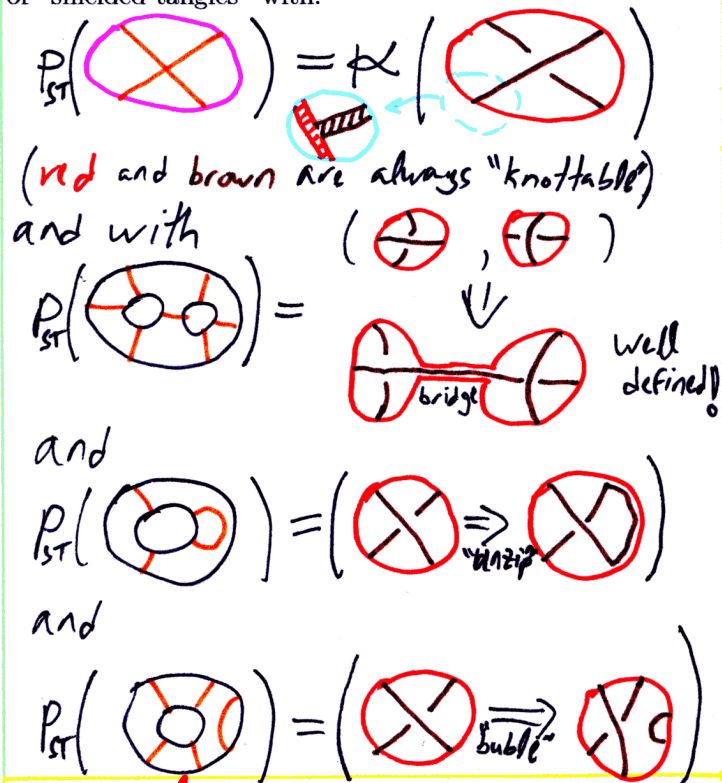


Theorem. There exists a skeletal (very) planar algebra of "shielded tangles" with:

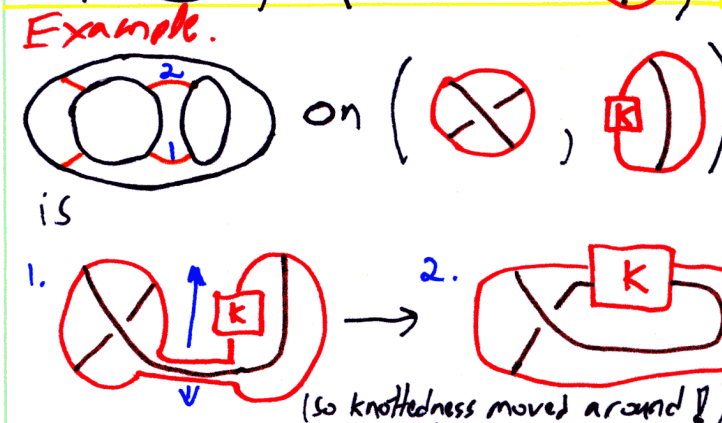


Definition. A planar algebra has spaces / operations indexed by s (with obvious compatibility between ops.)

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

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

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



All make sense in higher genus? Not very planar

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

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

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! $\exists Z : \{ \text{shielded tangles} \} \rightarrow \langle \text{tangle} \rangle / \text{rels.}$


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! 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 deeper connections

The dreams



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



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