The n! of Flat Knots

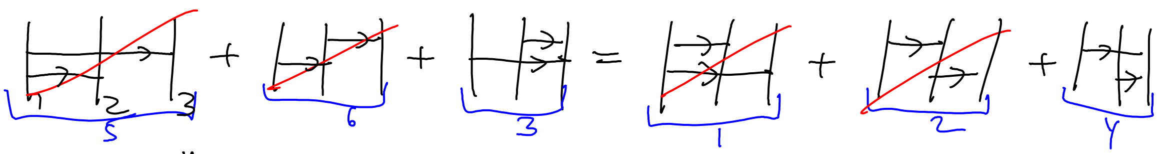
December-05-09
2:58 PM

http://katlas.math.toronto.edu/drorbn/bbs/show?shot=Leung-091123-175610.jpg

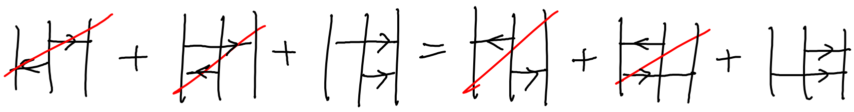
 $\longrightarrow \sum_{j>i} l_{ji} l_{ij} + \frac{1}{2}\sum_{j} (l_{jj}+h_j)(l_{jj}+h_j)$

$[l_{ij}, l_{kl}] = \delta_{jk} l_{il} - \delta_{li} l_{kj}$

6T:

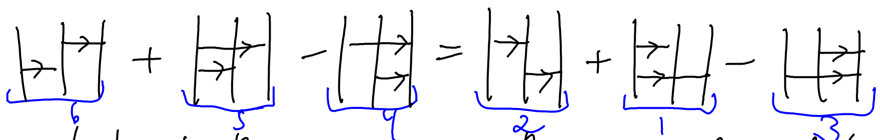


under the permutation (12) this becomes



red: if arrows were symmetric... so heads commute.

mod anti-symmetric arrows this is



which is the same as the original relation

Moral: Descending = flat on arrow diagrams level, just as expected.

There are maps

$$\begin{tikzcd} \mathcal{A}^F \arrow[r, "\text{“The descending realization”}"'] \arrow[rr, bend left, "I"] & \mathcal{A}^v \arrow[r, "\text{mod by “arrows are AS”}"'] & \mathcal{A}^F \end{tikzcd}.$$

?

Question: Is there a nice complement to $\mathcal{A}^F$ in $\mathcal{A}^v$?

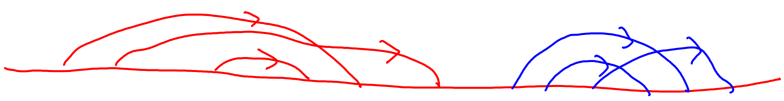
the dimensions in degrees $1\ldots5$ would be $1, 5, 21, 115, 693$.
$2-1 \quad 6-1 \quad 24-3 \quad 120-5 \quad 720-27$

$2 = 2$
$7 = 6+2-1$
$27 = 24+6-2-1$
$139 = 120+24-6+2-1$
$813 = 720+120-24-6+2+1$
$5623 = 5040+720-120-24+6+2-1$

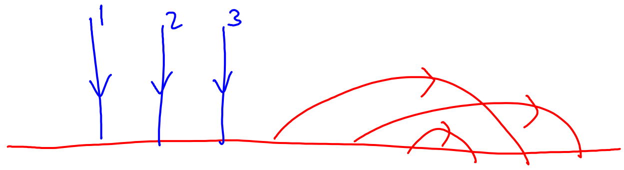
is the next number in this sequence also a combination of factorials?

maybe

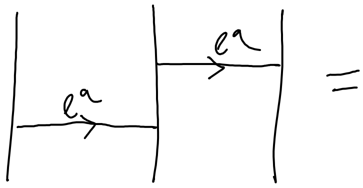
Does $\mathcal{A}_n^F$ act in an interesting way on $\mathbb{Q}S_n$?



