$$D \underset{\omega}{\overset{2}{\triangle}} Z \,\triangle_{\bullet}\, \overset{\mu}{\mathbb{C}} \xleftarrow[\text{u-rep}]{\underline{\ }K^{\mu}} G \ltimes D \underset{\omega}{\overset{2}{\triangle}} Z \,\triangle_{\bullet}\, \overset{\mu}{\mathbb{C}}$$

$$^{\zeta|z}\overbrace{\underline{\ }K^{\mu}_{g}\mathsf{q}} = {}^{\zeta}\overbrace{^{z}\underline{g}^{\mu}{}^{zg}\mathsf{q}} = {}^{\zeta^{z}\underline{g}|^{z}g}\mathsf{q}$$

$$\underline{\ }K^{\mu}_{g}\overbrace{\underline{\ }K^{\mu}_{\acute{g}}\mathsf{q}} = \underline{\ }K^{\mu}_{g\acute{g}}\mathsf{q}$$

$$^{z}\mathrm{LHS} = {}^{z}\underline{g}\ {}^{zg}\overbrace{\underline{\ }K^{\mu}_{\acute{g}}\mathsf{q}} = {}^{z}\underline{g}\ {}^{zg}\underline{\acute{g}}\ {}^{\underbrace{zg}\acute{g}}\mathsf{q} = {}^{z}\underline{\overbrace{g\acute{g}}}\ {}^{z\underbrace{g\acute{g}}}\mathsf{q} = {}^{z}\mathrm{RHS}$$

$$\overbrace{\underline{\ }K^{\mu}_{g}\mathsf{q}} \bowtie \overbrace{\underline{\ }K^{\mu}_{g}\mathsf{q}} = \mathsf{q} \bowtie \mathsf{q}$$

$$\mathrm{LHS} = \int_{dz}^{D} {}^{z}\overbrace{\underline{\ }K^{\mu}_{g}\mathsf{q}} \bowtie \underbrace{{}^{z}_{\ }\underline{\ }K^{\mu}_{z}\ {}^{z}\overbrace{\underline{\ }K^{\mu}_{g}\mathsf{q}}} = \int_{dz}^{D} \underbrace{{}^{z}\underline{g}\ {}^{zg}}\mathsf{q} \bowtie \overbrace{{}^{z}\underline{\ }K^{\mu}_{z}\ \underbrace{{}^{z}\underline{g}\ {}^{zg}}\mathsf{q}}$$

$$= \int_{dz}^{D} {}^{zg}\mathsf{q} \bowtie \overbrace{{}^{z}\underline{g}^{*}\ {}^{z}\underline{\ }K^{\mu}_{z}\ {}^{z}\underline{g}\ {}^{zg}\mathsf{q}} = \int_{dz}^{D} \overbrace{{}^{zg}\mathsf{q}} \bowtie \overbrace{{}^{zg}\underline{\ }K^{\mu}_{zg}\ {}^{zg}\mathsf{q}} = \int_{dw}^{D} {}^{w}\mathsf{q} \bowtie \overbrace{{}^{w}\underline{\ }K^{\mu}_{w}\ {}^{w}\mathsf{q}} = \mathrm{RHS}$$

$$^{z}\mathsf{q} = {}^{z}\mathcal{D}^{\mu}_{w}\mathsf{q}$$

$$\overset{-1}{g} \ltimes \mathcal{D}^{\mu}_{w}\mathsf{q} = \mathcal{D}^{\mu}_{wg}\mathsf{q}$$

$$\mathcal{D} = K^{\mathbb{C}}$$

$$\det {}^{z}\mathcal{D}_{w} = {}^{z}\Delta^{p}_{w}$$

$$B = K^{\mathbb{C}} \Longrightarrow {}^{z}B^{\mu}_{w} = {}^{z}B^{-\mu}_{w}$$

$$^{z}\underline{g}\ {}^{zg}B^{-1}_{wg}\ {}^{w}\underline{g}^{*} = {}^{z}B^{-1}_{w}$$

$$\int_{dx}^{D} {}^{z}\underline{K}_{x}\ {}^{x}\overset{-1}{\underline{K}}_{x}\ {}^{x}\underline{K}_{w} = {}^{z}B^{-1/2}_{w}\ \mathfrak{t}^{*}_{-w}\, C\, \mathfrak{t}_{-z}\ {}^{z}B^{-1/2}_{w}$$

$$\daleth \underset{B}{\overset{\text{inv}}{\sqsubseteq}} \overset{\triangle}{B} \Longrightarrow \left\{ \begin{matrix} B_w^{-1}\P \\ w \in D \\ \P \in \daleth \end{matrix} \right\} \mathbb{C} \underset{G}{\overset{\text{inv}}{\sqsubseteq}} D \underset{\omega}{\overset{2}{\triangle}} \overset{\triangle}{B}$$

