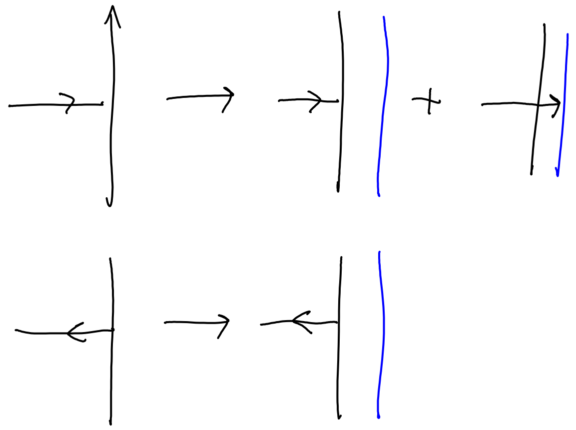
wEK Thoughts
October-13-08
1:00 PM

Q Thinking 4D, can we consistently "take the longtitude" of a tube?

This ought to give $\mathcal{A}^w$ something like an $\mathcal{A}$-comodule structure, and that may help to explain the polynomiallity of wAlex.

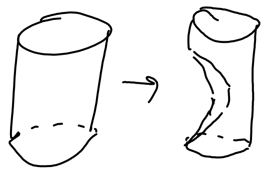
Yes:



yet

Seems well defined?

Topologically, this is "puncture the tube":



What about the "dual", "block the tube"?

This is simply the composition of the cabling map and the "turn black into blue map":

which is well-defined. It parallels

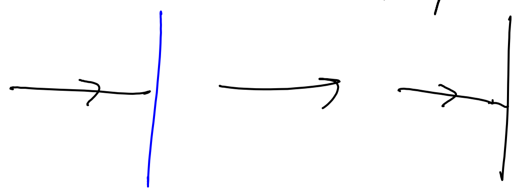
$$\mathcal{U}(I\mathfrak{g}) \longrightarrow \mathcal{U}(\mathfrak{g})$$

by moding out by the elements of $\mathfrak{g}^*$:

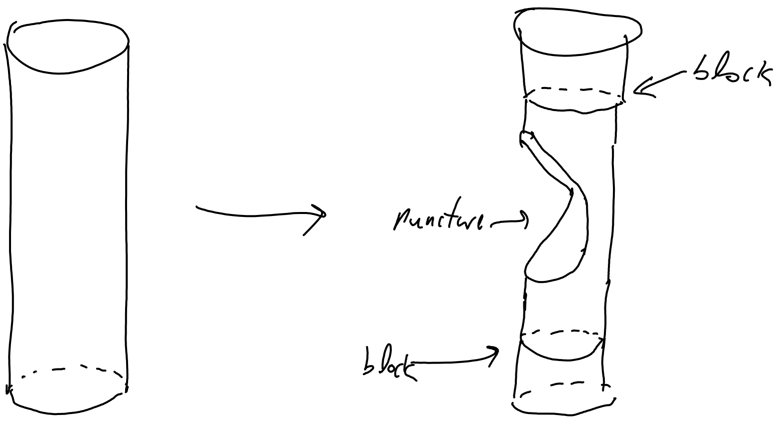
$$0 \longrightarrow \mathfrak{g}^* \longrightarrow I\mathfrak{g} \longrightarrow \mathfrak{g} \longrightarrow 0$$

$\mathfrak{g}$ is also a subalgebra of $I\mathfrak{g}$, so there's also a well defined map:

also a well defined map:

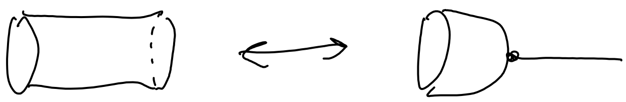


Does the EK mystery corresponds to



?

A related question: Is it that



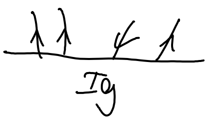
?

Claim

$$\vec{A}\left(\underline{\quad}_{Ig}\,|\,\underline{\quad}_{g}\right) \cong \vec{A}\left(\underline{\quad}_{Ig}\right)$$

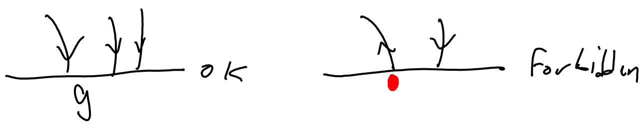
where the meanings are:

$\underline{\quad}_{Ig}$ $\leftrightarrow$ in and out arrows are allowed,



ok.

$\underline{\quad}_{g}$ $\leftrightarrow$ only in arrows are allowed,



$\underline{\quad}_{Ig}\,|\,\underline{\quad}_{g}$ $\leftrightarrow$ in arrows move freely across the barrier, out arrows are blocked on the Ig side.

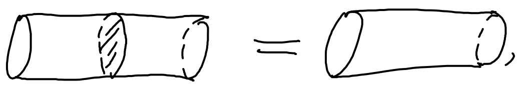
<u>Proof</u> The maps

$$\vec{\mathcal{A}}\left(\underset{Ig}{\text{———}}\,|\,\underset{g}{\text{———}}\right) \longleftrightarrow \vec{\mathcal{A}}\left(\underset{Ig}{\text{————}}\right)$$

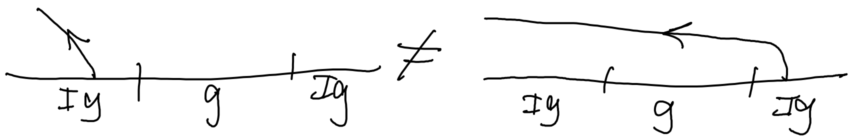
are obvious and are obviously well defined. $\square$

This is also $\mathcal{A}(\text{——}/\text{——})$

<u>Question</u> Is $\mathcal{A}\left(\underset{Ig}{\text{—}}\,|\,\underset{g}{\text{—}}\,|\,\underset{Ig}{\text{—}}\right) \cong \mathcal{A}(Ig)$?

Topologically, this would be ,
which doesn't sound reasonable.

<u>Answer</u> Indeed no, as



<u>Claim</u> $\vec{\mathcal{A}}\left(\underset{g^*}{\text{———}}\,\|\,\underset{g}{\text{———}}\right) \cong \vec{\mathcal{A}}\left(\underset{Ig}{\text{————}}\right)$?

Total barrier

Compare with the E-K isomorphism: