

Rewriting for operads... essentially the same.

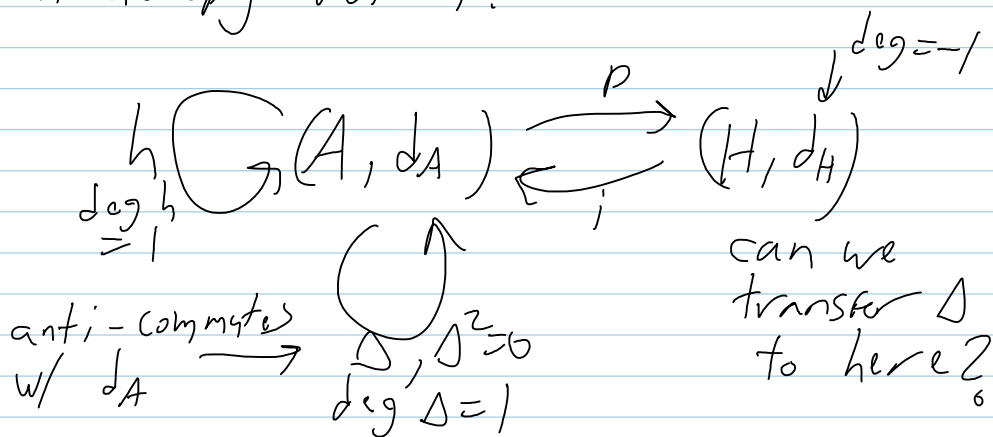
Gives a very easy proof that the associative operad is Koszul.

Also an easy proof that the Lie operad is Koszul. The diamond is:

Homotopy Algebras.

1. Motivation: The homotopy transfer Theorem

Homotopy retract:



$$d_1 := p \Delta i$$

$$d_1^2 = p \Delta i p \Delta i \neq 0$$

yet, with $d_2 = p \Delta h \Delta i$,

$$d_1^2 = \partial(d_2) = d_H d_2 + d_2 d_H$$

... set $d_n = p(\Delta h)^{n-1} \Delta i$ $|d_n| = 2n-1$

get $\partial(d_n) = \sum_{k=1}^{n-1} d_k d_{n-k}$... compares w/

get "spectral sequences"

the resolution from
| |

day 1.

A similar story occurs when we try to transfer an algebra structure.

see video -----

Get "a lifting of the Massey products"

A similar story in general... see videos.

It actually half makes sense, that to define a P_∞ -structure one would need to understand P^1 or P^i .

Will I get meta- A_∞ structures in categorifying the Alexander polynomial?
Ouch how painful this will be....