$$g \ltimes \underbrace{B_w^{-1}\P} = B_{wg^{-1}} \underbrace{{}^{w}\underline{g}^{*-1}\P}_{\in \daleth}$$

$$\int_{dx}^{D} {}^{z}B_x^{-1}\,{}^{x}B_x\,{}^{x}B_z^{-1} = {}^{0}\underline{g}^{-1}_{z} \left(\underbrace{\int_{dx}^{D} {}^{0}B_x^{-1x}B_x\,{}^{x}B_0^{-1}}_{=C} \right) {}^{0}\underline{g}^{-*}_{z}$$

$$\int_{dx}^{D} {}^{z}B_x^{-1}\,{}^{x}B_x\,{}^{x}B_z^{-1} = \int_{dx}^{D} {}^{0g}B_x^{-1}\,{}^{x}B_x\,{}^{x}B_{0g}^{-1} = \int_{dx}^{D} {}^{0g}B_{xg}^{-1}\,{}^{xg}B_{xg}\,{}^{xg}B_{0g}^{-1}$$

$$= \int_{dx}^{D} {}^{0}\underline{g}^{-1}\,{}^{0}B_x^{-1}\,{}^{x}\underline{g}^{-*}\,\overbrace{{}^{x}\underline{g}^{-1x}B_x^{-1x}\underline{g}^{-*}}\,{}^{x}\underline{g}^{-1}\,{}^{x}B_0^{-1}\,{}^{0}\underline{g}^{-*}$$

$$= \int_{dx}^{D} {}^{0}\underline{g}^{-1}\,{}^{0}B_x^{-1}\,{}^{x}\underline{g}^{-*}\,{}^{x}\underline{g}\,{}^{x}B_x\,{}^{x}\underline{g}^{*}\,{}^{x}\underline{g}^{-1}\,{}^{x}B_0^{-1}\,{}^{0}\underline{g}^{-*} = \int_{dx}^{D} {}^{0}\underline{g}^{-1}\,{}^{0}B_x^{-1}\,{}^{x}B_x\,{}^{x}B_0^{-1}\,{}^{0}\underline{g}^{-*} = {}^{0}\underline{g}^{-1} \underbrace{\int_{dx}^{D} {}^{0}B_x^{-1x}B_x\,{}^{x}B_0^{-1}}\,{}^{0}\underline{g}^{-*}$$

$$ {}^{zg}\mathcal{D}_{wg} = {}^{w}\underline{g}^{*}\; {}^{z}\mathcal{D}_{w}\; {}^{z}\underline{g} \in K^{\mathbb{C}} $$

$$
\begin{array}{ccc}
Z_{\underset{\frown}{\triangle}}\overset{\mu}{\mathbb{C}}\bowtie T^{-\nu} & \xrightarrow[{}^{z}\Delta_{w}^{\nu}]{{}^{z}\mathcal{D}_{w}^{\mu}} & Z_{\underset{\frown}{\triangle}}\overset{\mu}{\mathbb{C}}\bowtie T^{-\nu} \\
{}^{z}\underline{g}^{\mu}\uparrow\; {}^{z}\underline{\underline{g}}^{-\nu} & & {}^{w}\underline{g}^{*\mu}\downarrow\; {}^{w}\underline{\underline{g}}^{*\nu} \\
Z_{\underset{\frown}{\triangle}}\overset{\mu}{\mathbb{C}}\bowtie T^{-\nu} & \xrightarrow[{}^{zg}\Delta_{wg}^{\nu}]{{}^{zg}\mathcal{D}_{wg}^{\mu}} & Z_{\underset{\frown}{\triangle}}\overset{\mu}{\mathbb{C}}\bowtie T^{-\nu}
\end{array}
$$

$$ {}^{o}\underline{k} \in \mho | K^{\mu} $$

$$ {}^{z}\mathcal{D}_{z} = {}^{o}\underline{\mathfrak{g}}^{*}_{z}\; {}^{o}\underline{\mathfrak{g}}_{z} $$

$$ {}^{o}\mathcal{D}_{o} = I $$

$$ \text{LHS} = {}^{o}\underline{\mathfrak{g}}^{*}_{zg}\; {}^{o}\underline{\mathfrak{g}}_{zg} = \underline{{}^{o}k\mathfrak{g}_{z}g}^{*}\, I\, \underline{{}^{o}k\mathfrak{g}_{z}g} = \overbrace{{}^{o}\underline{k}\,{}^{o}\underline{\mathfrak{g}}_{z}\,{}^{z}\underline{g}}^{*}\; {}^{o}\underline{k}\; {}^{o}\underline{\mathfrak{g}}_{z}\; {}^{z}\underline{g} = {}^{z}\underline{g}^{*}\; {}^{o}\underline{\mathfrak{g}}^{*}_{z}\; {}^{o}\underline{k}^{*}\; {}^{o}\underline{k}\; {}^{o}\underline{\mathfrak{g}}_{z}\; {}^{z}\underline{g} = {}^{z}\underline{g}^{*}\; {}^{o}\underline{\mathfrak{g}}^{*}_{z}\; {}^{o}\underline{\mathfrak{g}}_{z}\; {}^{z}\underline{g} = \text{RHS} $$

