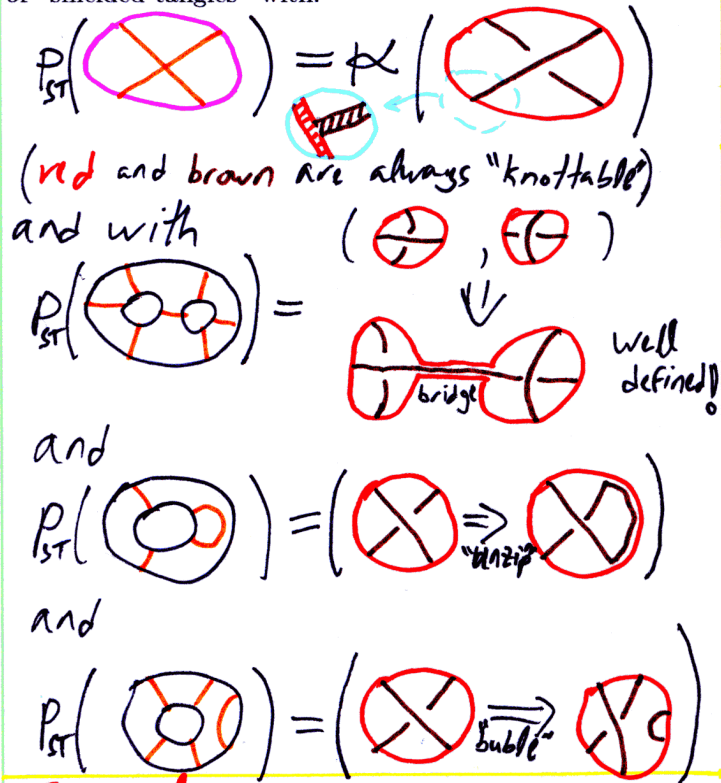


Theorem. There exists a skeletal (very) planar algebra of "shielded tangles" with:

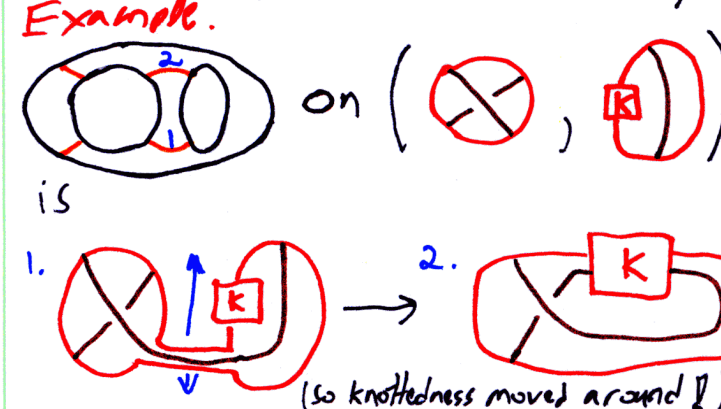


Definition. A planar algebra has spaces / operations indexed by s (with obvious compatibilities between ops.)

Examples. 1. My favourite - tangles: $P_T(\text{tangles}) = \{ \text{tangles} \}$ makes Reidemeister's theorem into gens/rels: $P_T = \langle \text{X}, \text{X} \rangle / \langle \text{X} = \text{O}, \text{X} = \text{V} \rangle$

2. "skeletons": $S = P_T / \langle \text{X} = \text{X} \rangle = \{ \text{X} \}$ Def. A skeletal planar algebra is "fibred" over S

3. TL: $\{ \text{TL} \} / \langle \text{O} = \text{O} \rangle$ 4. Tensor: choose H, V appropriate contractions $\text{TL} = H \otimes V$



All make sense in higher genus! Not very planar

PROOF. key point: on the level of skeletons - symmetric $\text{X} = \text{X}$ well defined? ... and trees are never knotted

Facts. 1. There is no planar-algebra-structure respecting universal finite type invariant $\{ \text{ordinary tangles} \} \rightarrow \langle \text{tangles} \rangle / \langle \text{4T, STU, AS, IHX} \rangle$

1. Slides/blame/Some propaganda powerpoint are evil! *can you always sync with the speaker? *Don't you want to look back at pictures long gone?

2. But there is one for shielded tangles! $\exists Z : \{ \text{shielded tangles} \} \rightarrow \langle \text{tangles} \rangle / \langle \text{rels.} \rangle$

2. Handouts are cool! Everything's always in front of you, even when you go home.

3. This Z provides a Reidemeister context for the Kontsevich integral!

2. Handouts are cool!

4. A cousin of Z is equivalent to the Drinfeld theory of associators.

Dream - A similar story will be told for "virtual knots", and will provide a topological interpretation of a "universal quantum group". See ... / Talks / Hanoi-0708

The dreams

"God created the knots, all else in topology is the work of mortals" Leopold Kronecker (modified)

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