Launch a testing program? ✓

Cheat Sheet J

http://drorbn.net/AcademicPensieve/2013-03/
initiated 18/3/13; completed ?; modified 21/3/13, 9:03am

With alphabet T and with $u,v,w\in T$, $\alpha,\beta,\gamma\in FL(T)$, $D\in\mathfrak{tder}(T)$, $g,h\in\exp(\mathfrak{tder}(T))=\mathrm{TAut}(T)$.

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1. The definition of J: $$J_u(\gamma):=\int_0^1 ds\,\mathrm{div}_u(\gamma\,/\!\!/\,RC_u^{s\gamma})\,/\!\!/\,C_u^{-s\gamma}$$
2. The t equation (desired): $$J_w(\gamma\,/\!\!/\,tm_w^{uv})\,/\!\!/\,RC_w^{\gamma/\!\!/tm_w^{uv}}=J_u(\gamma)\,/\!\!/\,tm_w^{uv}\,/\!\!/\,RC_w^{\gamma/\!\!/tm_w^{uv}}+J_v(\gamma\,/\!\!/\,RC_u^\gamma)\,/\!\!/\,RC_v^{\gamma/\!\!/RC_u^\gamma}\,/\!\!/\,tm_w^{uv}$$
3. The h equation (desired): $$J_u(\mathrm{bch}(\alpha,\beta))=J_u(\alpha)+J_u(\beta\,/\!\!/\,RC_u^\alpha)\,/\!\!/\,C_u^{-\alpha}$$

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4. CRC equation t: $$tm_w^{uv}\,/\!\!/\,RC_w^{\gamma/\!\!/tm_w^{uv}}=RC_u^\gamma\,/\!\!/\,RC_v^{\gamma/\!\!/RC_u^\gamma}\,/\!\!/\,tm_w^{uv}$$
5. CRC equation h: $$RC_u^{\mathrm{bch}(\alpha,\beta)}=RC_u^\alpha\,/\!\!/\,RC_u^{\beta/\!\!/RC_u^\alpha}$$
6. CRC equation div: $$\mathrm{div}_u(\alpha\,/\!\!/\,RC_u^\gamma)\,/\!\!/\,C_u^\gamma={?}$$

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7. div property t: $$\mathrm{div}_w(\gamma\,/\!\!/\,tm_w^{uv})=(\mathrm{div}_u(\gamma)+\mathrm{div}_v(\gamma))\,/\!\!/\,tm_w^{uv}$$
8. div property h — the "cocycle condition": with $\mathrm{ad}_u\{\gamma\}:=\mathrm{der}(u\to[\gamma,u])$, $$(\mathrm{div}_u\,\alpha)\,/\!\!/\,\mathrm{ad}_u\{\beta\}-(\mathrm{div}_u\,\beta)\,/\!\!/\,\mathrm{ad}_u\{\alpha\}=\mathrm{div}_u\left([\alpha,\beta]+\alpha\,/\!\!/\,\mathrm{ad}_u\{\beta\}-\beta\,/\!\!/\,\mathrm{ad}_u\{\alpha\}\right)$$
9. div of bch: $$\mathrm{div}_u(\mathrm{bch}(\alpha,\beta))={?}$$

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10. The definition of JA: $$JA_u(\gamma):=J_u(\gamma)\,/\!\!/\,RC_u^\gamma$$
11. The ODE for JA: with $\gamma_s=\gamma\,/\!\!/\,RC_u^{s\gamma}$, $$JA(0)=0,\qquad \frac{dJA(s)}{ds}=JA(s)\,/\!\!/\,\mathrm{ad}_u\{\gamma_s\}+\mathrm{div}_u\,\gamma_s,\qquad JA(1)=JA_u(\gamma)$$

