July 17, 2012 - J-Day

July-17-12
9:40 AM

$$Ad_x := e^{-ad_x} = e^{-x}\cdot e^{x} \qquad \lambda = (W, \mu)$$

$$\lambda /\!/ hta^{xy} = \begin{pmatrix} (W /\!/_0\, y \mapsto e^{\mu_x}\bar{y}e^{-\mu_x}) + j^{xy}(\mu) \\ \mu /\!/_0\, y \mapsto e^{\mu_x}\bar{y}e^{-\mu_x} \end{pmatrix}$$

$j^{xy}(\mu)$ must satisfy:

$$\left.\frac{d}{ds}\right|_{s=0} j^{xy}(s\mu) = div_y \mu_x$$

needs rethinking

$$\frac{d}{ds} j^{xy}(s\mu) = \underbrace{\left((div_y \mu_x) /\!/_0\, y \mapsto e^{s\mu_x}\bar{y}e^{-s\mu_x}\right)}_{\text{First short}} + \underbrace{j^{xy}(s\mu)}_{\text{Then long}}$$

$$= \underbrace{j^{xy}(s\mu) /\!/ der(y \mapsto [\mu_x^s, y])}_{\text{First long}} + \underbrace{(div_y \mu_x^s)}_{\text{Then short}}$$

where $\mu_x^s := \mu_x /\!/_0\, y \mapsto e^{s\mu_x}\bar{y}e^{-s\mu_x}$

Aside: Solve $\dot{q} = q\,a(t) + b(t)$

Sol'n $q(t) = \int_0^t ds\, b(s)\, e^{\int_s^t a(u)du}$

Oh well, continued July 19 and 20:

Let λ_s be λ with μ_x replaced with $s\mu_x$, and let $\bar{\lambda}_s = \begin{pmatrix}\bar{W}_s \\ \bar{\mu}_s\end{pmatrix} = \lambda_s /\!/ hta^{xy}$. Then

1. $\bar{\lambda}_0 = \lambda_0$

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2. $$\frac{d}{ds}\begin{pmatrix} \bar{w}_s \\ \bar{\mu}_s \end{pmatrix} = \begin{pmatrix} \bar{w}_s \\ \bar{\mu}_s \end{pmatrix} // \mathrm{dcr}\left(y \mapsto [\bar{\mu}_{s,x}, y]\right) + \begin{pmatrix} \mathrm{div}_y \, \bar{\mu}_{s,x} \\ h(x)\mu_x \end{pmatrix}$$