Exotic classes for measured foliations.


57R30 (28D15 57R20 58F18)

A measured foliations is a $C^2$ foliation $\mathcal{F}$ of a smooth manifold $M$ admitting a transverse invariant measure $\mu$. If $M$ is closed and orientable, $m = \dim(M)$ and $q = \text{codim}(\mathcal{F})$, then any class $y_I \in H^n(\text{gl}_q, O_q)$ determines, via $\mu$-integration over the leaf space, a geometric current in $H_{m-n-q}(M)$, hence a class $\chi_\mu(y_I) \in H^{n+q}(M)$. The author calls these the $\mu$-classes and announces various striking applications. These include applications to volume-preserving foliations and to residuable secondary classes (i.e., the images in $H^*(M)$ of classes $y_{ICJ} \in H^*(WO_q)$, degree $c_{IJ} = 2q$). For instance, if $M$ is closed and every leaf of $F$ is compact, each residuable secondary class must vanish. Examples can be constructed in which all $\mu$-classes are nontrivial, but it is conjectured that they vanish whenever all leaves have nonexponential growth.

Reviewed by Lawrence Conlon

© Copyright American Mathematical Society 1984, 2004