

Ulrich Kraehmer (TU Dresden)

Erasmus course on:

“Homological Methods in Noncommutative Geometry”

Abstract

This minicourse will provide a brief and informal introduction to some homological algebra used in noncommutative geometry and related subjects. We will briefly recall the basic construction of Ext and Tor using resolutions of modules, discuss Hochschild and then cyclic homology, and move on to further algebraic structures (cup and cap products, Gerstenhaber bracket etc). The case of commutative algebras (Hochschild-Kostant-Rosenberg theorem, homological smoothness) will be mentioned, and I intend to finish with an introduction to Calabi-Yau algebras.