The old Drinfel'd theorem

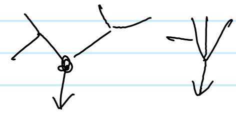
Saturday, November 7, 2015 1:15 PM

Following WKO2.

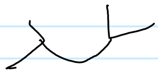
$\mathcal{A}$: unrooted trees $/AS, IHX = \mathrm{sder} = D/_{AS,IHX}$ ⎫ all-marked,

$\vec{\mathcal{A}}$: rooted trees $/\vec{AS}, \vec{IHX} = \mathrm{tder} = \vec{D}/\vec{AS}, \vec{IHX}.$ ⎭ including root

L : rooted trees w/no root label $/\vec{AS}, \vec{IHX} = \mathcal{L}ie = T/\vec{AS}, \vec{IHX}$



$I_{\to} = H - X$



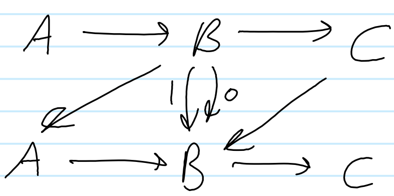
$$\begin{tikzcd}
 & & R \arrow[d, "\partial"] \arrow[dll, dashed, bend right, "\rho"'] \\
\{\lambda, Y\} = D \arrow[r, "\alpha"] \arrow[d, "\pi"] & \vec{D} \arrow[r, "\beta"] \arrow[d, "\pi^b"'] & T \arrow[d, "\pi"] \arrow[l, dashed, bend right, "\tau"'] \\
\mathcal{A} \arrow[r, "\bar\alpha"] & \vec{\mathcal{A}} \arrow[r, "\bar\beta", "a"'] & L
\end{tikzcd}$$

$\alpha /\!/ \beta \neq 0$

$\bar\alpha /\!/ \bar\beta = 0$

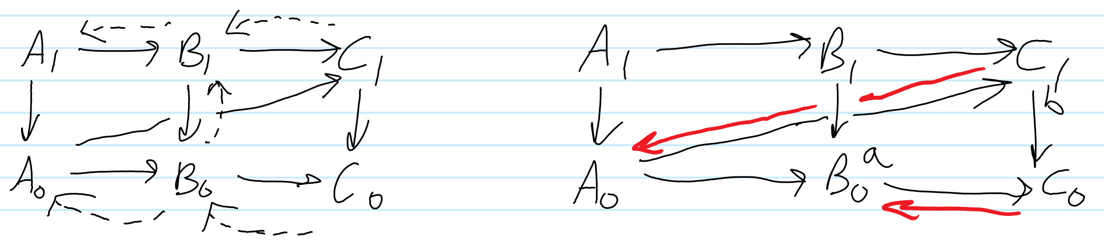
We prove that $\operatorname{im}\bar\alpha = \ker\bar\beta$ by constructing $\tau: T \longrightarrow \vec{D}$ s.t.

1. $\beta /\!/ \tau = Id_{\vec{D}}$ 2. $\partial /\!/ \tau = \rho /\!/ \alpha$



i.e. $A \underset{\alpha}{\overset{\delta}{\rightleftarrows}} B \underset{\beta}{\overset{\gamma}{\rightleftarrows}} C$

s.t. $\beta /\!/ \gamma + \delta /\!/ \alpha = 1$



$$A \longrightarrow B \longrightarrow C$$

$$\begin{tikzcd}
 & C_1 \arrow[d] \\
 & C_0 \arrow[d] \arrow[dl, dotted] \\
B/A \arrow[r, hook] & C
\end{tikzcd}
\qquad
\begin{tikzcd}
 & & C_1 \arrow[d] \arrow[dll, dashed] \\
 & & C_0 \arrow[d, two heads] \arrow[dl, dashed] \\
A \arrow[r] & B \arrow[r] & C
\end{tikzcd}$$

Does τ have a meaning?