Cheat Sheet β

http://drorbn.net/AcademicPensieve/2013-03/
initiated 24/3/13; modified 7/4/13, 8:35am; continued 2013-04

The original β-calculus: With $\epsilon := 1+\alpha$, $\langle\alpha\rangle := \sum_v \alpha_v$, and $\langle\gamma\rangle := \sum_{v\neq u}\gamma_v$,

$$\begin{array}{c|c}\omega_1 & H_1\\ \hline T_1 & \alpha_1\end{array} * \begin{array}{c|c}\omega_2 & H_2\\ \hline T_2 & \alpha_2\end{array} \underset{\beta}{=} \begin{array}{c|cc}\omega_1\omega_2 & H_1 & H_2\\ \hline T_1 & \alpha_1 & 0\\ T_2 & 0 & \alpha_2\end{array} \qquad \begin{array}{c|c}\omega & \cdots\\ \hline u & \alpha\\ v & \beta\\ \vdots & \gamma\end{array} \xrightarrow[\beta]{tm_w^{uv}} \begin{array}{c|c}\omega & \cdots\\ \hline w & \alpha+\beta\\ \vdots & \gamma\end{array} \qquad R^{\pm}_{ux} \underset{\beta}{=} \begin{array}{c|c}1 & x\\ \hline u & t_u^{\pm1}-1\end{array}$$

$$\begin{array}{c|ccc}\omega & x & y & \cdots\\ \hline \vdots & \alpha & \beta & \gamma\end{array} \xrightarrow[\beta]{hm_z^{xy}} \begin{array}{c|cc}\omega & z & \cdots\\ \hline \vdots & \alpha+\beta+\langle\alpha\rangle\beta & \gamma\end{array} \qquad \begin{array}{c|cc}\omega & x & \cdots\\ \hline u & \alpha & \beta\\ \vdots & \gamma & \delta\end{array} \xrightarrow[\beta]{sw_{th}^{ux}} \begin{array}{c|cc}\omega\epsilon & x & \cdots\\ \hline u & \alpha(1+\langle\gamma\rangle/\epsilon) & \beta(1+\langle\gamma\rangle/\epsilon)\\ \vdots & \gamma/\epsilon & \delta-\gamma\beta/\epsilon\end{array}$$