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The use of labelled trees in the Goodwillie-Taylor tower of discrete modules

A discrete module is a functor of finite pointed sets taking values in chain complexes of abelian groups. For an arbitrary discrete module F, McCarthy, Johnson and Intermont described the first homogeneous layer D_1F of the Goodwillie-Taylor tower of F in terms of the cross effects of F and the multilinear parts of finitely generated free Lie algebras. I will describe a category of trees which illustrates this connection and extends it to the rest of the layers D_nF of the Goodwillie-Taylor tower of F.