MR1125840 (92i:57026) 57R30 (58F18)

Ghys, Étienne (F-ENSLY)

Flots transversalement affines et tissus feuilletés. (French) [Transversally affine flows and foliated webs]

Analyse globale et physique mathématique (Lyon, 1989).

Mém. Soc. Math. France (N.S.) No. 46 (1991), 123–150.

This paper has two independent parts. The first part addresses the following question: Given a transversely holomorphic foliation $\mathcal{F}$ of complex codimension one on a compact manifold M, together with a transverse, holonomy invariant, ergodic measure μ, is it true that μ is (1) concentrated on a compact leaf; (2) concentrated on a compact submanifold of real codimension one; or (3) the volume form of a holonomy invariant, transverse Riemannian structure? The main result is that, if the foliation has a transverse complex affine structure, then one of these three cases holds. The author then classifies the transversely complex affine flows on compact 3-manifolds.

The second part of the paper concerns tissus feuilletés on closed three-manifolds M. Such a structure consists of three pairwise transverse foliations $\mathcal{F}_0, \mathcal{F}_1, \mathcal{F}_\infty$ of codimension one, intersecting along a common axis $\mathcal{A}$ which is a one-dimensional foliation. The foliations are smooth of class C^∞. The author shows that the axis $\mathcal{A}$ is necessarily a transversely holomorphic flow. In addition, $\mathcal{A}$ is either a transversely parallelizable flow or a transversely complex affine flow. In each of these cases, the author completely describes the possible tissus feuilletés. He shows, in particular, that M must either be (a) an S^1 bundle over T^2, (b) a T^2 bundle over S^1, or (c) $S^2 \times S^1$.

Reviewed by *Lawrence Conlon*