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12. The relation with $\mathfrak{tder}$: $$e^{\mathrm{ad}_u\{\gamma\}}=C_u^{?}\text{ and }C_u^\gamma=e^{\mathrm{ad}_u\{?\}}$$
13. The definition of j (following A-T): $$j(e^D)=\int_0^1 ds\,e^{sD}(\mathrm{div}\,D)=\frac{e^D-1}{D}(\mathrm{div}\,D)$$
14. j's cocycle property: $$j(gh)=j(g)+g\cdot j(h)$$

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15. The differential of exp: $$\delta e^\gamma=e^\gamma\cdot\left(\frac{1-e^{-\mathrm{ad}\,\gamma}}{\mathrm{ad}\,\gamma}\right)(\delta\gamma)=\left(\frac{e^{\mathrm{ad}\,\gamma}-1}{\mathrm{ad}\,\gamma}\right)(\delta\gamma)\cdot e^\gamma$$
16. The differential of $\gamma=\mathrm{bch}(\alpha,\beta)$: $$\left(\frac{1-e^{-\mathrm{ad}\,\gamma}}{\mathrm{ad}\,\gamma}\right)(\delta\gamma)=\left(e^{-\mathrm{ad}\,\beta}\frac{1-e^{-\mathrm{ad}\,\alpha}}{\mathrm{ad}\,\alpha}\right)(\delta\alpha)+\left(\frac{1-e^{-\mathrm{ad}\,\beta}}{\mathrm{ad}\,\beta}\right)(\delta\beta)$$
17. The differential of C (approximate): $$\delta C_u^\gamma=\mathrm{ad}_u\left\{\left(\frac{1-e^{-\mathrm{ad}\,\gamma}}{\mathrm{ad}\,\gamma}\right)(\delta\gamma)\,/\!\!/\,RC_u^{-\gamma}\right\}\,/\!\!/\,C_u^\gamma$$
18. The differential of RC (approximate): $$\delta RC_u^\gamma=RC_u^\gamma\,/\!\!/\,\mathrm{ad}_u\left\{\left(\frac{e^{\mathrm{ad}\,\gamma}-1}{\mathrm{ad}\,\gamma}\right)(\delta\gamma)\,/\!\!/\,RC_u^\gamma\right\}$$

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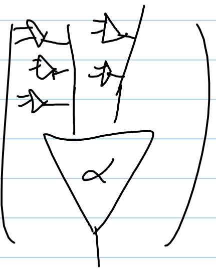
19. The differential of J: $$\delta J_u(\gamma)={?}$$

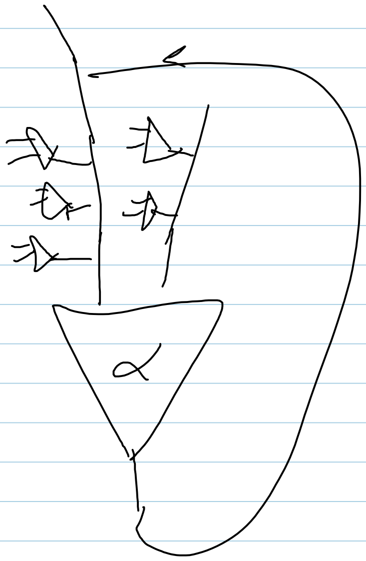
Add something about E / E_u? seems pointless

Add something about $h\Delta$, $t\Delta$ and their respective equations?

$t\Delta^w_{uv} // tha^{ux} // tha^{vx} = tha^{wx} // t\Delta^w_{uv}$?

$h\Delta^z_{xy} // tha^{ux} = h\Delta^z_{xy} // tha^{uy} = tha^{uz} // h\Delta^z_{xy}$? Seems easy

$\mathrm{div}_u(\alpha // C_u^\gamma) = \mathrm{div}_u\Big($  $\Big) =$



$+$?

$e^{\mathrm{ad}_u\{\gamma\}} = C_u^{\cancel{\gamma}\beta}$ and $C_u^\gamma = e^{\mathrm{ad}_u\{\cancel{\gamma}\beta\}}$ The relation w/ A-T.