaugh’s “monotone search” theorem for cops trapping a roofer they can see (LaPaugh’s robber was invisible).

MSC:

- [05C70](#) Edge subsets with special properties (factorization, matching, partitioning, covering and packing, etc.)
- [05C05](#) Trees
- [91A43](#) Games involving graphs

Cited in **6** Reviews
Cited in **118** Documents

Keywords:

graph searching; min-max theorem; tree-decomposition; screens; game; tree-width

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