

Bibliographical Comments on Part IV

This part gives the first systematic and comprehensive study of the relationship between the homotopy of modules over operads and functors. Nevertheless, we note that another model structure for right modules and bimodules over operads is defined in [54] in the context of simplicial sets and simplicial modules. A version of theorem 15.1.A also occurs in [54], but the other unifying homotopy invariance result, theorem 15.2.A, is completely new for modules over operads. Recall however that theorem 15.2.A has already been proved for certain very particular instances of modules (see §15.2). The homotopy invariance of the relative composition product is proved in the dg-context in [14] by using spectral sequence arguments, and in the context of spectra in [23].

The homotopy of extension and restriction functor has already been studied in various situations: in the context of simplicial sets and simplicial modules, [54, §3.6]; for certain operads in differential graded modules, [26]; in the context of spectra, [21, Theorem 1.2.4] and [23]; under the assumption that the underlying model category is left proper, [4].

The ideas of §17 are original, though certain results already occur in the literature. In particular, theorem 17.4.A, the homotopy invariance of enveloping operads (algebras) on cofibrant algebras, is proved in [26] and [5] by other methods. On the other hand, the parallel case of cofibrant operads, stated in theorem 17.4.B, is completely new.