

1131-58-331

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We prove that any smooth foliation that admits a Riemannian foliation structure has a well-defined basic signature, and this geometrically defined invariant is actually a foliated homotopy invariant. We also show that foliated homotopic maps between Riemannian foliations induce isomorphic maps on basic Lichnerowicz cohomology, and that the Álvarez class of a Riemannian foliation is invariant under foliated homotopy equivalence. The definitions and geometric interpretations of these words will be explained. (Received July 18, 2017)