

## Cohomological equations and renormalization

In a joint work with G. Forni we have studied the cohomology of horocycle flows on hyperbolic surfaces and applied this study to obtain precise asymptotics of ergodic averages of these flows. In successive works by Mieczkowski and Ramirez similar methods have been used to compute the cohomology of other groups actions. In these two lectures we shall present in detail the the main ideas introducing all the necessary background.