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Bruce R Corrigan-Salter* (brcs@wayne.edu). *Coefficients for higher order Hochschild cohomology.*

When studying deformations of an A -module M , Laudal and Yau showed that one can consider 1-cocycles in the Hochschild cohomology of A with coefficients in the bi-module $End_k(M)$. With this in mind, the use of higher order Hochschild (co)homology, presented by Pirashvili and Anderson, to study deformations seems only natural though the current definition allows only symmetric bi-module coefficients. In this talk we present an extended definition for higher order Hochschild cohomology which allows multi-module coefficients (when the simplicial sets \mathbf{X}_\bullet are accommodating) which agrees with the current definition. Furthermore we determine the types of modules that can be used as coefficients for the Hochschild cochain complexes based on the simplicial sets they are associated to and give an example of deformations that can be described via higher order Hochschild cohomology. (Received July 18, 2015)