

17-1350-AKT Tue Feb 28, Gentle Hours 13-14: Chord

Diagrams

February 7, 2017 8:32 AM

Last Class:



Review

$$K(s) = \mathbb{Q}\langle \downarrow \rangle \quad K_n = \langle X \dots X \rangle \quad X = \downarrow - \downarrow$$

"decreasing filtration"

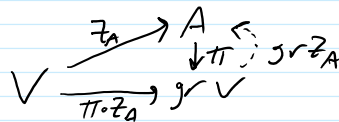
$$A := gr K \quad A_n = K_n / K_{n+1} \leftarrow \mathcal{Q}_n = \mathbb{Q}\langle \downarrow \rangle$$

1. $UT, FI \quad A_n := \mathcal{Q}_n / UT$

2. Definition: A "guess gr " is a graded $A = \bigoplus A_n$ w/ graded $\pi: A \rightarrow gr V$
 An A -expansion is $Z_A: V \rightarrow A$ s.t. $\pi \circ gr Z_A = Id: A \rightarrow A$
 meaning, if $a \in A_n$, $\pi a = [F]$ w/ $F \in F_n V$, $Z_A(F) = (0 \dots 0, a, *, \dots)$.

Claim If $Z_A: V \rightarrow A$ is an A -expansion, then guess is confirmed & $Z = Z_A // \pi$ is an expansion.

PF



3. Goal: Construct an A -expansion $Z: K \rightarrow A$.

Quick overview of existing constructions: CS, KZ
 naively, there isn't a homomorphic expansion, yet PT, KTG, \dots

4. properties of A :

a. $A(\downarrow_s)$ is a meta-Hopf-algebra.

b. $A(\uparrow)$ is a commutative & co-commutative bi-algebra. } *done like mentioned*

c. $A(\uparrow_s) \cong A(*_s) = \mathcal{Q}(s)$ but first,

5. $A^c \cong A^t$

6. The relationship w/ metrized Lie algebras.

7. PBW.