$$ {}^{\zeta}\overbrace{{}^{z}\widetilde{\mathcal{K}}_w} = \overbrace{1 - z\overset{*}{w} - \zeta\overset{*}{w}}^{\nu} = \overbrace{1 - \underbrace{z+\zeta}\overset{*}{w}}^{\nu} \Rightarrow g \ltimes \widetilde{\mathcal{K}}_w = \widetilde{\mathcal{K}}_{w\overset{-1}{g}} \overbrace{a - b\overset{*}{w}}^{\nu} $$

$$ {}^{\zeta|z}\overbrace{\begin{array}{c|c} a & b \\ \hline c & d \end{array} \ltimes \widetilde{\mathcal{K}}_w} = {}^{\zeta}\overbrace{{}^{z}_{U}\begin{array}{c|c} a & b \\ \hline c & d \end{array} \ltimes {}^{\overbrace{a+zc}^{-1}\overbrace{b+zd}}\widetilde{\mathcal{K}}_w} = {}^{\zeta}\overbrace{\begin{array}{c|c} a+zc & 0 \\ \hline c & d - c\underbrace{a+zc}_{-1}\underbrace{b+zd} \end{array} \ltimes {}^{\overbrace{a+zc}^{-1}\overbrace{b+zd}}\widetilde{\mathcal{K}}_w} $$

$$ = \overbrace{a+zc+\zeta c}^{\nu}\, {}^{\overbrace{a+zc+\zeta c}^{-1}\zeta\overbrace{d - c\underbrace{a+zc}_{-1}\underbrace{b+zd}} | \overbrace{a+zc}^{-1}\overbrace{b+zd}}\widetilde{\mathcal{K}}_w $$

$$ = \overbrace{a+zc+\zeta c}^{\nu}\ \overbrace{1 - \underbrace{\overbrace{a+zc+\zeta c}^{-1}\zeta\overbrace{d - c\underbrace{a+zc}_{-1}\underbrace{b+zd}} + \overbrace{a+zc}^{-1}\overbrace{b+zd}}\overset{*}{w}}^{\nu} $$

$$ = \overbrace{a+zc+\zeta c - \zeta\overbrace{d - c\underbrace{a+zc}_{-1}\underbrace{b+zd}}\overset{*}{w} - \underbrace{a+zc+\zeta c}\overbrace{a+zc}^{-1}\overbrace{b+zd}\overset{*}{w}}^{\nu} $$

$$ = \overbrace{a+zc+\zeta c - \zeta d\overset{*}{w} + \zeta c\underbrace{a+zc}_{-1}\underbrace{b+zd}\overset{*}{w} - b\overset{*}{w} - zd\overset{*}{w} - \zeta c\underbrace{a+zc}_{-1}\underbrace{b+zd}\overset{*}{w}}^{\nu} $$

$$ = \overbrace{a - b\overset{*}{w} + \underbrace{z+\zeta}\underbrace{c - d\overset{*}{w}}}^{\nu} = \overbrace{1 + \underbrace{z+\zeta}\underbrace{c - d\overset{*}{w}}\underbrace{a - b\overset{*}{w}}_{-1}}^{\nu}\overbrace{a - b\overset{*}{w}}^{\nu} = \overbrace{1 + \underbrace{z+\zeta}\overbrace{\underbrace{\overset{*}{a} - w\overset{*}{b}}_{-1}\underbrace{\overset{*}{c} - w\overset{*}{d}}}^{*}}^{\nu}\ \overbrace{a - b\overset{*}{w}}^{\nu} $$

$$ g^{-1} = J\overset{*}{g}J = \begin{array}{c|c} \overset{*}{a} & -\overset{*}{c} \\ \hline -\overset{*}{b} & \overset{*}{d} \end{array} \Rightarrow w\overset{-1}{g} = \overbrace{\overset{*}{a} - w\overset{*}{b}}^{-1}\underbrace{w\overset{*}{d} - \overset{*}{c}} $$

$$ {}^{z}_{T}G^{\lambda}_{w}\ {}^{z}\overbrace{{}^{\zeta}_{T}K^{\mu}_{\partial T}{}^{z}G^{-\lambda}_{w}} = (\lambda)_{\mu}\,{}^{\zeta}_{T}K^{\mu}_{w^{z}} $$

