13-Aarhus Day 7: Braids Day

June-02-13
4:05 AM

Optimistic Rough Tentative Plan. Fifth introduction: Dalvit on braids, then all about uvw-braids. Perhaps something about surface braids? (was the plan for day 6)

Pasted from <http://www.math.toronto.edu/~drorbn/Talks/Aarhus-1305/>

First thing in morning: Dalvit braid videos.
First thing in afternoon: Humbert on surface braids.

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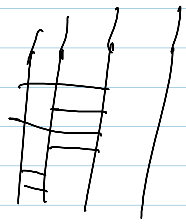
25 minutes on braids:

$$1 \to F_{n-1} \longrightarrow PB_n \rightleftarrows PB_{n-1} \longrightarrow 1$$

So $$PB_n = PB_{n-1} \ltimes F_{n-1} = (PB_{n-2} \ltimes F_{n-2}) \ltimes F_{n-1} \dots$$

$$= F_1 \ltimes F_2 \ltimes F_3 \ltimes \dots \ltimes F_{n-1}$$

Likewise $$\mathcal{A}_n^{hor} = FA_1 \ltimes FA_2 \ltimes FA_3 \dots \ltimes FA_{n-1}$$



$\Longrightarrow$ 1. $\exists\ Z: PB_n \to \mathcal{A}_n^{hor}$ [homomorphic is hard!]

2. It is injective

3. Composition w/ $\mathcal{T}_{gl(N)}$ is also injective.

4 PB_n acts on F_n; in fact,

$$PB_n = \left\{ \varphi \in Aut(F_n) : \begin{array}{l} 1.\ \varphi(x_i) = a_i^{-1} x_i a_i \\ 2.\ \varphi(x_1 \dots x_n) = x_1 \dots x_n \end{array} \right\}$$

$wPB_n = \{\varphi \in \mathrm{Aut}(F_n) :\ 1. \quad ; \text{ not } 2\}$

$\Longrightarrow$ Z^w is injective

.... and now Philippe Humbert will tell us that on a surface, things aren't so simple.