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Dan Lior* (danlior2@uiuc.edu), 410 West Green Street, Apartment 4, Urbana, IL 61801. *The role of free Lie algebras in the Taylor tower of Γ -modules.* Preliminary report.

We present, for an arbitrary Γ -module F , a bicomplex $\Upsilon(F)$ whose columns are derived tensor products $Inj([n], -)_+ \widehat{\otimes}_{\Sigma_n} cr_n F([1])$ of the functor of pointed injections out of a pointed n element set with the n^{th} cross effect module of F . We give explicit descriptions of layers of the discrete Taylor tower for the Γ -module $Inj([n], -)_+$ and show how to use these layers together with ΥF to construct bicomplexes for all the layers of the discrete Taylor tower of F . In particular, the bicomplex for the first layer has intimate connections with certain free Lie algebras and the stable homotopy of F . These connections are described. (Received September 22, 2010)