Well-covered $k$-trees, $k$-frames, and unique colorability

ABSTRACT

A graph is said to be well-covered if all maximal independent vertex sets have the same cardinality. Well-covered trees can be characterized as trees with a perfect matching consisting of pendant edges, i.e. edges incident with a vertex of degree one. The main result of the talk is a generalization of this result to $k$-trees, with pendant cliques playing in $k$-trees the role which pendant edges play in trees.

A graph is said to be uniquely colorable if, modulo permutations of the colors, there is only one coloring in the minimal number of colors. It is easy to see that $k$-trees are uniquely colorable. A (possibly) new class of uniquely colorable graphs, the $k$-frames, will be introduced, generalizing the class of $k$-trees.