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Infinite-type surfaces and the arcs that survive

In the world of finite-type surfaces, one of the key tools to studying the mapping class group is to study its action on the curve graph. The curve graph is a combinatorial object intrinsic to the surface, and its appeal lies in the fact that it is infinite-diameter and δ-hyperbolic. For infinite-type surfaces, the curve graph disappointingly has diameter 2. However, all hope is not lost! In this talk I will introduce the surviving arc graph and we will see that for a large collection of infinite-type surfaces, the graph is infinite-diameter and δ-hyperbolic. The talk will feature a new characterization of infinite-type surfaces, which provided the impetus for this project.

This is joint work with Federica Fanoni and Alan McLeay