ps. the rep is definitely highly non trivial on the Torelli sgp –

$(g_1 g_2)^3$ goes onto $(\text{const})\begin{pmatrix} t^3 & & & & 0 \\ & t^3 & & & \\ & & t^3 & & \\ & & & t^3 & \\ 0 & & & & 1 \end{pmatrix}$

↑
Dehn twist on separating curve

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Dear Joan,

Here are the matrices in $SL(5,\mathbb{R})$. A painful calculation (which I haven't done) will show $(g_1 g_2 \cdots g_5)^6 = 1 = (g_1 g_2 \cdots g_4)^5$. I thought we should play with them a lot to see if it's worth a conjecture that the rep. of the mapping class gp. of $S^2 - 6$ points is faithful, and a few other things, and then write a joint paper. It would also be important to see if one can't get a form that looks just like the Burau rep, i.e. get rid of the $\sqrt{\ }$'s and the bad denominators. The limit $t = -1$ should be exciting. Maybe $t = e^{2\pi i/3}$ is also exciting.

In our paper we should also include the case of an ~~De~~ arbitrary rectangular ~~g~~ Young tableau.

Note: despite the coincidence in dimension this representation is not in any weakest sense, equivalent to the Burau rep. simply because $\dim(e_i) = 2$.

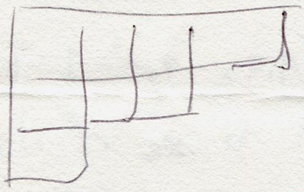
By the way, it should be clear now from reading my Braid gps. Hecke algebras... paper that I knew all along how to calculate explicit formulae for the e_i's in all representations. I kept quiet about it because Wenzl also got them. This was not ~~rea~~ Ocneanu's major contribution. His was the trace on the whole Hecke algebra and the weights in terms of Schur functions. In fact enough is contained in my index paper ~~and~~ to calculate

(Also in Wasserman's thesis)

the weights down to any level. But Ocneanu's Schur function formula is beautiful and will be extremely useful.

Let me explain it to you again.

step 1 Form Young tableau



Step 2 Put in hook lengths. eg

Entry in each box is no of boxes cut off by the "hook"

6	4	3	1
4	2	1	
1			

then $\dfrac{n!}{\text{product of hook lengths}}$ = dim rep.

step 3 Change to [n]:

$1-q^6$	$1-q^4$	$1-q^3$	$1-q$
$1-q^4$	$1-q^2$	$1-q$	
$1-q$			

step 4 calculate $\alpha = \dfrac{[n]!}{\text{product of terms}}$ $\underset{\text{ex.}}{\overset{\text{in this}}{=}}$ $\dfrac{(1-q)(1-q^2)\cdots(1-q^8)}{(1-q)(1-q)(1-q)(1-q^4)(1-q^2)(1-q^3)(1-q^4)(1-q^6)}$

Step 5 Superimpose Young tableau on $w = 1-q+z$

$w-z$	$w-qz$	$w-q^2z$	$w-q^3z$	...
$qw-z$	$qw-qz$	$qw-q^2z$	$qw-q^3z$	
q^2w-z	q^2w-qz	q^2w-q^2z		
⋮	⋮	⋮		

step 6 let β = product of all the entries $= (w-z)(w-qz)(w-q^2z)(w-q^3z)(qw-z)$
$(qw-qz)(qw-q^2z)(q^2w-z)$.

step 7 The weight (= value of trace on a minimal idempotent in the corresponding braid group rep) is $\dfrac{\beta}{\alpha}$

All the best,

Vaughan.