Wednesday-8 AKT on 140305: Graph cohomology and the construction of a UFTI, 2

February-25-14 11:11 AM

Go over "GC & CSI" handout, then:

In particular, we have $I_n : H^0(\bar{\mathcal{D}}_n) \longrightarrow \mathcal{A}^0(\Gamma)$
$= \{\text{knot invariants}\}$

set $Z_0 = \sum_n I_n^* : \{\text{knots}\} \longrightarrow \widehat{\bigoplus_{n\geq 0}} [H^0(\bar{\mathcal{D}}_n)]^*$

$$(H^0(\mathcal{D}))^* = (\ker d)^* = (\bar{\mathcal{D}}^0)^* / \operatorname{im} d^* : (\bar{\mathcal{D}}^1)^* \longrightarrow (\bar{\mathcal{D}}^0)^*$$
$$= \underline{\mathcal{D}}_0 / \operatorname{im} d^* : \underline{\mathcal{D}}_1 \to \underline{\mathcal{D}}_0$$

$$d^*_{\text{naive}}(\quad) = 3\quad + 2\quad + 4\quad$$

$\underline{\mathcal{D}}_m = (\bar{\mathcal{D}}^m)^* = \bar{\mathcal{D}}^m$; yet set $\langle \bar{D}, \underline{D}' \rangle = |\operatorname{Aut}(D)| \delta_{DD'}$

$$\langle d^* \underline{\quad}, \bar{\quad} \rangle = 3 = \langle \underline{\quad}, d\, \bar{\quad} \rangle$$

In general $d^* D$ = sum over all ways of breaking a vertex in D.

<u>Prop</u> $H^0(\bar{\mathcal{D}}^0)^* \cong \mathcal{A} = \underline{\mathcal{D}} / \begin{smallmatrix} STU \\ IHX \end{smallmatrix}$

done line

<u>prop</u>
$$Z_0(\gamma) = \sum_{D \in \underline{\mathcal{D}}} \frac{1}{|\operatorname{Aut}(D)|} I(D)(\gamma) = \sum_{D \in \underline{\mathcal{D}}} \frac{1}{|\operatorname{Aut} D|} \int_{C_D^\gamma} \Phi_D^* \omega^{E_i(D)}$$

<u>prop</u> If invariant, Z_0 is a UFTI.