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Forbidden subgraph characterization for (∞, k) -polar cographs

A graph without induced paths of length four is called a cograph. An (s, k) -polar partition of a graph is a partition (A, B) of its vertex set such that A induces a complete multipartite graph with at most s parts, and B induces the disjoint union of at most k complete graphs. A graph is said to be (s, k) -polar if it admits an (s, k) -polar partition; (s, ∞) - and (∞, k) -polar graphs can be analogously defined.

In this talk, we will focus on the problem of characterizing the (∞, k) -polar cographs (for a fixed k) by means of a finite family of forbidden subgraphs. We will show a partial recursive construction for such obstructions, and we will give complete lists of them for the cases $k = 2$ and $k = 3$.