

Abstract

Given a \mathbb{Z}^k action on a compact nilmanifold by automorphisms without rank 1 factor actions, we show that any ergodic invariant measure either is the uniform measure or projects to a zero entropy factor modulo finite index modification. We will discuss an analogous statement for invariant subsets as well. Finally, we will display an ergodic invariant measure with positive entropy, such that any finite index ergodic component is not translation invariant by any non-trivial subgroup of the covering nilpotent group.