$$ {}^{z}_{T}G^{-\lambda}_{w} = \sum_{\mu} (\lambda)_{\mu}\,{}^{z}_{T}K^{\mu}_{w} \Longrightarrow {}^{0}\overbrace{{}^{\zeta}_{T}K^{\mu}_{\partial T}{}^{z}G^{-\lambda}_{w}} = {}_{T}K^{\mu}_{\zeta}\,\bar{\Join}\,{}^{z}_{T}G^{-\lambda}_{w} = \sum_{\varkappa} (\lambda)_{\varkappa}\,{}_{T}K^{\mu}_{\zeta}\,\bar{\Join}\,{}^{z}_{T}K^{\varkappa}_{w} = (\lambda)_{\mu}\,{}^{\zeta}_{T}K^{\mu}_{w} $$

$$ {}^{x}\overbrace{\mathfrak{t}_{z}\ltimes{}^{z}_{T}G^{-\lambda}_{w}} = {}^{x+z}_{T}G^{-\lambda}_{w} = \overbrace{1 - x\overset{*}{w} - z\overset{*}{w}}^{-\lambda} = \overbrace{\underbrace{1 - x\overset{*}{w}\,\overbrace{1 - z\overset{*}{w}}^{-1}}\,\underbrace{1 - z\overset{*}{w}}}^{-\lambda} $$

$$ = {}^{z}_{T}G^{-\lambda}_{w}\,{}^{x}_{T}G^{-\lambda}_{w^{z}} = {}^{z}_{T}G^{-\lambda}_{w}\sum_{\varkappa}(\lambda)_{\varkappa}\,{}^{x}_{T}K^{\varkappa}_{w^{z}} $$

$$ \Longrightarrow {}^{z}\overbrace{{}^{\zeta}_{T}K^{\mu}_{\partial T}{}^{z}G^{-\lambda}_{w}} = {}^{0}\overbrace{\mathfrak{t}_{z}\ltimes{}^{\zeta}_{T}K^{\mu}_{\partial T}{}^{z}G^{-\lambda}_{w}} = {}^{0}\overbrace{{}^{\zeta}_{T}K^{\mu}_{\partial}\underbrace{\mathfrak{t}_{z}\ltimes{}^{z}_{T}G^{-\lambda}_{w}}} = {}_{T}K^{\mu}_{\zeta}\,\bar{\Join}\,\underbrace{\mathfrak{t}_{z}\ltimes{}^{z}_{T}G^{-\lambda}_{w}} $$

$$ = {}^{z}_{T}G^{-\lambda}_{w}\sum_{\varkappa}(\lambda)_{\varkappa}\,{}_{T}K^{\mu}_{\zeta}\,\bar{\Join}\,{}_{T}K^{\varkappa}_{w^{z}} = {}^{z}_{T}G^{-\lambda}_{w}\,(\lambda)_{\mu}\,{}^{\zeta}_{T}K^{\mu}_{w^{z}} $$

$$ D\underset{\omega}{\overset{2}{\triangleright}}\underbrace{\overset{\lambda}{\mathbb{C}}\Join{}^{Z}\underset{\frown}{\triangleright}\overset{n-}{\mathbb{C}}} \leftarrow D\underset{\omega}{\overset{2}{\triangleright}}{}^{n+\lambda}\mathbb{C} $$

$$ {}^{\zeta|z}\overline{\mathcal{I}\rceil} = \sum_{\mu}\frac{(-n)_{\mu}}{(\lambda)_{\mu}}\,{}^{z}\overline{{}^{\zeta}_{T}K^{\mu}_{\partial}\rceil} = {}^{z}\overline{{}^{\zeta}_{\lambda}\mathfrak{f}^{-n}_{\partial}\rceil} $$

$$ n \geqslant \mu_{1} \geqslant \cdots \geqslant \mu_{r} \geqslant 0 \Longrightarrow \begin{bmatrix} n+r \\ r \end{bmatrix} \text{ terms} $$

$$ {}^{z}_{T}G^{\lambda}_{w}\ {}^{\zeta|z}\overbrace{\mathcal{I}{}^{z}_{T}G^{-\lambda}_{w}} = {}^{\zeta}_{T}G^{n}_{w^{z}} $$

