Franz: Homotopy Gerstenhaber algebras in toric topology

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Gerstenhaber Algebra: "graded commutative Poisson algebra": $A, \cdot, [\cdot,\cdot]$ w/

$$[a, bc] = [a,b]c + (-1)^{|a|(|b|-1)} b[a,c]$$

Ex 1. $\Lambda^* g$ when g is a Lie Alg.

2. $HH^*(A,A)$ where A is an associative algebra.

3. A B-V algebra.

Homotopy Gerstenhaber Algebra:

A a dg algebra with operations

$E_p : A \otimes A^{\otimes p} \to A$ of deg $-p$, $p \geq 1$

w/ many relations, including

$$dE_1(a,b) - E_1(da, b) \pm E_1(a, db) = ab \mp ba$$

So on cohomology,

$$[\![a]\!][\![b]\!] = \mp [\![b]\!][\![a]\!]$$

.... So $H^*(A)$ is a G-algebra

1. The Deligne Conj (proven by Voronov-Gerstenhaber, Getzler, Jones)

$HC^*(A,A)$ is a hG algebra

Hocschild Cochains

2. If X is a topological space then the singular cochains $C^*(X,R)$ is a hG algebra. 0:19