

Proposition: $H(\mathcal{L}C) = \text{Cotor}^c(\mathbb{R}, \mathbb{R})$ as an algebra.

Cor: If X is a \mathbb{T} -reduced simplicial set, $H(\mathcal{L}C(X)) = \text{Cotor}^{c(X)}(\mathbb{R}, \mathbb{R}) = H(\mathcal{L}X)$ as an algebra.

Proof: let $\tau: C \rightarrow \mathcal{L}C$, $\tau c = s^1 c$, be the canonical twisting morphism.

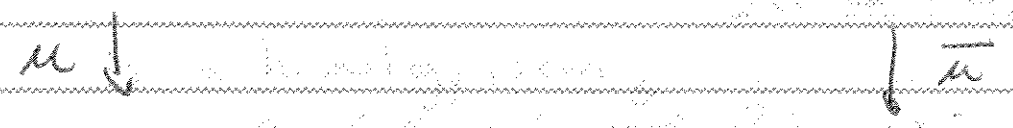
Recall the \mathbb{T} -twisted tensor products (= Cartan construction) $\mathcal{L}C \otimes_{\tau} C$ and $C \otimes_{\tau} \mathcal{L}C$ with differentials

$$d_{\tau} = d_{\otimes} + [(\mu \otimes 1)(1 \otimes \tau \otimes 1)(1 \otimes \Delta)] \text{ and}$$

$$d_{\tau} = d_{\otimes} - [(\mu \otimes 1)(1 \otimes \tau \otimes 1)(\Delta \otimes 1)], \text{ respectively.}$$

In terms of the construction, the multiplication in differential cotor is given by:

$$\mathcal{L}C \otimes_{\tau} C \square_C R \square_C C \otimes_{\tau} \mathcal{L}C = \mathcal{L}C \otimes R \otimes \mathcal{L}C$$



$$\mathcal{L}C \otimes_{\tau} C \square_C C \square_C C \otimes_{\tau} \mathcal{L}C = \mathcal{L}C \otimes_{\tau} C \otimes_{\tau} \mathcal{L}C$$

where: the map $\bar{\mu}$ is the obvious one;