Abstract

The derived triangulated category of quasi-coherent sheaves over an Artin stack fails to be compactly generated in general. Using Lurie-Quillen deformation theory formalism I will discuss an obstruction theory for lifting compact objects to the stable ∞ category of quasi-coherent modules over a derived geometric stack $X$ from the category of modules over it’s underlying classical stack $X^{cl}$. The obstructions live in Andre-Quillen cohomology. An explicit description of the space of realizations of a given module over $X$ as a colimit of perfect modules can be given in terms of the k-invariants of a Postnikov tower of $X$ and the cotangent complex of the moduli functor of perfect modules.