MR880511 (88b:57032) 57R30
Ghys, Étienne (F-LILL)
Classe d'Euler et minimal exceptionnel. (French) [Euler classes and exceptional minimal sets]
Topology **26** (1987), *no. 1,* 93–105.

Let Σ be a compact, oriented surface of nonpositive Euler characteristic. Each representation $\varphi\colon \pi_1(\Sigma) \to \mathrm{Diff}^+_k(S^1)$ defines a foliated circle bundle over Σ, many properties of which are related directly to the dynamics of $\varphi(\pi_1(\Sigma))$ on S^1. In particular, the foliation has an exceptional minimal set if and only if there is a $\varphi(\pi_1(M))$-invariant Cantor set $K \subset S^1$, each orbit of which is dense in K.

The author studies the relationship between the Euler number $\mathrm{eu}(\varphi)$ of the circle bundle and the existence of such a minimal Cantor set K. His main results are that, if $k \geq 2$, a necessary condition for the existence of K is that $|\mathrm{eu}(\varphi)| < |\chi(\Sigma)|$ and that, if $k = \omega$, it is necessary that $\mathrm{eu}(\varphi) = 0$. It is a well-known result of Milnor and Wood that, in any case, $|\mathrm{eu}(\varphi)| \leq |\chi(\Sigma)|$. A C^∞ construction due to the author and V. Sergiescu exhibits a representation φ with an exceptional minimal set, having $\mathrm{eu}(\varphi) = 1$ and $\chi(\Sigma) = -22$ [Comment. Math. Helv. **62** (1987), no. 2, 185–239].

Reviewed by *Lawrence Conlon*