Van der Veen in Iowa

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Roland Van der Veen:

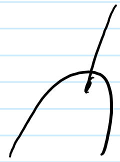
1. Braided Hopf algebras
2. e.g. functions on a group G are useful for studying
3. Representation varieties
4. And their deformations
5. Coming from braided quantum groups

Slogan: quantum matrix groups are easy.

Applications to knot theory:

– boundary slopes of essential surfaces.
(j/ w/ Christine Lee,
arXiv:1602.04546)

② How is $\mathbb{C}[G] = \{F : G \longrightarrow \mathbb{C}\}$

algebra:  co-algebra: 

$\Delta : \mathbb{C}(G) \longrightarrow \mathbb{C}(G \times G)$

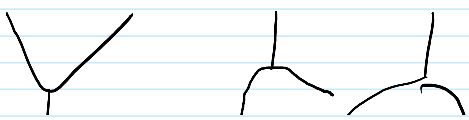
s.t. assoc., co-assoc

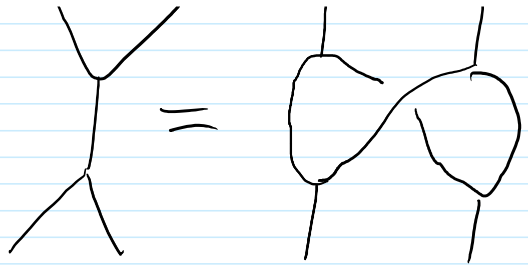
$f \longmapsto \Delta f(g_1, g_2) = f(g_1 g_2)$

S "antipode" by $(Sf)(g) = f(g^{-1})$

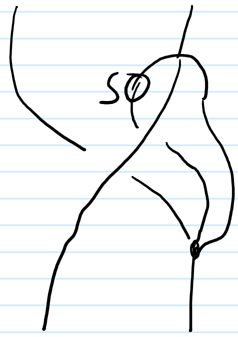
eg, for $GL(n)$, $\Delta(t^i_j) = \sum_k t^i_k \otimes t^k_j$

where t^i_j is the "matrix element" functional on $GL(n)$.

Another axiom:  $(a \otimes b)(c \otimes d)$

Another axiom: 

$(a\otimes b)(c\otimes d) = (ac)\otimes(bd)$

<u>Thm</u> $X: B\otimes B \longrightarrow B\otimes B$ by 

satisfies YB.

Ex

$$\begin{pmatrix} q & 0 & 0 & 0 \\ 0 & 1 & q-q^{-1} & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & q \end{pmatrix}$$

The R-matrix for Jones.