Maybe,

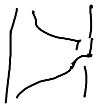
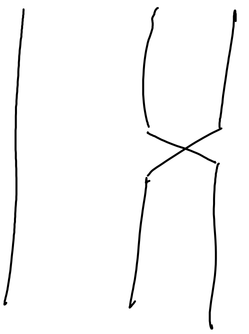


Much like R3 is the exponential relation corresponding to $4\vec{T}$, what is the exponential relation corresponding to 6T in the presence of "arrows are anti-symmetric"?

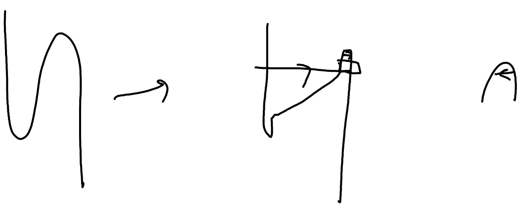


(with luck, this will imply that the "Drinfeld twist trick" will extend to virtual crossings).

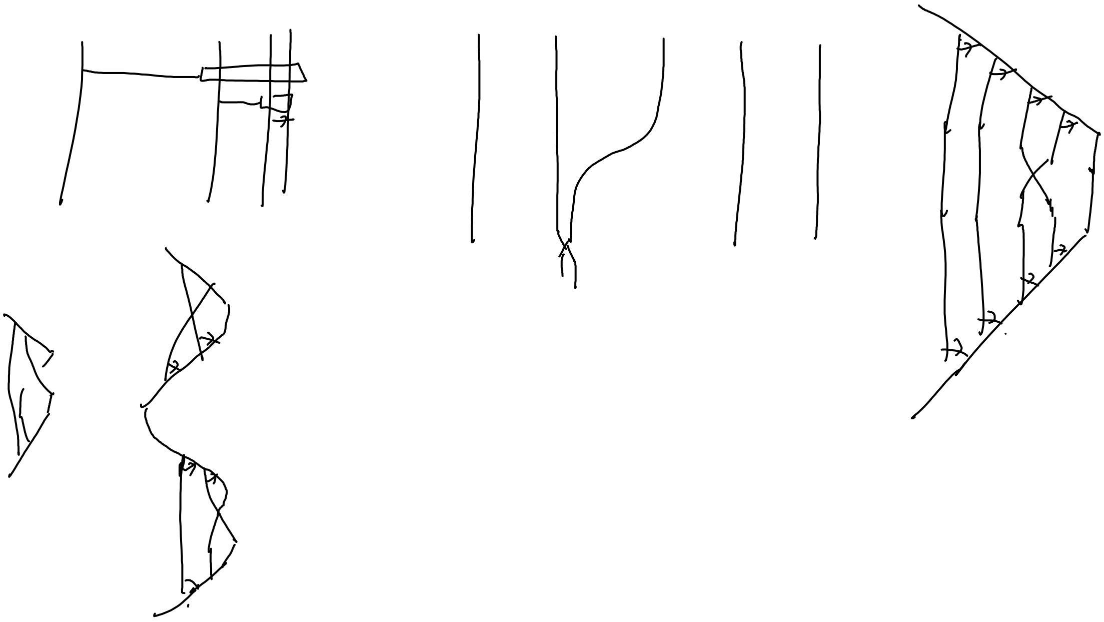
Question With a braider

 $\to B =$ 

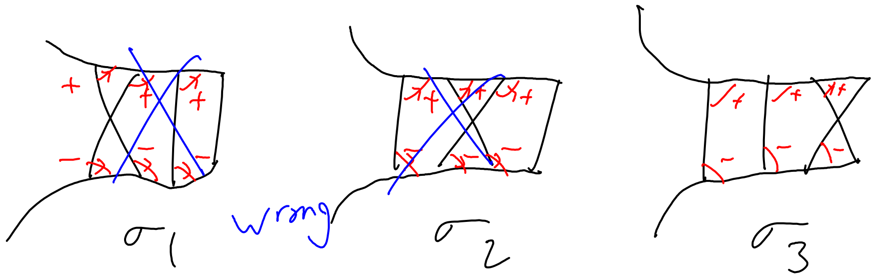
Even the question I can't complete....

