

Coloring count cones of planar graphs

Minors description

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This is a supplement to the paper “Coloring count cones of planar graphs”. The paper mentions that there are 38 forbidden minors. Here we describe them. The starting point for each of these graphs the following graph.

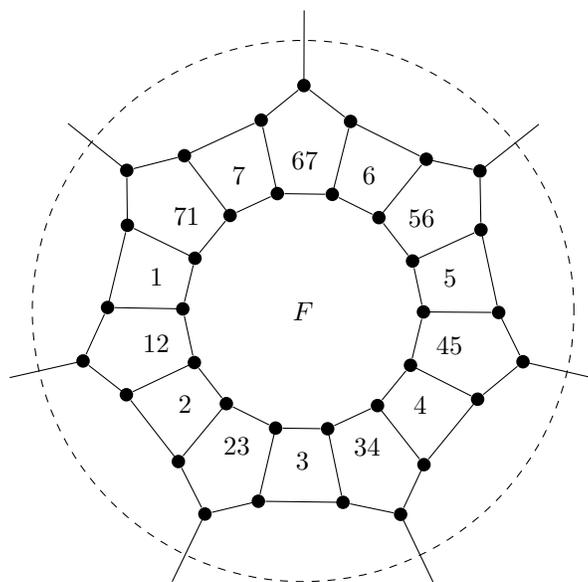


Figure 1: Template for minors. Labels correspond to edges of F .

The listing that follows first contains the number of vertices of degree 3 in the resulting graph and then a description of the interior of face F from Figure 1. Notice that the edges of F are labeled.

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Each sequence of numbers in parenthesis describes one connected component that is placed in F and each number x represents a new vertex that is placed on the edge labeled x , see Figure 1.

Finally, we alter each edge e with single digit label x that does not contain any new vertex. Let v be a common vertex of e and the edge labeled $x(x+1)$. Remove the unlabeled edge incident with v and suppress vertices of degree 2.

The first two minors with 27 vertices of degree 3 are depicted in Figure 2.

27 vs - [(12, 23, 45, 67)]
 27 vs - [(1, 34, 56)]
 29 vs - [(1, 34), (34, 56, 71)]
 29 vs - [(12, 45, 67), (12, 23, 45)]
 31 vs - [(1, 34), (34, 45, 67, 71)]
 31 vs - [(1, 34), (34, 45, 7)]
 31 vs - [(1, 34), (4, 67, 71)]
 31 vs - [(1, 34), (4, 7)]
 31 vs - [(1, 34, 45), (45, 56, 71)]
 31 vs - [(1, 34, 45), (45, 67, 71)]
 31 vs - [(1, 4), (45, 56, 71)]
 31 vs - [(1, 45, 56), (1, 34, 45)]
 31 vs - [(1, 5), (1, 34, 45)]
 31 vs - [(1, 5), (1, 4)]
 31 vs - [(12, 45, 56, 71), (12, 23, 45)]
 33 vs - [(1, 34), (34, 45, 71), (45, 56, 71)]
 33 vs - [(1, 34), (34, 45, 71), (45, 67, 71)]
 33 vs - [(1, 34), (34, 45, 71), (45, 7)]
 33 vs - [(1, 34), (34, 45, 71), (5, 71)]
 33 vs - [(1, 34), (34, 67, 71), (34, 45, 67)]
 33 vs - [(1, 34), (34, 67, 71), (34, 56, 67)]
 33 vs - [(1, 34), (34, 67, 71), (34, 6)]
 33 vs - [(1, 34), (34, 7), (34, 45, 67)]
 33 vs - [(1, 34), (34, 7), (34, 56, 67)]
 33 vs - [(1, 34), (34, 7), (34, 6)]
 33 vs - [(1, 34), (34, 7), (4, 67)]
 33 vs - [(1, 34), (4, 71), (45, 56, 71)]
 33 vs - [(1, 34), (4, 71), (45, 67, 71)]
 33 vs - [(1, 34), (4, 71), (45, 7)]
 33 vs - [(1, 45), (12, 23, 45), (45, 56, 71)]
 33 vs - [(1, 45), (12, 23, 45), (45, 67, 71)]
 33 vs - [(1, 45), (12, 34, 45), (45, 56, 71)]
 33 vs - [(12, 45, 71), (12, 23, 45), (45, 67, 71)]
 33 vs - [(12, 56, 67), (12, 45, 56), (12, 23, 45)]
 33 vs - [(12, 56, 71), (12, 45, 56), (12, 23, 45)]

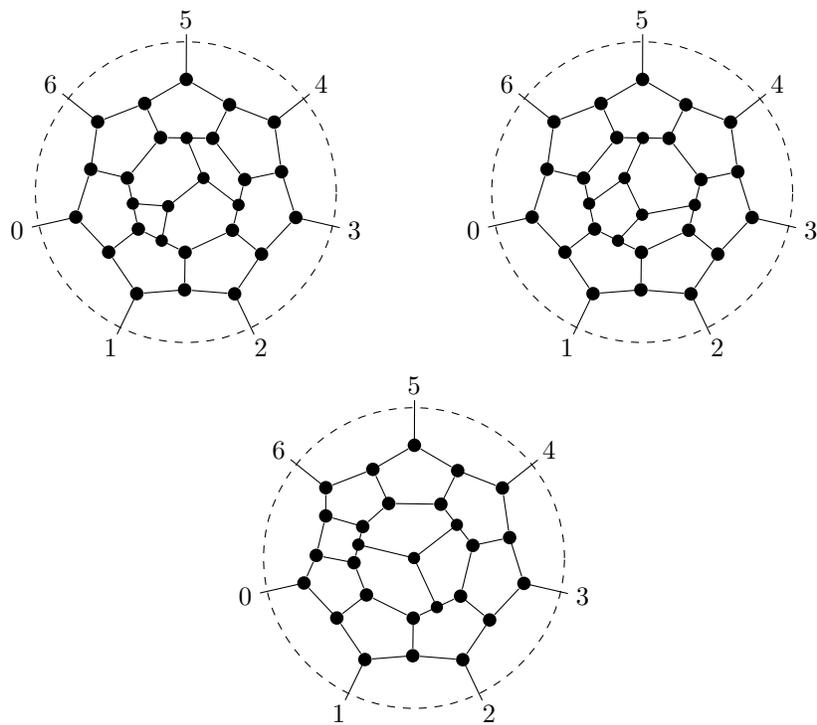


Figure 2: The smallest minors.