

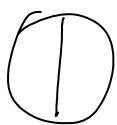
$S * K = \sum \text{trees}$
 $\deg = (\# \text{vert} - 1)n - (\# \text{edges})(n-1)$
 $d = [\text{graph}] - [\text{graph}]$

Is there any advantage to seeing the graph homology differential as the bracket with a fixed element $(\circ \rightarrow)$?

Does this have a topological meaning?

$\Delta = [0, \cdot]$
 $\{ \Gamma_1, \Gamma_2 \} = \Gamma_1 \wedge \Gamma_2$
 $H^0(G_n) = 0$
 $H^1(G_n) = 0$
 $H^2(G_n) = 0$
 $H^3(G_n) \neq 0$

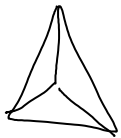
The "correct" grading is always $(n-1)l - nV$



deg 1
inv of
3-manifold

inv of 2D
families
of 5-folds

inv of 4D
families of
7-folds



deg 2
inv of
3-manifolds

inv of 4D
families
of 5-folds

inv. of 9D
families of
7-folds

Is there a topological way to go between these classes of objects?

$g_{rt} \rightarrow \text{Def}(G_{\infty} \rightarrow \text{Graphs})$
 $H(\text{graphs})$
 $\text{graphs} \rightarrow \Omega(FM_n)$
 $\delta(0000) = \Sigma(0000)$
 $\delta X = \dots$
 $\delta Y = \dots$
 $\delta(0000) = \Sigma(0000)$

$g_{rt} = H^1(t, d_s) = \text{Def}(\text{Assoc} \rightarrow t[[\Gamma]])$
 $\mathbb{R}(\text{Com}(\Gamma)) \xrightarrow{m, \Gamma} \text{Com}(\Gamma)$
 Pavel Severa & me: "Equivalence of for- $H(KG) = t$ "
 finalities of the 1-d operad
 $\gamma(x, y) = -\gamma(y, x)$
 $\gamma(x, y) + \gamma(y, z) + \gamma(z, x) = 0$ ($z = -x - y$)
 $(ICG \leftarrow TCG \rightarrow t)$
 $\text{pent } ICG_n = \dots$ internally conn. graphs
 $\text{deg} = n$
 $g_{rt} = H^1(ICG, d_s + d_t)$
 $H(ICG, d_s) \cong \text{graphs w/ one ext vert \& valence one}$
 $[t_{n1}, t_{n2}] = \dots$

I have no graph-homology interpret. of uni-trivalent diagrams.

$g_{rt} \text{ Graphs} \xleftarrow{\text{Drinfeld ass}} \text{Br} \dots ?$
 $H(\dots) = \Omega_2$
 $\text{Br} \rightarrow \mathcal{C}(FM) \xrightarrow{\Phi} \text{Graphs}$
 $H^1 = e_2$
 $(ICG \text{ filtration by int loop nr.})$
 $E_0^{0,0} \cong t_{der}$
 $E_1^{0,0} \cong s_{der}$
 $E_2^{0,0} \cong \mathbb{R}V$
 $E_1^{2,1} \cong t_2$

Is there a v-version of graph homology?