$$ D_{\triangle}\; Z_{\underset{\frown}{\triangle}}\overset{\mu}{\mathbb{C}}\bowtie T^{-\nu} \ni \text{٩} $$

$$ \text{٩}\,\bar{\bowtie}\,\text{ꝗ} = \int_{dz}^{D} {}^{z}\text{٩}\,\underset{z}{\bar{\bowtie}}\,{}^{z}\text{ꝗ} = \int_{dz}^{D} {}^{z}\text{٩}\,\bar{\bowtie}\,{}^{z}\mathcal{D}_{z}\,{}^{z}\text{ꝗ} = \int_{dz}^{D} {}^{z}\text{٩}\,\bar{\bowtie}\,{}^{o}\underline{\mathfrak{g}}^{*}_{z}\; {}^{o}\underline{\mathfrak{g}}_{z}\,{}^{z}\text{ꝗ} = \int_{dz}^{D} \underbrace{{}^{o}\underline{\mathfrak{g}}_{z}\,{}^{z}\text{٩}}\,\bar{\bowtie}\,\underbrace{{}^{o}\underline{\mathfrak{g}}_{z}\,{}^{z}\text{ꝗ}} $$

$$\underset{\omega}{\overset{D}{\triangleright}}{}^{2}\, \underset{\frown}{\overset{Z}{\triangleright}} \overset{\mu}{\mathbb{C}} \bowtie T^{-\nu} \xleftarrow[\text{u-rep}]{\ltimes} G \ltimes \underset{\omega}{\overset{D}{\triangleright}}{}^{2}\, \underset{\frown}{\overset{Z}{\triangleright}} \overset{\mu}{\mathbb{C}} \bowtie T^{-\nu}$$

$$^{\zeta|z}\overbrace{g^{\nu\mu}_{TK}\,\mathsf{q}} = {}^{\zeta}\overbrace{{}^{z}\underline{\underline{g}}^{\nu z}\underline{g}^{\mu^{zg}}\mathsf{q}} = {}^{z}\underline{\underline{g}}^{-\nu}\ {}^{\zeta^{z}\underline{g}|^{zg}}\mathsf{q}$$

$$g \ltimes \underbrace{\acute{g} \ltimes \mathsf{q}} = \underbrace{g\acute{g}} \ltimes \mathsf{q}$$

$$g \underset{\nu}{\ltimes} \overbrace{\acute{g} \underset{\nu}{\ltimes} \mathsf{q}} = \underbrace{g\acute{g}} \underset{\nu}{\ltimes} \mathsf{q}$$

$$^{z}\mathrm{LHS} = {}^{z}\underline{g}\ {}^{zg}\overbrace{\acute{g} \ltimes \mathsf{q}} = {}^{z}\underline{g}\ {}^{zg}\underline{\acute{g}}\ {}^{\underbrace{zg\acute{g}}}\mathsf{q} = {}^{z}\underline{\overbrace{g\acute{g}}}\ {}^{z\underbrace{g\acute{g}}}\mathsf{q} = {}^{z}\mathrm{RHS}$$

$$\overbrace{g \ltimes \mathsf{q}} \bowtie \overbrace{g \ltimes \mathsf{f}} = \mathsf{q} \bowtie \mathsf{f}$$

$$\mathrm{LHS} = \int_{dz}^{D} {}^{z}\overbrace{g \ltimes \mathsf{q}} \bowtie \underbrace{{}^{z}\mathcal{D}_{z}\ {}^{z}\overbrace{g \ltimes \mathsf{f}}} = \int_{dz}^{D} \underbrace{{}^{z}\underline{g}^{zg}\mathsf{q}} \bowtie \overbrace{{}^{z}\mathcal{D}_{z}\,\underbrace{{}^{z}\underline{g}^{zg}\mathsf{f}}}$$

$$= \int_{dz}^{D} {}^{zg}\mathsf{q} \bowtie \overbrace{{}^{z}\overset{*}{\underline{g}}{}^{z}\mathcal{D}_{z}{}^{z}\underline{g}^{zg}\mathsf{f}} = \int_{dz}^{D} \overbrace{{}^{zg}\mathsf{q}} \bowtie \overbrace{{}^{zg}\mathcal{D}_{zg}{}^{zg}\mathsf{f}} = \int_{dz}^{D} {}^{z}\mathsf{q} \bowtie \overbrace{{}^{z}\mathcal{D}_{z}{}^{z}\mathsf{f}} = \mathrm{RHS}$$