

Surfaces of section for geodesic flows of closed surfaces

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Abstract: A surface of section for the flow of a nowhere vanishing vector field on a closed 3-manifold N is a compact surface in N , with interior transverse to the vector field, and boundary tangent to the vector field. A surface of section is global when it intersects any orbit segment of length T , for some $T > 0$. Surfaces of section are objects of great interest in dynamics, as they allow to reduce the study of a 3-dimensional flow to the study of a surface diffeomorphism. In this talk, I will present a few results on surfaces of section for geodesic flows of closed surfaces, culminating with the existence of global surfaces of section for all those geodesic flows satisfying the C^∞ generic Kupka-Smale condition (joint work with Gonzalo Contreras, Gerhard Knieper, and Benjamin Schulz). As an application, I will present a characterization of the Anosov condition, which implies the validity of the C^2 -structural stability conjecture for geodesic flows of closed surfaces (joint work with Gonzalo Contreras).