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“Examples of Finite Genus Surfaces Embedded in $R^3$ with Anosov Geodesic Flow”

Monday, March 4, 2024
Talk at 4:15 – Park 245
Tea at 4:00 – Park 361, Math Lounge

Abstract:
The types of dynamical behavior that can occur in Hamiltonian (i.e. measure preserving systems) range from simple and well-behaved (integrable system) to strongly chaotic (Anosov) with varying levels of “chaoticness” in between.

We show how many of these behaviors can arise from geodesic flows on surfaces. However, some of these surfaces are abstract surfaces that do not exist in three-dimensional Euclidean space. We explore examples of surfaces that exist in three-dimensional space and show that such systems can be strongly chaotic (Anosov). The geometry of our three-dimensional space does not limit chaoticness! We finish by giving an explicit estimate for the genus (# of holes) of these examples.