

IGL Brochure - Exploring Entropy and Complexity of Curves on a Surface

Spencer Dowdall (Faculty mentor), Joe Nance, Victor Yang, Xiaolong Han, Yohan Kang

November 14, 2014

· Motivating Idea of this Project

A closed curve γ with a base point p on a surface S determines a natural homeomorphism on the surface $S \setminus \{p\}$.

[Pictures]

· Main Goal of this Project

Given a randomly chosen closed curve with a base point on a genus-2 surface, we measure its entropy and combinatorial complexity, and analyze their correlation.

· Description of Our Program

Our program would randomly choose a surface and a closed curve generated by some special curves on the surface, then calculate its dilatation number (topological entropy) and self-intersection number (combinatorial complexity).