

Determining minor minimal k -connected graphs

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The difficulty of determining the set \mathcal{F}_k of the minor minimal k -connected graphs increases as k increases, and only $\mathcal{F}_1, \dots, \mathcal{F}_4$ are known so far. The finiteness of \mathcal{F}_5 follows from the main result of Graph Minors IV — whereas for proving the finiteness of \mathcal{F}_k , $k \geq 6$, one apparently needs the full statement of WAGNER's conjecture — and there is an explicit conjecture listing all the members of \mathcal{F}_5 . The talk surveys old and recent results concerning these problems. In particular, I describe how to reduce any essentially 6-connected graph on at least 13 vertices to a 5-connected graph by contracting 1, 2, 3, or 4 edges simultaneously.