

1116-13-1430      **Peder Thompson\*** (pthompson4@math.unl.edu). *Stable local cohomology.*

Let  $R$  be a Gorenstein local ring,  $I$  an ideal in  $R$ , and  $M$  an  $R$ -module. The local cohomology of  $M$  supported at  $I$  can be computed by applying the  $I$ -torsion functor to an injective resolution of  $M$ . Since  $R$  is Gorenstein,  $M$  has a complete injective resolution, so it is natural to ask what one gets by applying the  $I$ -torsion functor to it. Following this lead, we define stable local cohomology for modules with complete injective resolutions. This gives a functor to the stable category of Gorenstein injective modules. We show that in many ways this behaves like the usual local cohomology functor. Our main result is that when there is only one non-zero local cohomology module, there is strong connection between that and stable local cohomology; in fact, the latter gives a Gorenstein injective approximation of the former. (Received September 19, 2015)