Diameter and clique divergence

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(joint work with V. Neumann–Lara)

The *clique graph* kG of a graph G is the intersection graph of the family of all cliques (maximal complete subgraphs) of G. The iterated clique graphs k^nG are defined by $k^0G = G$ and $k^{n+1}G = kk^nG$ for all non–negative integers n. The graph G is said to be k *–divergent* if $|V(k^nG)|$ tends to infinity when $n \to \infty$.

An example of a k *–divergent* graph will be presented such that the diameters of the iterated clique graphs also tend to infinity. Furthermore, the sizes of the cliques remain bounded. This example answers two problems posed by B. Hedman and the second–named author.