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Generation of hypohamiltonian graphs

We will present a new algorithm to generate all non-isomorphic hypohamiltonian graphs of a given order. (A graph G is hypohamiltonian if G is non-hamiltonian and $G - v$ is hamiltonian for every $v \in V(G)$).

Using this algorithm, we were able to generate complete lists of hypohamiltonian graphs of much larger orders than what was previously possible. This allowed us amongst others to find the smallest hypohamiltonian graph of girth 6 and to show that the smallest planar hypohamiltonian graph has order at least 23.

This is joint work with Carol Zamfirescu.