$$ \text{LHS} = {}^{z}_{T}G^{\lambda}_{w}\sum_{\mu}\frac{(-n)_{\mu}}{(\lambda)_{\mu}}\,{}^{z}\overbrace{{}^{\zeta}_{T}K^{\mu}_{\partial T}{}^{z}G^{-\lambda}_{w}} = \sum_{\mu}\frac{(-n)_{\mu}}{(\lambda)_{\mu}}(\lambda)_{\mu}\,{}^{\zeta}_{T}K^{\mu}_{w^{z}} = \sum_{\mu}(-n)_{\mu}\,{}^{\zeta}_{T}K^{\mu}_{w^{z}} = {}^{\zeta}_{T}G^{n}_{w^{z}} $$

$$ \text{neu}\ {}^{z}_{T}G^{\lambda}_{w}\ {}^{\zeta|z}\overbrace{\mathcal{I}{}^{z}_{T}G^{-\lambda\zeta^{z}B^{-1}_{w}}_{w}\daleth} = {}^{z}_{T}G^{-n/p}_{w}\ {}^{\zeta}\overbrace{{}^{z}g_{w}\ltimes{}^{w^{w}+}\daleth} = {}^{z}_{T}G^{-n/p}_{w}\,{}^{z+\zeta}_{T}G^{n}_{w}{}^{w^{w}+\zeta^{z}g_{w}}\daleth = {}^{\zeta}_{T}G^{n}_{w^{z}}{}^{w^{w}+\zeta^{z}g_{w}}\daleth $$

$$\overset{-\nu}{\overleftrightarrow{a+wc}}^{*}\;{}^{\zeta}\overbrace{{}^{w\overset{*}{}}_{U}g^{\nu}\,\text{ɿ}} \;=\; {}^{0\cdot {}^{w\overset{*}{}}_{U}g+\zeta\, {}^{w}\underline{\overset{*}{g}}}\text{ɿ}$$

$$\dot{w}\;{}^{w}\underline{g} \;=\; \overbrace{a{+}wc}^{-1}\;\dot{w}\;\underbrace{d{-}c\overbrace{a{+}wc}^{-1}\overbrace{b{+}wd}} \;\Longrightarrow\; \dot{w}\;{}^{w}\underline{\overset{*}{g}} \;=\; \overbrace{a{+}wc}^{-*}\;\dot{w}\;\overbrace{d{-}c\underbrace{a{+}wc}_{-1}\underbrace{b{+}wd}}^{*}$$

$$^{\zeta}\overbrace{\begin{array}{c|c}\alpha & \beta\\ \hline \gamma & \delta\end{array}}^{\nu}\text{ɿ} \;=\; \overset{\nu}{\overleftrightarrow{\alpha+\zeta\gamma}}\;\overbrace{\alpha+\zeta\gamma}^{-1}\overbrace{\beta+\zeta\delta}\,\text{ɿ} \Longrightarrow 0\cdot{}^{w\overset{*}{}}_{U}g \;=\; \overbrace{a{+}wc}^{-*}\;\overset{*}{c}$$

$$^{w\overset{*}{}}_{U}g \;=\; \begin{array}{c|c}\overbrace{a{+}wc}^{*} & \overset{*}{c}\\ \hline 0 & \overbrace{d{-}c\underbrace{a{+}wc}_{-1}\underbrace{b{+}wd}}^{*}\end{array}$$

$$\overset{-\nu}{\overleftrightarrow{a+wc}}^{*}\;{}^{\zeta}\overbrace{{}^{w\overset{*}{}}_{U}g^{\nu}\,\text{ɿ}} \;=\; {}^{\overbrace{a{+}wc}^{-*}\underbrace{\overset{*}{c}+\zeta\,\overbrace{d{-}c\overbrace{a{+}wc}^{-1}\overbrace{b{+}wd}}^{*}}}\text{ɿ} \;=\; {}^{0\cdot {}^{w\overset{*}{}}_{U}g+\zeta\, {}^{w}\underline{\overset{*}{g}}}\text{ɿ}$$

$$\overset{-\nu}{\overleftrightarrow{a+wc}}^{*}\;{}^{w\overset{*}{}}_{U}g^{\nu}\,\text{ʇ} = {}^{w}\underline{\overset{*}{g}}\ltimes\text{ʇ} + \underbrace{0\cdot{}^{w\overset{*}{}}_{U}g}\,\text{ʇ}$$

$$0\cdot{}^{w\overset{*}{}}_{U}g \;=\; \underbrace{0\cdot\overset{*}{g}}\;\overset{*}{\mathfrak{t}}_{w}$$

$$\overset{-\nu}{\overleftrightarrow{a+wc}}^{*}\;{}^{w\overset{*}{}}_{U}g^{\nu}\left(\text{ʇ}+\underbrace{w^{w}}\text{ʇ}\right)$$

