

$$g=\left|\begin{array}{c|c} a & b \\ \bar{b} & \bar{a} \end{array}\right|$$

$$[g]=\left|\begin{array}{c|c} -a^\circ b & a^\circ \\ \overset{+}{a^\circ} & \bar{b}a^\circ \end{array}\right|$$

$$\zeta{:}\omega\in\mathbb{C}^r$$

$$x = \zeta \overset{+}{\zeta}$$

$$y = \omega \overset{+}{\omega}$$

$${^x_g\mathcal{B}_y}={^x_{\mathcal{E}_{\overset{+}{a^\circ b}/2}}}{^{a^\circ x\overset{+}{a^\circ}}}\mathcal{J}_y{}^{-a^\circ b/2}\mathcal{E}_y$$

$$\begin{aligned} \exp \frac{1}{2}\left(\overset{+}{\zeta}\overset{-}{b}a^\circ\zeta+2\overset{*}{\omega}a^\circ\zeta-\overset{*}{\omega}a^\circ b\overset{-}{\omega}\right) &= \mathcal{E}^{\overset{+}{\zeta}\overset{-}{b}a^\circ\zeta/2}\,\mathcal{E}^{\overset{*}{\omega}a^\circ\zeta}\,\mathcal{E}^{-\overset{*}{\omega}a^\circ b\overset{-}{\omega}/2}\\ \mathcal{E}^{\overset{+}{\zeta}\overset{-}{b}a^\circ\zeta/2} &= \mathcal{E}^{\operatorname{tr}\zeta\overset{+}{\zeta}\overset{-}{b}a^\circ/2}=\mathcal{E}^{\operatorname{tr}x\overset{*}{\overset{+}{a^\circ b}}/2}=\mathcal{E}^{x\mathbf{x}\overset{*}{\overset{+}{a^\circ b}}/2}\\ \mathcal{E}^{-\overset{*}{\omega}a^\circ b\overset{-}{\omega}/2} &= \mathcal{E}^{-\operatorname{tr}a^\circ b\overset{-}{\omega}\overset{*}{\omega}/2}=\mathcal{E}^{-\operatorname{tr}a^\circ by/2}=\mathcal{E}^{-a^\circ b\mathbf{x}y/2} \end{aligned}$$

$$\int\limits_{dh}^{\ell_{\mathbb{R}^{\text{U}}_\ell}}\mathcal{E}^{2\operatorname{tr}\zeta h\overset{*}{\omega}}=\zeta\overset{+}{\zeta}\mathcal{J}_{\omega\overset{+}{\omega}}^{\ell/2}$$

$$\int\limits_{dh}^{\ell_{\mathbb{R}^{\text{U}}_\ell}}\mathcal{E}^{2\overset{*}{\omega}a^\circ\zeta h}={}^{a^\circ x\overset{+}{a^\circ}}\mathcal{J}_y^{\ell/2}$$

$$\text{LHS }=\int\limits_{dh}^{\ell_{\mathbb{R}^{\text{U}}_\ell}}\mathcal{E}^{2\operatorname{tr}\overset{*}{\underline{a^\circ\zeta h\omega}}}={}^{(a^\circ\zeta)}\overset{+}{\overset{a^\circ\zeta}{\mathcal{J}_{\omega\overset{*}{\omega}}}}^{\ell/2}={}^{a^\circ\underline{\zeta\zeta}}\overset{+}{\overset{a^\circ}{\mathcal{J}_{\omega\overset{*}{\omega}}}}^{\ell/2}=\text{ RHS}$$

$$\mathcal{J}\left(\widehat{\overset{+}{\omega a^\circ\zeta}}\widehat{\overset{*}{\omega a^\circ\zeta}}\right)=\mathcal{J}\left(\overset{+}{\zeta}\overset{+}{a^\circ}\overset{-}{\omega}\overset{*}{\omega a^\circ\zeta}\right)$$

$$={}^{a\circ}\zeta \zeta^{\pm}{}^{a\circ}_{\omega\omega^{\pm}}\mathcal{J}_{{}_{\omega\omega^{\pm}}}={}^{a\circ}x^{\pm}{}^{a\circ}_y\mathcal{J}_y$$