Double Shuffle

Sunday, November 29, 2015 9:35 AM

(150924) Schneps in Les Diablerets: For $f \in FL(x,y)$, $\pi_y(f)$ proj. on words ending with y, $f_* := \pi_y(f) \sum \frac{(-)^n}{n}(f \mid x^{n-1}y)y^n$ $(-)$ rewritten in $y_i := x^{i-1}y$. $\partial s := \{f \colon \Delta_*(f_*) = f_* \otimes 1 + 1 \otimes f_*\}$, with $\Delta_*(y_i) := \sum_{k+l=i} y_k \otimes y_l$. BBS:Ens-150923: Write $u, v \in FA(x,y)y$ in $y_i := x^{i-1}y$ and set $St(1,u) = St(u,1) = 1$, $St(y_iu, y_jv) = y_iSt(u, y_jv) + y_jSt(y_iu, v) + y_{i+j}St(u,v)$. Then $\partial s = \{f \in FL_{\geqslant 3}(x,y) \colon (f \mid St(u,v)) = 0\}$, where not both u and v are powers of y. For $f \in \partial s$ set $F(x,y) = f(-x-y,-y) = xF^x + yF^y$, $G(x,y) = \sum_{i\geqslant 0} \frac{(-)^i}{i!}\partial_x^i(F^x)yx^i$. Then $f \mapsto D_{F,G}$ is $\partial s \hookrightarrow \mathfrak{trv}_2$.

(151003a) BBS:Ens-151002: In $FA(u_d)$ with $\deg u_d = d$, if $\exp \sum u_d = \sum y_k$ with $\deg y_k = k$, then $\Delta y_k = \sum_{i+j=k} y_i \otimes y_j$.

Is there a β-quotient?

Is it related to the Rozansky conjectures?

Is it related to shielded tangles?

Is there a one-shielding-two-tangles co-product?

Is there a two-shieldings-one-tangle co-product?