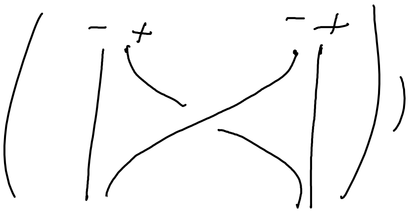
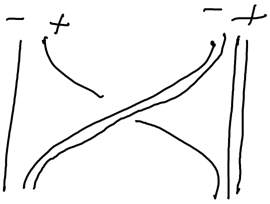
The Core E-K Argument

February-14-10
9:54 AM

$j := (\phi^{-1} \otimes \phi^{-1})\big(Z\big($  $\big)\big)$

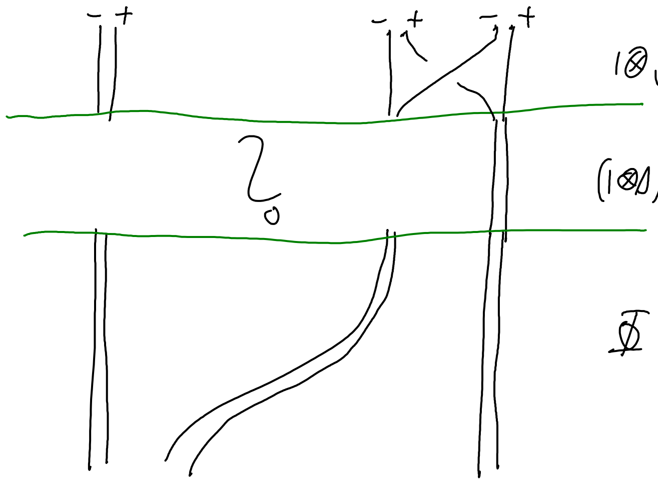
Q If $(1 \times \Delta) j = (\phi^{-1} \otimes \phi^{-1} \otimes \phi^{-1})(Z(S))$, what's S?

Ans

$S =$  , with a virtual re-ordering and re-bracketing placed on top

maybe  ?

A claim missing a good proof: j twists Φ to the identity.



$1 \otimes j$

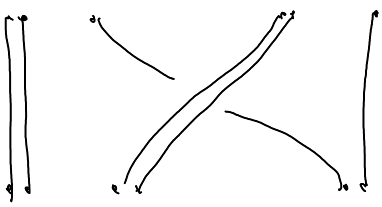
$(1 \otimes \Delta) j$

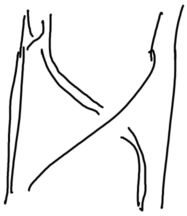
wrong order

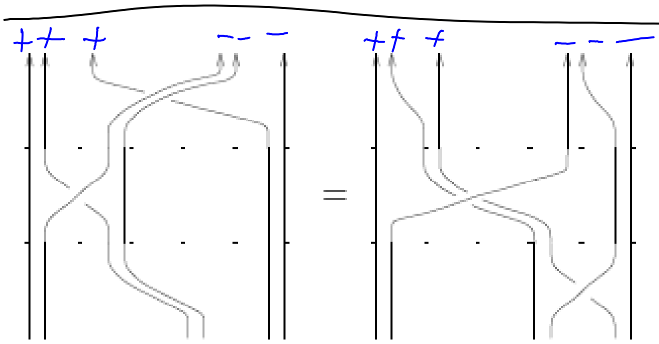
Φ

missing

$(\Delta \otimes 1) j^{-1}$, $j^{-1} \otimes 1$







Picture from Haviv.

Q What's that, as an equality in $\vec{A}_3^{v}$?

i.e., in $\mathcal{U}(g)^{\otimes 3}$

Ans: $\Phi^{-1} \underbrace{(j \otimes 1)}_{\text{confirm}} (\Delta \otimes 1)(j) = \underbrace{(1 \otimes j)}(1 \otimes \Delta)(j)$

wrong

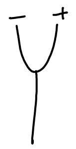
confirm

wrong! confirm

There's a funny change to the order of terms. confirm

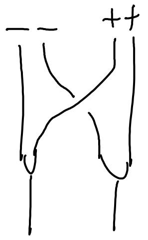
Properties of $\phi: U(\mathfrak{g}) \xrightarrow{\sim} M_+ \otimes M_-$:

1. Not multiplicative, as this sense makes not.
2. Yes comultiplicative.
3. Yes $U(\mathfrak{g})$-module morphism.

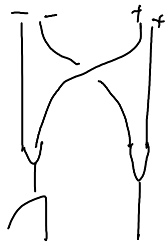


The meaning of ϕ: The picture on the left is sweepable.

So j is

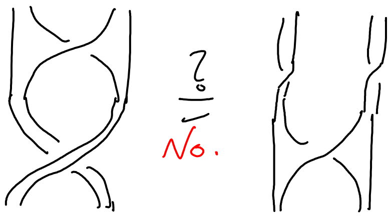


Hence $(\Delta\otimes 1)j$ is

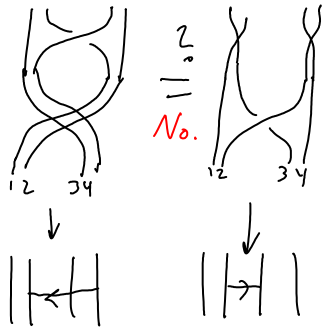


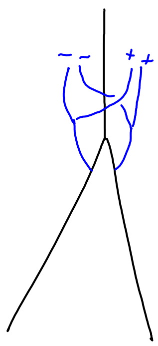
It looks like I will be getting a global interpretation of E-K; it may or may not have a topological guise.

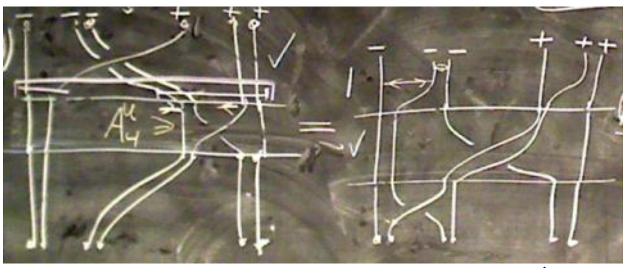
Haviv's argument for R:



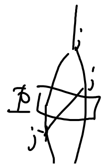
How about the virtual crossing?





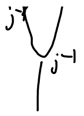


$$\Phi\cdot(1\otimes\Delta)(j)\cdot j^{23} = (\Delta\otimes 1)(j)\cdot j^{12}$$



Does the E-K j satisfy

$$[(\Delta\otimes 1)j, j^{12}] = 0 \quad ?$$



$$(\Delta\otimes 1)j^{-1}j^{-12}\Phi j^{23}(1\otimes\Delta)j = 1$$

$$\Rightarrow \Phi = j^{12}(\Delta\otimes 1)j\,(1\otimes\Delta)(j^{-1})j^{-23}$$

Perhaps the key is not to mod out by RY, or at least, sometimes not to mod out by RY?