

missing at the start: A qualitative statement of the results.

$B_n = \{ \text{movies of } n \text{ pts on the disk} \}$

A handout could be handy.

disk $\rightarrow \Sigma$; oriented & compact give

$B_n(\Sigma)$; likewise there are surface knots & surface tangles.

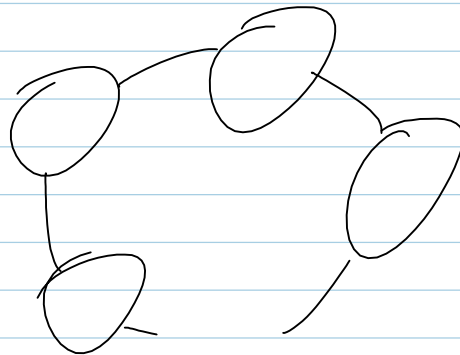
"A new column behind Dror's"

Plan: $T ; C ; H$ (where high is often analysis)

Topology "Once bordered fatgraphs".

The topology of braid relations could have been explained in a more visual way.

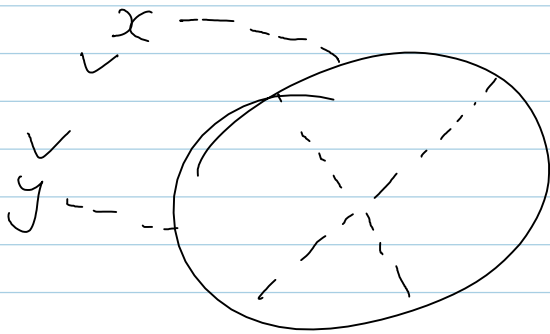
"Goussarov's bracelet filtration":



m rings
 m joints

Symplectic chord diagrams $H_\Sigma = H_1(\Sigma ; \mathbb{C})$

$\langle \cdot, \cdot \rangle : H_\Sigma \otimes H_\Sigma \rightarrow \mathbb{C}$ The intersection pairing.



ordinary chord diagrams with labeled univalent ends, ordered & labeled by H_Σ

deg = # of internal vertices (6 in our case)

$$A(\Sigma) = \left\langle \begin{array}{c} \text{such} \\ \text{C.D.} \end{array} \right\rangle / \text{4T, stu-aka:}$$

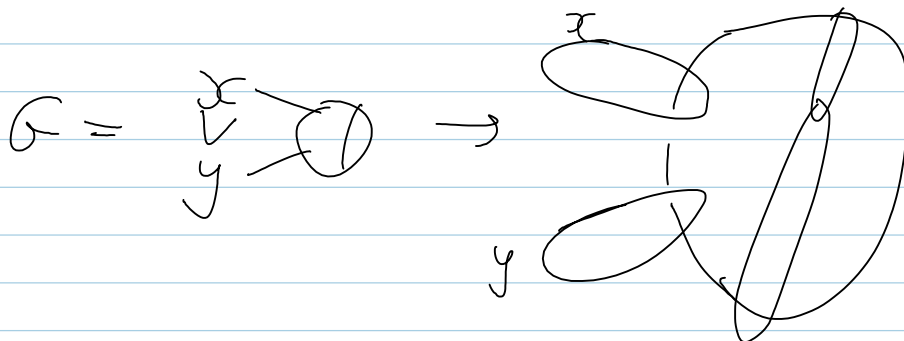
$x \text{ ---}$
 \vee
 $y \text{ ---}$

$- \begin{array}{c} y \\ \vee \\ x \end{array} \text{ ---}$

$$= \langle \alpha, \beta \rangle \left(\begin{array}{l} \text{Gauss} \\ \text{state} \\ \text{type invariant} \end{array} \right)$$

Claim Type n GF T I

gives an element of $(A_\Sigma^m)^*$



Thm "Tangles are as easy as braids".