

Partitioning into two graphs with only small components

Bogdan Oporowski
Louisiana State University

We present several results on edge partitions and vertex partitions of graphs into graphs with bounded size components. We show that every graph of bounded tree-width and bounded maximum degree admits such partitions. We also show that an arbitrary graph of maximum degree three has a vertex partition into two graphs, each of which has components on at most two vertices, and an edge partition into two graphs, each of which has components on at most eight vertices. It is not known whether similar results are true for maximum degree four and five, but we show that a similar result is false for maximum degree six or higher, even for planar graphs.