On the computation of A-infinity algebras and Ext-algebras
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ABSTRACT: Abstract: For a ring R, the Ext algebra $Ext_R^*(k, k)$ carries rich information about the ring and its module category. The algebra $Ext_R^*(k, k)$ is a finitely presented k-algebra for most nice enough rings. Computation of this ring is done by constructing a projective resolution P of k and either constructing the complex $Hom(P_n, k)$ or equivalently constructing the complex $Hom(P, P)$. By diligent choice of computational route, the computation can be framed as essentially computing the homology of the differential graded algebra $Hom(P, P)$.

Being the homology of a dg-algebra, $Ext_R^*(k, k)$ has an induced A-infinity structure. This structure, has been shown by Keller and by Lu-Palmieri-Wu-Zhang, can be used to reconstruct R from $Ext_R^{\leq 2}(k, k)$.

In this talk, we shall discuss the computation of $Ext_R^*(k, k)$ and methods for computing an A-infinity structure on the Ext algebra. Examples will be drawn from group cohomology, where the computation of the Ext algebra has conditions from Benson and Carlson for recognizing whether a partial computation has the entire structure.