MR663239 (83m:57019) 57R30

Carrière, Yves; Ghys, Étienne

Feuilletages totalement géodésiques. (French) [Totally geodesic foliations]

An. Acad. Brasil. Ciênc. **53** (1981), *no. 3*, 427–432.

Let $\mathcal{F}$ be a transversally orientable foliation of codimension 1 on a complete, orientable Riemann manifold M. The authors show that if M is compact and 3-dimensional, then the foliation is geodesible if and only if either it is transverse to a Seifert fibering, or it is obtained as follows: An element A of $\mathrm{SL}_2(\mathbf{Z})$ with trace greater than 2 is used to construct a torus bundle M over the circle, and $\mathcal{F}$ arises from one of the eigenspaces of A. Along the way, the authors show that the universal cover of a totally geodesic, codimension 1 foliation of any dimension is a product. Hence, if M is compact and $\mathcal{F}$ has a compact leaf, then M fibers over the circle and $\mathcal{F}$ is transverse to a generalized Seifert fibering.

Reviewed by *Bruce L. Reinhart*