Constructions show that among $n$-vertex cubic nonhamiltonian and nonplanar graphs with girth 5 and cyclic edge connectivity 4, the intersection of two bipartitions: snarks – non-snarks and hypohamiltonian – nonhypohamiltonian, is a quadripartition into exponentially numerous classes provided that $n$ is even and large enough. Thus the properties snark and hypohamiltonicity are shown to be essentially unrelated. Moreover, the constructed graphs are all strongly nonplanar, that is, all contain a subdivision of the Petersen graph.

**Keywords:** flip-flop, composition strength, dot product, Frobenius number, group action, Cauchy–Frobenius (Burnside’s) lemma.

**References**


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