Characterizing Almost-planar Graphs

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A non-planar graph $G$ is almost-planar if $G \setminus e$ or $G / e$ is planar for all edges $e \in E(G)$. This class of graphs is minor-closed so by the results of Robertson and Seymour in their Graph Minors project, the class can be described by a finite set of forbidden minors. Gubser provided a characterization of the 3-connected graphs in this class (Combinatorics, Probability, and Computing, 1996). In this talk, we prove a forbidden minor characterization for all almost-planar graphs. This work is joint with Emily Marshall and Guoli Ding.

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