

1096-AG-2744 **Dan Margalit*** (margalit@math.gatech.edu). *Characteristic classes for surface bundles.*

A characteristic class for a vector bundle is some data that describes how twisted the vector bundle is. The simplest instance is that an open annulus has trivial characteristic classes and an open Mobius band has nontrivial characteristic classes. Characteristic classes are useful because they are computable, and because they help us tell vector bundles apart (how else can we distinguish the tangent bundle of, say, a sphere from the trivial bundle?) It turns out that there is a complete list of all characteristic classes; they correspond to cohomology classes of a space called the Grassmannian. In this talk we will describe this classical theory and show how it transfers to the case of surface bundles (the fiber over each point is a surface instead of a vector space). Again the characteristic classes describe how twisted the bundle is and again the characteristic classes correspond to the cohomology classes of some other known object, in this case the mapping class group. The characteristic classes we do understand have some remarkable symmetries. However, unlike the vector bundle case, we are far from having a complete list. I will survey what is known and give an idea of the vastness of the uncharted territory. (Received September 18, 2013)