
Zbl 772.05052

Duke, Richard; Erdős, Paul; Rödl, Vojtěch

Extremal problems for cycle-connected graphs. (In English)

Combinatorics, graph theory, and computing, Proc. 22nd Southeast Conf., Baton Rouge/LA (USA) 1991, Congr. Numerantium 83, 147-151 (1991).

[For the entire collection see Zbl 747.00034.]

Let $\mathcal{H}$ be a fixed collection of graphs. A graph G is $\mathcal{H}$- connected if, for every pair of edges of G, there is a subgraph H of G that contains both edges and lies in $\mathcal{H}$. In this and several earlier papers, the authors have focussed attention on the case when $\mathcal{H}$ consists of a small number of even-length cycles. The goal in this work has been to bound the number of edges in a graph that will ensure that it contains a large $\mathcal{H}$-connected subgraph. Having previously given best-possible such bounds in the cases when $\mathcal{H}$ consists of all even cycles of length at most six and when $\mathcal{H}$ consists of all even cycles of length at most twelve, the authors consider here the case when $\mathcal{H}$ consists of all even cycles of length at most eight. Their main result is that, for a positive constant d, an n-vertex graph with dn^2 edges contains a subgraph with $d^2n^2(1-o(1))$ edges in which every pair of edges lie on a cycle of length 4, 6, or 8.

J.G.Oxley (Baton Rouge)

Classification:
05C35 Extremal problems (graph theory)
05C40 Connectivity

Keywords:
cycle-connected graph; Erdős-Ko-Rado theorem