Extremal K_5-minor-free graphs with fixed girth

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(joint work with David R. Wood)

A typical question of extremal graph theory is the following. *What is the maximum number of edges in a graph that belongs to a certain class?* We study the classes of K_5-minor-free graphs with fixed girth. We show a general result for an infinite number of values. On the other hand we give a detailed argument for the case with girth 5. We exhibit an infinite class of extremal graphs that depends on the number of vertices modulo 5. We indicate that the same principles would work for other values of the girth.