J. DIFFERENTIAL GEOMETRY
39 (1994) 359-378

COMPUTATIONS ON THE TRANSVERSE MEASURED FOLIATIONS ASSOCIATED WITH A PSEUDO-ANOSOV AUTOMORPHISM

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The following is a brief summary of the work. Let g be a pseudo-Anosov diffeomorphism of a compact surface S of genus p $(p > 1)$. First, we show how to make a partition of the lift of the unstable foliation Φ_U associated with g to the universal covering space (the unit disk U) into a countable number of layers approximating inaccessible points for Φ_U at infinity (∂U). We prove the following theorem.

Theorem 1. *Let $g^*(z_0) = z_0$. Then there exists an ascending sequence of Cantor sets of measure zero on ∂U invariant under g^*: $\overline{F}_1 \subseteq \overline{F}_2 \cdots \subseteq \overline{F}_n \subseteq \cdots$, such that $E = \cup \overline{F}_n \backslash A$, where E is the set of the endpoints of leaves of Φ_U and A is a countable set.*

The regular step lines will be studied in the second paragraph, both in U and on S. The idea of step lines belongs to Strebel (see [8]). We add one more requirement that each step end at a singularity of ϕ_u. In many aspects the regular step lines are similar to geodesics on a surface. For example, we prove the following theorem.

Theorem 2. *Let z_0, $z \in S$. Then there exists a unique regular step curve from z_0 to z in each homotopy class of curves with fixed points at z_0 and z.*

(Actually, z_0 in Theorem 2 is either a singularity of Φ_U or does not lie on any horizontal or vertical leaf. But this requirement can be easily lifted.) The regular step lines, also, minimize the total variations, both of the first and second coordinates, in a homotopy class of curves with fixed points at z_0 and z. However, the regular step line from z_0 to z is different from the one from z to z_0. At the end of the second section we use the regular step lines to parameterize $\overline{U}$ by sequences of real numbers, where g^* has especially simple form. The above parameterization induces a lexicographical order on points of $\overline{U}$ which agrees with the natural order on ∂U. We notice, here, that all results in the first two sections,

Received February 3, 1993.