

$$\begin{array}{ccccc}
C^\chi \mathfrak{Z} T^\nu & \xrightarrow[\Delta_w^\nu]{z G_w^\chi} & C^\chi \mathfrak{Z} T^\nu & \xleftarrow{z/w} & K^\chi \mathfrak{Z} T^{\nu-n} \\
\uparrow \begin{array}{l} z g^\chi \\ C g^\nu \end{array} & & \downarrow \begin{array}{l} w \dot{g}^\chi \\ C \dot{g}^\nu \end{array} & & \downarrow \begin{array}{l} w \dot{g}^\chi \\ K \dot{g}^{\nu-n} \end{array} \\
C^\chi \mathfrak{Z} T^\nu & \xrightarrow[\Delta_w^\nu]{z g G_w^\chi} & C^\chi \mathfrak{Z} T^\nu & \xleftarrow{z g/wg} & K^\chi \mathfrak{Z} T^{\nu-n}
\end{array}$$

$$\dot{g}_{TC}^{-1\nu\chi} \underbrace{\Delta_w^{-\nu} C G_w^{-\chi} / w}_{\mathfrak{A}} = \dot{g}_T^{*\nu-n} \Delta_{wg}^{-\nu} C G_{wg}^{-\chi} \underbrace{/ wg K \dot{g}^{*\nu-n}}_{\mathfrak{A}}$$

$$\begin{array}{ccc}
D_{\Delta_w}^2 C^\chi \mathfrak{Z} T^\nu & \xleftarrow[\Delta_w^{-\nu}]{C G_w^{-\chi} / w} & K^\chi \mathfrak{Z} T^{\nu-n} \\
\uparrow g_{TC}^{\nu\chi} & & \downarrow \begin{array}{l} w \dot{g}^\chi \\ K \dot{g}^{\nu-n} \end{array} \\
D_{\Delta_w}^2 C^\chi \mathfrak{Z} T^\nu & \xleftarrow[\Delta_w^{-\nu}]{C G_{wg}^{-\chi} / wg} & K^\chi \mathfrak{Z} T^{\nu-n}
\end{array}$$

$$\begin{aligned}
{}^{zg} \text{LHS} &= {}_T^{zg} \dot{g}^{-1\nu} {}_C^{zg} \dot{g}^{-1\chi} \overbrace{\Delta_w^{-\nu} C G_w^{-\chi} / w}_{\mathfrak{A}} = {}_T^{zg} g^{-\nu} {}_C^{zg} g^{-\chi} \overbrace{\Delta_w^{-\nu} C G_w^{-\chi} / w}_{\mathfrak{A}} = {}_T^{zg} g^{-\nu} \overbrace{\Delta_w^{-\nu} {}_C^{zg} g^{-\chi} C G_w^{-\chi} / w}_{\mathfrak{A}} \\
&= {}^{zg} \Delta_{wg}^{-\nu} \overbrace{{}_T^{zg} \dot{g}^{\nu} {}_C^{zg} G_{wg}^{-\chi} {}_C^{zg} \dot{g}^\chi / w}_{\mathfrak{A}} = {}^{zg} \Delta_{wg}^{-\nu} \overbrace{{}_C^{zg} G_{wg}^{-\chi} / wg} \overbrace{{}_T^{zg} \dot{g}^{\nu-n} w \dot{g}^{*\nu-n}}_{\mathfrak{A}} = {}_T^{zg} \dot{g}^{\nu-n} \overbrace{\Delta_{wg}^{-\nu} C G_{wg}^{-\chi} / wg K \dot{g}^{*\nu-n}}_{\mathfrak{A}} = {}^{zg} \text{RHS}
\end{aligned}$$

$$\mathcal{I} \overbrace{\Delta_w^{n-\nu} G_w^{-\chi}}^{\mathbf{A}} = \Delta_w^{-\nu} G_w^{-\chi} /_w \mathbf{A}$$

$$D_{\omega}^2 C^{\chi} \mathbf{z} T^{\nu} \xleftarrow{\mathcal{I}} D_{\omega}^2 K^{-\chi} \mathbf{z} T^{\nu-n}$$

$$\mathcal{I} \overbrace{g_{TK}^{-1\nu-n\chi} \Delta_w^{n-\nu} G_w^{-\chi}}^{\mathbf{A}} = \mathcal{I} \overbrace{w_T^* g^{\nu-n} \Delta_{wg}^{n-\nu} G_{wg}^{-\chi} w_K^* g^{\chi}}^{\mathbf{A}} = w_T^* g^{\nu-n} \mathcal{I} \overbrace{\Delta_{wg}^{n-\nu} G_{wg}^{-\chi} w_K^* g^{\chi}}^{\mathbf{A}}$$

$$= w_T^* g^{\nu-n} \Delta_{wg}^{-\nu} G_{wg}^{-\chi} /_{wg} w_K^* g^{\chi} \mathbf{A} = \overbrace{g_{TC}^{-1\nu\chi} \Delta_w^{-\nu} G_w^{-\chi} /_w \mathbf{A}} = \overbrace{g_{TC}^{-1\nu\chi} \mathcal{I} \Delta_w^{n-\nu} G_w^{-\chi}}^{\mathbf{A}}$$