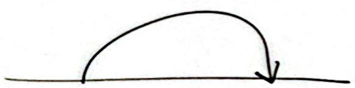
$I_g = g \oplus g^*$ with trivial cobracket

$T_{I_g} : (D) ; 1 \longrightarrow \mathcal{U}(I_g)^{\otimes n}$

$D \in A^w(T_n) =$

$$\begin{tikzcd}
\text{Braided monoidal + extra} & \mathcal{U}(\mathbb{L} \oplus \mathbb{L}^*) \text{ in Symm monoidal cat} \arrow[l, "Q"'] \\
vT \arrow[u] \arrow[r, "Z"] & A \arrow[u]
\end{tikzcd}$$



$vT/\sim \; = wT$

"b": $1 \longrightarrow g \otimes g^*$

$\Updownarrow$

id: $g \longrightarrow g$

	Topology	Assoc graded	Lie algebras
w			g^* abelian / cobracket trivial
v	no such thing	no such relation	Lie bialgebras (of some flavour)

Let $\mathbb{L}^c$ = universal Casimir Lie algebra object in some (nice) base category $\mathcal{C}$

Thm. (Hinich-Vaintrob): There is an isomorphism of Hopf algebras $A \longrightarrow Z(\mathcal{U}(\mathbb{L}^c))$

external universal enveloping algebra

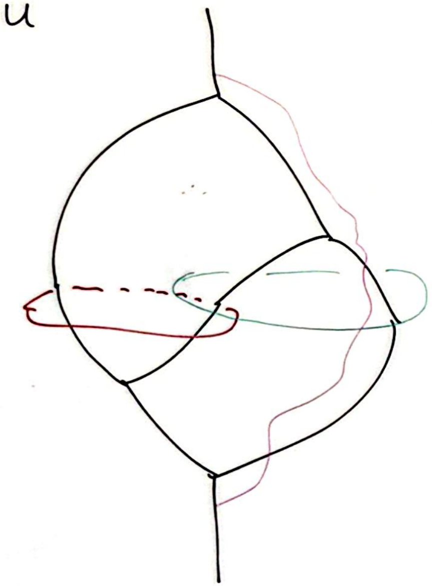
$\mathrm{Hom}_{g\text{-mod}}(1, \mathcal{U}(g)) = Z(\mathcal{U}(g))$

$$\begin{tikzcd}
wTF \arrow[r, dashed, "Z"] \arrow[d, dashed] & A^w \arrow[d] \\
\mathcal{U}(\mathbb{L}^c)X \arrow[r, dashed] & \mathcal{U}(\mathbb{L}^c) \in \mathcal{C} \\
 & \mathbb{L} \oplus \mathbb{L}^* \arrow[u]
\end{tikzcd}$$

in some braided monoidal cat

sym monoidal cat

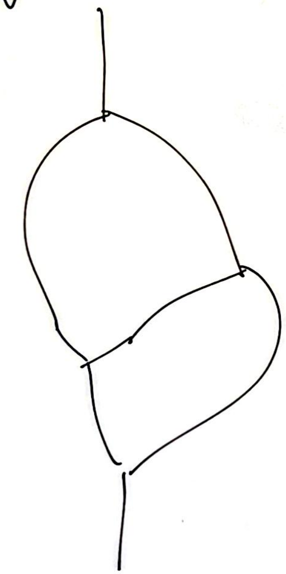
u



⇒ Goldman

⇒ Turaev

W



also ok

$\sigma \oplus \sigma^* - \mathrm{Id}$

$\updownarrow$

δ_{Turaev} or δ_{gr}

A^{wkon}