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Hurder, Steven (1-PRIN)
Global invariants for measured foliations.
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The author introduces, studies, and applies a theory of exotic classes for codimension q foliations with transverse invariant measure. With a few assumptions such a measure determines a map $H^*(\mathrm{gl}_q, \mathrm{O}_q) \to H^{*+q}(M)$. This map is easiest to define when the measure is given by a smooth closed q-form w. Let c_i be the ith Chern polynomial and $\Delta(c_i)$ the familiar $(2i-1)$-form from the theory of exotic classes constructed from a Bott and Riemannian connection. In this case the map takes y_i in $H^*(\mathrm{gl}_q, \mathrm{O}_q)$ to $\Delta(c_i) \wedge w$.

The author relates these measure classes to other invariants such as leaf invariants and the Weil operators [J. Heitsch and the author, "Secondary classes, Weil operators and the geometry of foliations", J. Differential Geom., to appear]. Properties of the measure classes, examples of triviality and nontriviality are given. Applications are made to SL_q-foliations, the cohomology of the classifying spaces for SL_q-foliations and to the study of certain groups of diffeomorphisms.

Reviewed by *Connor Lazarov*