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Asymptotic dimension of minor-closed families and beyond

We prove that the asymptotic dimension of any minor-closed families of graphs, any class of graphs of bounded tree-width, and any class of graphs with bounded layered tree-width are at most 2, 1 and 2, respectively. The first result solves a question of Fujiwara and Papasoglu; the second and third results solve a number of questions of Bonamy, Bousquet, Esperet, Groenland, Pirot and Scott. These results are optimal, improve a number of results in the literature, and imply known and new results about weak diameter coloring and clustered coloring on graphs.