Convergence issues, II

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(170725) 2017-07/Multi-beta-yax.nb: In $\mathcal{U}_{\gamma^{-1};\gamma\beta}$, $\prod_{i=1}^{2} \mathbb{e}^{\eta_i y}\mathbb{e}^{\alpha_i a}\mathbb{e}^{\xi_i x} = \mathbb{e}^{\eta y}\mathbb{e}^{\alpha a}\mathbb{e}^{\xi x}\mathbb{e}^{\tau t}$, with

$$\begin{aligned}
\eta &= \eta_1 + \eta_2 e^{-\gamma\alpha_1} - \beta\gamma\eta_2^2\xi_1 e^{-\gamma\alpha_1} + \ldots = \eta_1 + \delta\eta_2 e^{\beta-\alpha_1\gamma} \\
\alpha &= \alpha_1 + \alpha_2 + 2\beta\eta_2\xi_1 + \ldots = \alpha_1 + \alpha_2 - 2(\beta + \log\delta)/\gamma \\
\xi &= \xi_1 e^{-\gamma\alpha_2} + \xi_2 - \beta\gamma\eta_2\xi_1^2 e^{-\gamma\alpha_2} + \ldots = \delta\xi_1 e^{\beta-\alpha_2\gamma} + \xi_2 \\
\tau &= -\eta_2\xi_1 + \beta\eta_2\xi_1(\gamma\eta_2\xi_1 + 1)/2 + \ldots = (\beta + \log\delta)/(\beta\gamma)
\end{aligned}$$

and $\delta := \left((e^\beta - 1)\gamma\eta_2\xi_1 + e^\beta\right)^{-1} = 1 - (1 + \gamma\eta_1\xi_1)\beta + \ldots$.

$R = \mathcal{O}\left(yb \otimes ax : e^{\gamma^{-1}ab} e^{\gamma^{-1}xy}\right)$

original balance: $t / yb\beta / xa\gamma$

Balance under $t = \gamma^{-1}$: $yb\beta$ is as before,

$xa\gamma$ degree is always 0.

I.e.; $\text{xdeg}(x, a, \gamma, \alpha, \underset{\tau}{\xi}) = (1, 1, 1, -1, \underset{-1}{-1})$ vanishes everywhere above.