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On the clique behavior of locally small graphs

We shall sketch the proof of the following theorem:

Theorem 1 *If G_1 and G_2 are both locally H and $|H| \leq 6$, then G_1 and G_2 have the same clique behavior.*

We say that a graph G is locally H if the neighbors of every vertex induce a subgraph isomorphic to H. Hall classified in 1985 the graphs H with at most 6 vertices, such that there exist at least one finite graph G which is locally H. The clique graph $K(G)$ of G is the intersection graph of all the (maximal) cliques of G. Iterated clique graphs are then defined recursively by $K^0(G) = G$ and $K^n(G) = K\big(K^{n-1}(G)\big)$. When the sequence of orders of the iterated clique graphs of G is unbounded, we say that G is clique divergent, otherwise it is clique convergent. We say that two graphs have the same clique behavior when both graphs are clique divergent or both graphs are clique convergent.

Joint work with Paco Larrión and Rafael Villarroel-Flores.