# ABSTRACT

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A web is a trivalent graph with oriented edges so that each vertex is a source or sink embedded in a surface. Also to be a web, the complement of the graph in the surface cannot have any faces that are monogons, bigons or quadrigons.

If the surface has at least one puncture and negative Euler characteristic it has an ideal triangulation. Choose one and orient its edges.

Pull the web taut with respect to the edges of the ideal triangulation. General position means that the intersection of the graph with the edges avoids the vertices of the graph and is transverse. Taut position means that the web is in general position with respect to the edges of the ideal triangulation and minimizes the cardinality of intersection.

An important fact about simple diagrams in surfaces is that starting with two diagrams that are transverse they can be isotoped to two diagrams that minimize the cardinality of their interesection by moves that do not increase the cardinality of their intersection. The same thing is true when minimizing the intersection of a web with the edges of an ideal triangulation.

A combinatorial analysis of taut webs is what allows us to coordinatize them. The coordinates are the number of positive and negative intersections of the web in taut position with each oriented edge of the triangulation, along with a number for each triangle which measures how the web is rotating around the triangle.

Using these coordinates we can prove the $SU(3)$-skein algebra of a finite type surface is finitely generated.

This is joint work with Adam Sikora