1048-17-14 **Mikael Vejdemo-Johansson*** (mik@math.stanford.edu), Stanford University, Dept. of Mathematics, Bldg 380, Stanford, CA 94305-2125. *Finite time computation of A-infinity algebra structures on Ext algebras.* Preliminary report.

For a k-algebra R, the Ext algebra $\mathrm{Ext}^*_R(k,k)$ carries rich information about the ring and its module category. The algebra $\mathrm{Ext}^*_R(k,k)$ 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 $\mathrm{Hom}(P_n,k)$ or equivalently constructing the complex $\mathrm{Hom}(P,P)$. By diligent choice of computational route, the computation can be framed as essentially computing the homology of the differential graded algebra $\mathrm{Hom}(P,P)$.

Being the homology of a dg-algebra, $\mathrm{Ext}^*_R(k,k)$ 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 $\mathrm{Ext}^{\leq 2}_R(k,k)$.

It turns out that for good k-algebras R, the computation of a complete A-infinity algebra structure, specifying explicitly all the structure maps, can be performed with a finite amount of explicit computation. Furthermore, there is an easy sufficient but not necessary test to recognize that an A-infinity structure is complete. In this talk, I will describe these properties and give examples of computations that are feasible using these techniques. (Received November 12, 2008)