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**David Allen\*** (dtallen@bmcc.cuny.edu), David Allen, Mathematics Dept (N599), 199 Chambers Street, New York, NY 10007. *Applications of Homotopy Theory to Torus Actions.*

In this talk I will describe explicit calculations of the higher derived functor of the indecomposable functor,  $L_iQA$  (or dually,  $R^iP(-)$ ) for an augmented simplicial algebra  $A$  over a commutative ring. In certain degrees there are concrete representations that facilitate explicit calculations. These computations allow one to translate statements concerning torus actions on Quasitoric manifolds into statements concerning the orbits, which can then be analyzed using unstable methods. There is an interplay between the combinatorics, simplicial methods and commutative algebra that produces isomorphisms of these derived functors. A few applications will be discussed, the first answers in the negative a question posed by Bendersky on the existence of certain “nice” torus actions. These methods also provide additional insight into questions regarding cohomological rigidity including notions such as *C-rigid* polytopes recently studied by Panov and his collaborators. Time permitting I will discuss recent results regarding the Unstable  $K(1)$  completion of a certain family of Toric Spaces.

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