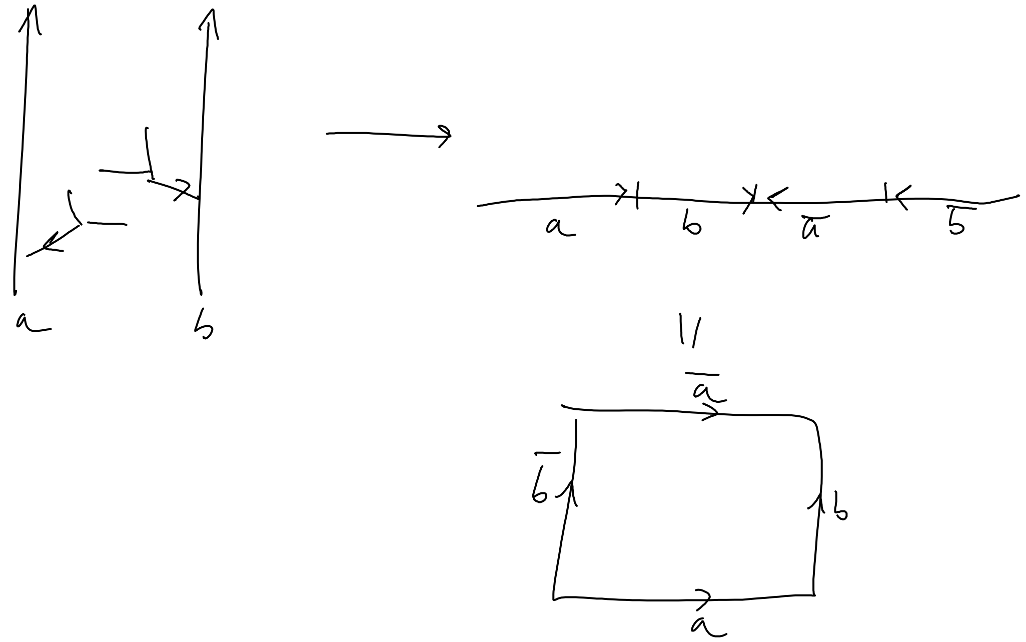
wAKT

October-21-08
11:26 AM

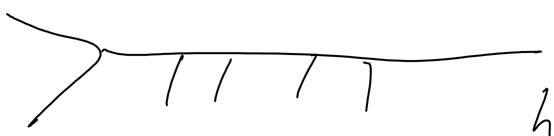
__Problem__ Determine $\operatorname{im} \partial_A : \mathcal{A}^w(\;) \to \mathcal{A}^w(\;)$



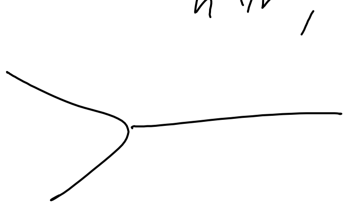
Really, it is easier to determine $\ker \partial_A$ ...

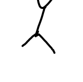
__Claim__ Any diagram with an internal vertex is in $\ker \partial_A$. (in any genus!)

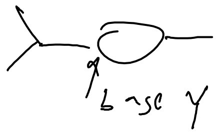
__Proof__ The tree case:



hair commutes with everything, so if there's hair, the diagram dies.



The simple Y has 3 reasons to die, so after ∂_A, every leg must connect to a vertex. If these vertices are all different, we get  $=0$.

otherwise, we get  $= 0$

Wheels die even more easily — their hair is commutative.

Corollary It is enough to understand

(in genus 2) $\partial_A\Big($  $\Big)$, and in general,

$\partial_A(\exp \sum l^{ij} a_{ij})$

This is worth testing!

Question Given a virtual knot, find a preimage of it algorithmically using ∂_T.