
DMYTRO SAVCHUK, University of South Florida
Submanifold Projection for $Out(F_n)$

One of the most useful tools for studying the geometry of the mapping class group has been the subsurface projections of Masur and Minsky. We propose an analogue for the study of the geometry of $Out(F_n)$ called submanifold projection. We use the doubled handlebody $M_n = \#^n S^2 \times S^1$ as a geometric model of F_n , and consider essential embedded 2-spheres in M_n , isotopy classes of which can be identified with free splittings of the free group. We interpret submanifold projection in the context of the sphere complex (also known as the splitting complex). We prove that submanifold projection satisfies a number of desirable properties, including a Behrstock inequality and a Bounded Geodesic Image theorem. This is a joint work with Lucas Sabalka.