Automorphisms of the Fine Curve Graph
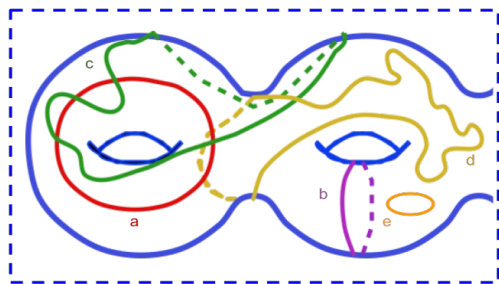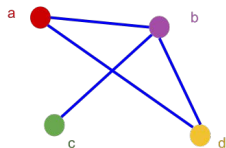
Anna Pham[1], Claudia Yao[2] (joint work with Adele Long[3])
Project Mentors: Dan Margalit and Yvon Verberne
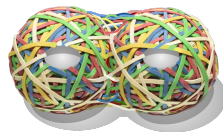
Fine Curve Graph *FC(S)*

Vertices: essential simple closed curves in *S*
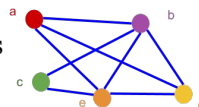**Edges:** Disjointness

Main Theorem

The natural map
Homeo(S) → Aut *FC(S)*
is an isomorphism.

Extended Fine Curve Graph *EFC(S)*

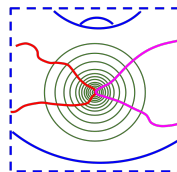**Vertices:** simple closed curves (including inessential curves)

Theorem (Farb-Margalit)

The natural map
Homeo(S) → Aut *EFC(S)*
is an isomorphism.

Subgraph of *EFC(S)* ↔ Point in *S*

$(c_i) \to c \Leftrightarrow$ $\forall$ *a, b* intersecting infinitely many c_i: *a* intersects *b*
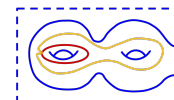

Proof Approach: *EFC(S)* to *FC(S)*

We want a map:
Aut *FC(S)* → Aut *EFC(S)* ≃ Homeo(S)
(F-M)

Characterizing Curves

The **hull** of a set of curves: union of the curves and all the disks they bound
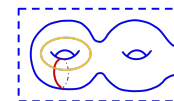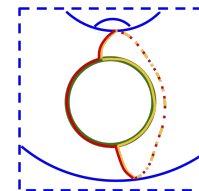

OR

⇔ The hull of two curves contains no other curve.

Curve Pairs

Use essential curves characterizing inessential ones. More complex to characterize.

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