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# The Grid Minor Theorem in planar graphs.

Quentin Claus

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## Abstract

The famous Grid Minor Theorem [2], of Robertson and Seymour, is a very classical tool in structural graph theory. The idea behind this theorem is that for every graph  $G$  and every planar graph  $H$ , if  $G$  is sufficiently "far" from a forest, then  $G$  "contains"  $H$ . In the particular case when  $G$  is also known to be planar, we can use other proof techniques, and the numerical bounds become better. My coauthors and me have improved the currently best known bound of Gu and Tamaki [1] for the case where  $G$  is planar - we are currently writing the article.

The goal of this talk is to explain a little more rigorously the statement of Robertson-Seymour theorem, as well as some techniques that we used for our result.

This is based on joint work with Wouter Cames van Batenburg, Gwenaël Joret, Robin Petit, Jean-Florent Raymond, and Eileen Robinson.

## References

- [1] Gu, Q.-P. and Tamaki, H. "Improved bounds on the planar branchwidth with respect to the largest grid minor size." *Algorithmica*, 64(3):416– 453, 2012.

- [2] Robertson, N. and Seymour, P. "Graph minors. V. Excluding a planar graph." *Journal of Combinatorial Theory, Series B*, 41(1):92–114, 1986.