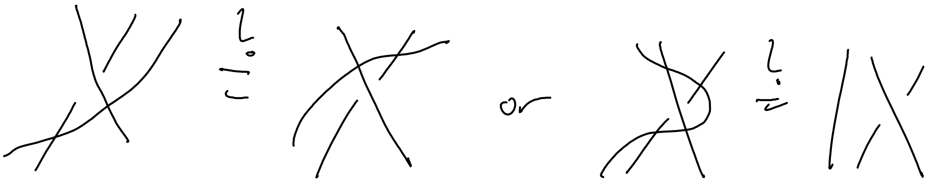


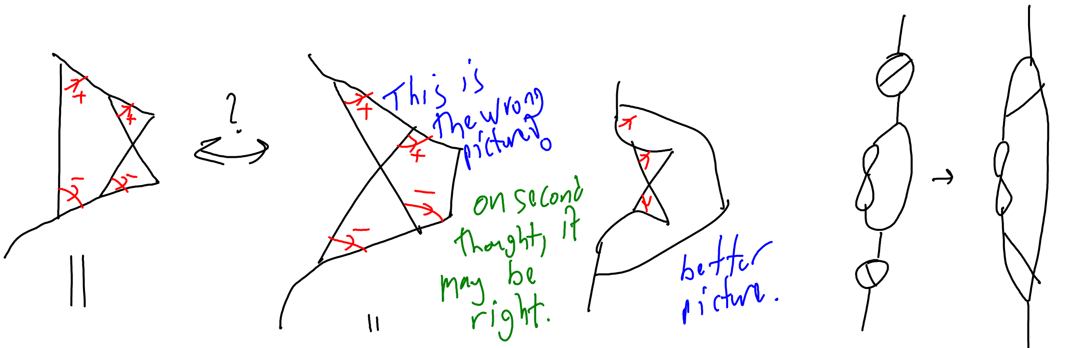
There ought to be two representations of B_n into A_n^f. One is the trivial rep. What's the other?

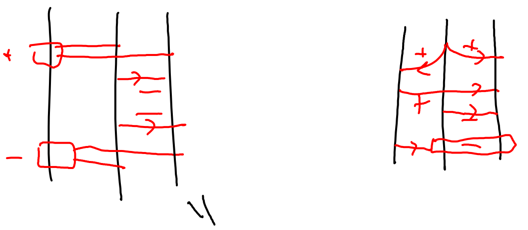


In B_4:



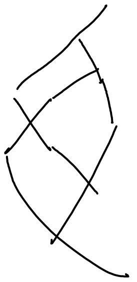






$= e^{-a_{12}-a_{13}} e^{-a_{23}} e^{a_{13}} e^{a_{23}-a_{12}}$

$e^{-a_{12}-a_{13}} e^{-2a_{23}} e^{a_{12}+a_{13}}$



Question in $\mathcal{A}_3^f$, is it true that

$$e^{-a_{12}-a_{13}} e^{-2a_{23}} e^{a_{12}+a_{13}} = \cancel{e^{a_{12}-a_{23}} e^{a_{13}} e^{-a_{12}} e^{-a_{13}-a_{23}}} \text{ ?}$$

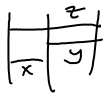
wrong.

Deg 1 $-\overset{1}{\cancel{a_{12}}}-\overset{2}{\cancel{a_{13}}}-\overset{5}{\cancel{2a_{23}}}+\overset{1}{\cancel{a_{12}}}+\overset{2}{\cancel{a_{13}}} \stackrel{?}{=} \overset{3}{\cancel{a_{12}}}-\overset{5}{\cancel{a_{23}}}+\overset{4}{\cancel{a_{13}}}-\overset{3}{\cancel{a_{12}}}-\overset{4}{\cancel{a_{13}}}-\overset{5}{\cancel{a_{23}}}$ ✓

Deg 2:

"xzy = yzx"

GT: $xz+zy+xy = yz+zx+yx$ or



$[x+z,y]=[z,x]$

now simplify $e^{-x-z}\,y\,e^{x+z}$:

$= e^{-\mathrm{ad}(x+z)}y =$