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**Charles Frohman\*** ([charles-frohman@uiowa.edu](mailto:charles-frohman@uiowa.edu)), Department of Mathematics, The University of Iowa, Iowa City, IA 52242. *Dehn's Algorithm for Simple Diagrams.*

A simple diagram on a surface is a disjoint collection of simple closed curves none of which bounds a disk. If the surface  $F$  is noncompact, of finite type and has negative Euler characteristic, then isotopy classes of simple diagrams are classified up to isotopy by admissible colorings of the edges of an ideal triangulation. The weight of a diagram is the sum of its geometric intersection numbers with the edges of the triangulation. If  $\hat{F}$  is a closed surface, we can remove a point to get a finite type surface  $F$ . Each simple diagram on  $\hat{F}$  can be represented by infinitely many simple diagrams on  $F$ . We show that if the Euler characteristic of  $F$  is negative, any representative of a simple diagram on  $\hat{F}$  can be simplified monotonically to have least weight. Also each diagram has finitely many least weight representatives, which are in fact unique unless the diagram admits a structure analagous to a half relator. (Received January 14, 2015)