Corollary: $\mathrm{Cotor}^{P}(\mathbb{Z}/p, \mathbb{Z}/p) =$

$\mathrm{Cotor}^{P_0}(\mathbb{Z}/p, \mathbb{Z}/p) \otimes \mathrm{Cotor}^{P_1}(\mathbb{Z}/p, \mathbb{Z}/p) \otimes \cdots$

as Hopf algebras.

Proof: Consider the special case

$$\mathrm{Cotor}^{C\otimes D}(R, R) = \mathrm{Cotor}^{C}(R, R) \otimes \mathrm{Cotor}^{D}(R, R)$$

1) algebra $=$ is always true

2) coalgebra $=$ is: $\Delta_{C\otimes D}$ is the composition

$$(1\otimes T\otimes 1)(\Delta_C \otimes \Delta_D) : C\otimes D \longrightarrow C\otimes C\otimes D\otimes D \longrightarrow C\otimes D\otimes C\otimes D$$

and colgebra $=$ is true whenever C and D are commutative and these diagonals are maps of colgebra.

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the general result follows from:

$$P_0 \otimes P_1 \otimes \cdots = \varinjlim (P_0 \otimes \cdots \otimes P_k).$$

Corollary: mod p, $H(\Omega^2 S^{2n+1}) =$

$$\bigotimes_{k=0}^{\infty} \mathrm{Cotor}^{P_k}(\mathbb{Z}/p, \mathbb{Z}/p) \text{ as algebras.}$$