
The holonomy groupoid of a foliation can easily fail to be Hausdorff, even though every element still has a Hausdorff neighborhood. For groupoids of this kind, a convolution algebra construction was defined by A. Connes, and was further studied by G. Skandalis, A. Paterson, and others. We present an equivariant $KK$-theory with respect to such groupoids, and prove its properties. The main application is to the Baum-Connes conjecture. (Received September 19, 2007)