

1127-54-39

Ahmad Rafiqi* (ar776@cornell.edu), 310 Malott Hall Cornell University, Ithaca, NY 14853.
Constructing pseudo-Anosov maps with given dilatations, and computing the Teichmuller polynomial. Preliminary report.

Dilatations, or 'stretch factors', are a real numerical invariant associated to pseudo-Anosov self-homeomorphisms of a compact surface. These numbers turn out to be algebraic units and are biPerron. Given a biPerron algebraic unit λ (satisfying additional properties) we construct a surface and a self-homeomorphism of this surface with λ as dilatation.

The mapping torus of such a homeomorphism gives us a compact 3-manifold M (possibly with boundary) that fibers over the circle. The fiber is an element $[S] \in H_2(M, \partial M; \mathbb{Z}) \simeq H^1(M; \mathbb{Z})$. If the first cohomology of M is at least of rank 2, there are infinitely many other fibrations of M over the circle, and the Teichmuller polynomial encodes the dilatations of the monodromies of these other fibrations. We explain how to compute this polynomial. Part of this work was done in collaboration with Hyungryul Baik and Chenxi Wu. (Received January 30, 2017)