Homomorphic Expansions for KTGs

August-29-10
9:00 AM

Goal: Write a "detailed dream; statement of fact reality" paper, along the following lines:

1. Very brief introduction.
2. Executive summary: $\exists Z^{ud}$, with very minimal definitions.
3. Algebraic structures, expansions, homomorphic expansions.
4. KTGs, $\mathcal{A}$, the dream statement.
5. AKT, relation with (R, Φ).
6. Reality - the ν-correction.
   * Why we are not happy.
7. Reality - the ud-correction.

In some ways, it will be more an essay than a paper.

Largely irrelevant, we can do better now.

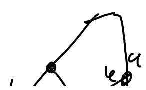
From http://katlas.math.toronto.edu/drorbn/index.php?title=06-1350/Class_Notes_for_Tuesday_November_7:

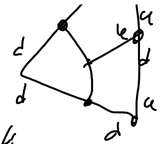
The edge-unzip operations.

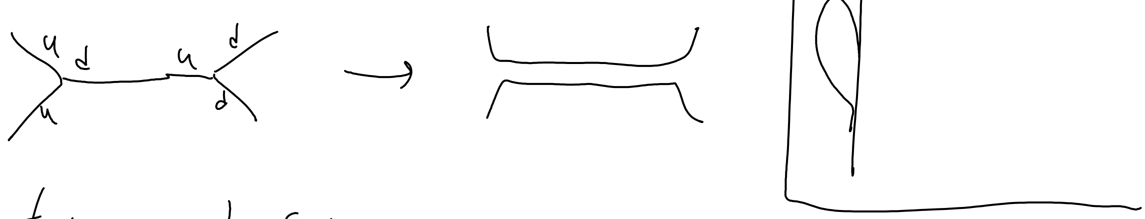
Let ν denote the specific element of $\mathcal{A}(\uparrow)$ defined in the following subsection. If u_e denotes the unzip operation of an edge e for the TG-algebra $\mathcal{A}$ and u_e^ν is the corresponding operation in $\mathcal{A}^\nu$, the two operations are related by $u_e^\nu = \nu_{e'}^{-1/2}\nu_{e''}^{-1/2}u_e\nu_e^{1/2}$. Here "$\nu_e^{1/2}$" means "inject a copy of $\nu^{1/2}$ on the edge e of Γ, and likewise, "$\nu_{e'}^{-1/2}\nu_{e''}^{-1/2}$" means "inject copies of $\nu^{-1/2}$ on the edges e' and e'' of $u_e\Gamma$ that are created by the unzip of e".

This looks as if all vertices are embedded as in "bottom tangles".

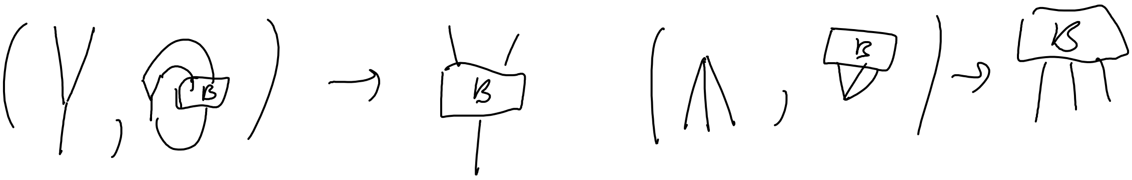
So far the most promising idea is to work with (u,d)-marked KTGs, having also

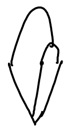


bivalent vertices, subject to some 
u-d cancellation rules and u-d limitations
on the applicability of the KTG ops.



Vertex connect sum:



New generators:  etc.

In the language of (unlikely)
http://katlas.math.toronto.edu/drorbn/index.php?title=The_Kontsevich_Integral_for_Knotted_Trivalent_Graphs,

Perhaps the trick should be to stop at step $2\frac{1}{2}$ - apply ν & $\cap$ but not y & λ.

<u>Question</u> What operations can be performed on Z_3 at no cost? Possibly, no unzips yet yes binary connect sum along trees; this includes unzip as a special case, and a price is allowed.
Perhaps this should be combined with some u-d trick?
Or with a simple edge/vertex renormalization?