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Box 298900, Fort Worth, TX 76129. *New cohomological invariants of foliations.*

Given a smooth foliation on a closed manifold, basic forms are differential forms that can be expressed locally in terms of the transverse variables. The space of basic forms yields a differential complex, because the exterior derivative fixes this set. The basic cohomology is the cohomology of this complex, and this has been studied extensively. Given a Riemannian metric, the adjoint of the exterior derivative maps the orthogonal complement of the basic forms to itself, and we call the resulting cohomology the “antibasic cohomology”. Although these groups are defined using the metric, the dimensions of the antibasic cohomology groups are invariant under diffeomorphism and metric changes. If the underlying foliation is Riemannian, the groups are foliated homotopy invariants that are independent of basic cohomology and ordinary cohomology of the manifold. For this class of foliations we use the codifferential on antibasic forms to obtain the corresponding Laplace operator, develop its analytic properties, and prove a Hodge theorem. We then find some topological and geometric properties that impose restrictions on the antibasic Betti numbers. (Received September 13, 2019)