$$\overset{\lambda}{\overleftrightarrow{1-z\overset{*}{w}}}\;{}^{\zeta|z}\overbrace{\mathcal{I}\;\overset{-\lambda}{\overleftrightarrow{1-z\overset{*}{w}}}} \;=\; \overset{n}{\overleftrightarrow{1-\zeta\overset{*}{w}^{z}}}$$

$$\text{LHS} \;=\; \overset{\lambda}{\overleftrightarrow{1-z\overset{*}{w}}}\;\sum_{\mu}\frac{(-n)_{\mu}}{{}_{K}\lambda_{\mu}}\;{}^{z}\overbrace{{}^{\zeta}K^{\mu}_{\partial}\;\overset{-\lambda}{\overleftrightarrow{1-z\overset{*}{w}}}} \;=\; \sum_{\mu}\frac{(-n)_{\mu}}{{}_{K}\lambda_{\mu}}\;{}_{K}\lambda_{\mu}\;{}^{\zeta}K^{\mu}_{w^{z}} \;=\; \sum_{\mu}(-n)_{\mu}\;{}^{\zeta}K^{\mu}_{w^{z}} \;=\; \overset{n}{\overleftrightarrow{1-\zeta\overset{*}{w}^{z}}}$$

$$\text{neu}\;\overset{\lambda}{\overleftrightarrow{1-z\overset{*}{w}}}\;{}^{\zeta|z}\overbrace{\mathcal{I}\;\overset{-\lambda}{\overleftrightarrow{1-z\overset{*}{w}}}\;{}^{\zeta}{}^{z}_{K}G_{w}^{-1}}\,\text{ɿ} \;=\; \overset{-n}{\overleftrightarrow{1-z\overset{*}{w}}}\;{}^{\zeta}\overbrace{{}^{z}g_{w}\ltimes{}^{w^{w}+}\text{ɿ}} \;=\; \overset{-n}{\overleftrightarrow{1-z\overset{*}{w}}}\;\overset{n}{\overleftrightarrow{1-\underbrace{z+\zeta}\overset{*}{w}}}\;{}^{w^{w}+\zeta^{z}g_{w}}\text{ɿ} \;=\; \overset{n}{\overleftrightarrow{1-\zeta\overset{*}{w}^{z}}}\;{}^{w^{w}+\zeta}$$

$$\overset{-\nu}{\overleftrightarrow{a+wc}}^{*}\;{}^{w\overset{*}{}}_{U}g\underset{\nu}{\ltimes}\text{ʇ} = {}^{w\overset{*}{}}_{K}g\ltimes\text{ʇ} + \underbrace{0\cdot{}^{w\overset{*}{}}_{U}g}\,\text{ʇ}$$

$$0\cdot{}^{w\overset{*}{}}_{U}g \;=\; \underbrace{0\cdot\overset{*}{g}}\;\overset{*}{\mathfrak{t}}_{w}$$

$$\left(\overbrace{a+wc}^{-\nu}\right)^{*} {}^{w*}_{U}g \ltimes_{\nu} \left(\rceil + \underbrace{w^{w}}\rceil\right) = {}^{w*}_{K}g \ltimes \rceil + \underbrace{0 \cdot {}^{w*}_{U}g + w^{w}}\rceil = {}^{w*}_{K}g \ltimes \rceil + \underbrace{(wg)^{wg}}{}^{w*}_{K}g \ltimes \rceil = {}^{w*}_{-}g \ltimes \rceil + \underbrace{0 \cdot {}^{w*}_{U}g}\rceil$$

$$= {}^{w*}_{-}g \ltimes \rceil + \underbrace{0 \cdot {}^{w*}_{U}g + w^{w}}\rceil = {}^{w*}_{-}g \ltimes \rceil + \underbrace{(wg)^{wg}}{}^{w*}_{-}g \ltimes \rceil$$

$$0 \cdot {}^{w*}_{U}g + w^{w} = \underbrace{(wg)^{wg}}{}^{w*}_{-}g = \underbrace{(wg)^{wg}}{}^{w*}_{K}g$$

$$\underbrace{0 \cdot {}^{w*}_{U}g + w^{w}}{}^{w-*}_{K}g = (wg)^{wg}$$

$$\underbrace{w^{w}}{}^{w}_{K}G_{w}^{1/2} = w$$