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Planar-F deletion in single exponential FPT time

abstract: Given a familly F of graphs, the F-deletion problem consists in testing the existence of a set S of at most k vertices in an input graph G, such that G-S does not contain any H from F as a minor. This problem generalizes a number of classical problems such as Vertex Cover, Feedback Vertex Set among others. We will describe a single exponential FPT time algorithm for the case F contains at least one planar graph, namely the parameterized planar-F-deletion problem where the parameter is the number of vertices to remove.

Our algorithm is based on iterative compression, protrusion replacement techniques (as were several previous algorithms for that problem) and on ideas developed by Langer, Reidl, Rossmanith, Sikdar.

This is a joint work with Ignasi Sau and Eun Jung Kim