Back to Acrobats

March-01-11
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Back to the past - from papers/old/Acrobat/main.ps

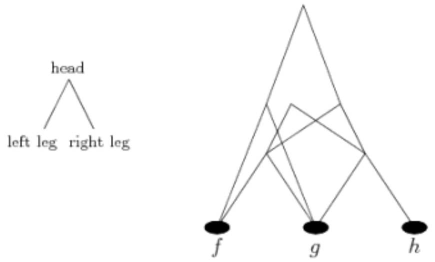
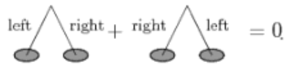


Figure 1. An acrobat and an $\{f, g, h\}$-based acrobat tower. Each vertex (except the bases) is the head of an acrobat. The two edges going down from any given verttex are the legs of that acrobat. The edges going up from any vertex (head) are the legs of the acrobats standing on that head. There are 6 heads in this picture, so it represents a degree 6 acrobat tower. There are $9 = 3 + 6$ footholds on this tower.

Definition 2.1. Let $\mathcal{T}(X)$ be the graded linear space freely generated by all X-based acrobat towers, modulo the (homogenuous) "antisymmetry" and "Jacobi" relations. The antisymmetry relation states that if the two legs of any given acrobat in a tower are flipped, the tower reverses its sign:

} rename $\mathcal{T}(X) \to \mathcal{A}^p(X)$



The Jacobi relation is a bit harder to state. A degree m "Jacobi relation tower" is defined in the same way as an acrobat tower, only that it is made of $m-2$ standard acrobats like the one in figure 1, and one special acrobat (the "Jacobi" acrobat) that has three legs instead of just two, numbered 1, 2, and 3. In the simplest case, the Jacobi acrobat has nothing on its head. In this case, the Jacobi relation corresponding to the Jacobi relation tower is obtained by replacing the Jacobi acrobat by a pair of standard "daughter" acrobats in three different ways, adding the corresponding acrobat towers, and setting the sum to be 0. An example is in figure 2. In the general case, there's also some number k of legs lying on the head of the Jacobi acrobat. In this case, to get the corresponding Jacobi relation one also has to sum over the 2^k possible ways of dividing those k legs between the two heads of the two daughter acrobats (so the relation involves a total of $3 \cdot 2^k$ towers). An example is in figure 3.

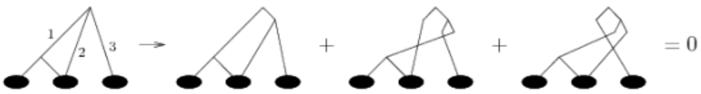


Figure 2. A simple Jacobi relation tower, and the corresponding Jacobi relation.

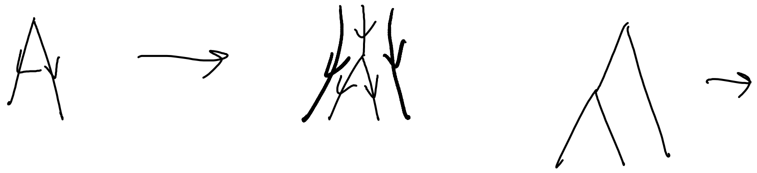
"linear acrobats" means acrobats that vanish unless exactly one leg is placed on their head. $\sim \mathcal{A}^w$

$(T \in \mathcal{A}^p(3),\ F_{1,2,3} : \mathfrak{g} \to \mathbb{R}) \longmapsto \mathbb{R}$ by setting $F_i = f \circ \log$ & then applying T.

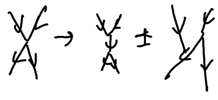
$\Rightarrow$ There ought to be some $\beta(T) \in \mathcal{A}^v$ that acts on $F_{1,2,3}$ directly.

where exactly?

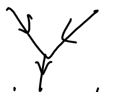
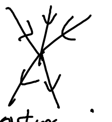
$\Rightarrow$ A fair expectation is that an eventual $\mathcal{A}^p \to \mathcal{A}^v$ map will not be homogeneous.



$$\exp(F(\log x))' = e^{F(\log x)} \cdot F'(\log x) \cdot \frac{1}{x}$$



Is there a reasonable vp-space?

$A^{vp} = \langle$  ,  $\rangle$ / rels.

2 in 1 out

2 out many in