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Computing the obstacle number of a plane graph

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An obstacle representation of a plane graph G is V(G) together with a set of opaque polygonal obstacles such that G is the visibility graph on V(G) determined by the obstacles. We investigate the problem of computing an obstacle representation of a plane graph (ORPG) with a minimum number of obstacles. We call this minimum size the obstacle number of G.
First, we show that ORPG is NP-hard by reduction from planar vertex cover, resolving a question posed by [8]. Second, we give a reduction from ORPG to maximum degree 3 planar vertex cover. Since this reduction preserves solution values, it follows that ORPG is fixed parameter tractable (FPT) and admits a polynomial-time approximation scheme (PTAS).

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