ON LOCALIZATION OF THE GODBILLON-VEY CLASS TO COMPACT LEAVES

HITOSHI MORIYOSHI

Let (M, F) be a foliated manifold of codimension one. There exists a celebrated secondary characteristic class, the Godbillon-Vey invariant $\mathrm{GV}(F)$, which belongs to the de Rham cohomology group $H^3(M)$. We shall define a refined invariant GGV, called the groupoid GV class in $H^3(I^*)$, where I^* is the defining ideal of the foliation F contained in the de Rham complex $\Omega^*(M)$. The refined class descends to $\mathrm{GV}(F)$ via the natural inclusion from I^* to $\Omega^*(M)$. In this talk we first prove that GGV can be localized on compact leaves of F to the de Rham cohomology group with holonomy local system. Second, the resulting class is nontrivial for a foliated circle bundle over a Solvmanifold, even though its Godbillon-Vey invariant vanishes in this case.