

Papers In Preparation

1. L. Demasi and B. Mohar. Rooted $K_{2,4}$ minors in planar graphs.

In their Graph Minors series of papers, Robertson and Seymour showed that given three vertices in a graph G there exists a rooted $K_{2,3}$ minor of G , where the three given vertices form the larger side of the bipartition, if and only if (up to small separations) the graph is not planar with the three vertices on the same face. In this paper, we provide a structural characterization for when given four vertices in a planar graph, there exists a $K_{2,4}$ minor. We also give a polynomial time algorithm for determining this.

2. L. Demasi and B. Mohar. 4-terminal Delta-Wye reducibility.

Given a planar graph G with four special terminal vertices, we would like to know whether such a graph is Delta-Wye reducible to only terminal vertices. We provide a minor characterization for when this is possible .

3. L. Demasi and M. Devos. Domination in plane triangulations.

Matheson and Tarjan showed that the vertices of any plane triangulation can be divided into three sets, each of which is a dominating set. A corollary of this is that any plane triangulation has a dominating set of size at most $V(G)/3$. We improve on this result to show that any plane triangulation has a dominating set of size at most $V(G)/3.5$.