



NAKAYAMA FUNCTORS ON PROPER ABELIAN SUBCATEGORIES

DAVID NKANSAH

Abstract: We construct Nakayama functors on proper abelian subcategories of triangulated categories with a Serre functor using approximation theory. This, in turn, allows for the construction of Auslander–Reiten translates. As a result, we prove that suitable proper abelian subcategories are dualising k -varieties and have enough projectives if and only if they have enough injectives. As an application, we provide a new proof of the existence of Auslander–Reiten sequences in the category of finite-dimensional modules over a finite-dimensional algebra.

2020 Mathematics Subject Classification: 18E10, 18G80, 18G25.

Key words: approximation, Auslander–Reiten translation, cover, envelope, Nakayama functor, Serre functor, triangulated category.