

$$D \underset{w}{\triangle} \underset{Z}{\triangle} \underbrace{\underset{\cdot}{\triangle} \mathbb{C}}^{|n} \ni \mathbf{1}$$

$$\zeta \overbrace{+G_w^{-|n} \mathbf{1}} = \zeta + z D_w^n \overbrace{\zeta + z}^w - 2z^w \mathbf{1}$$

$$\not\prec = \mathbf{t}_z^* z B_z^{1/2} \mathbf{t}_z$$

$${}^o G_{\not\prec} = \not\prec \mathbf{t}_z^{-1} = \mathbf{t}_z^* z B_z^{1/2} = \overbrace{z B_z^{1/2} \mathbf{t}_z}^* = \overbrace{\mathbf{t}_{z^z B_z^{-1/2}} z B_z^{1/2}}^* = \overbrace{\mathbf{t}_{z^z} z B_z^{1/2}}^* = z B_z^{1/2} \mathbf{t}_{z^z}^*$$

$${}^z G_z = {}^o G_{\not\prec}^* {}^o G_{\not\prec} = \mathbf{t}_{z^z} z B_z^{1/2} z B_z^{1/2} \mathbf{t}_{z^z}^* = \mathbf{t}_{z^z} z B_z \mathbf{t}_{z^z}^*$$

$$\begin{aligned} \overbrace{\zeta + z}^w - 2z^w {}^z G_w &= \zeta \mathbf{t}_z \mathbf{t}_{-w}^* \mathbf{t}_{-2z^w} \mathbf{t}_{z^w} z B_w \mathbf{t}_{w^z}^* = \zeta \mathbf{t}_z \mathbf{t}_{-w}^* \mathbf{t}_{-z^w} z B_w \mathbf{t}_{w^z}^* \\ &= \overbrace{\zeta + z}^w - z^w z B_w}^{-wz} \underset{\text{L}\overline{\text{O}}\text{O}}{\zeta^{w^z}}^{-wz} = \zeta \end{aligned}$$

$$\Rightarrow \zeta {}^z G_w^{-1} = \overbrace{\zeta + z}^w - 2z^w \Rightarrow {}^z G_w^{-1} = \mathbf{t}_z \mathbf{t}_{-w}^* \mathbf{t}_{-2z^w} = \underbrace{\mathbf{t}_{-w}^*}_{\widetilde{\mathbf{t}_{-w}^*}} \mathbf{t}_{-z^w}$$

$$\Rightarrow \zeta \underline{{}^z G_w^{-1}} = \zeta + z \underline{\mathbf{t}_{-w}^*} = \zeta + z B_w^{-1} \Rightarrow \det \zeta \underline{{}^z G_w^{-1}{}^{-n}} = \zeta + z D_w^n$$

$$\zeta \overbrace{y^n \mathbf{1}} = \det \zeta \underline{y^{-n} \zeta y} \mathbf{1} \Rightarrow \text{LHS} = \det \zeta \underline{{}^z G_w^{-1}{}^{-n} \zeta {}^z G_w^{-1} \mathbf{1}} = \zeta + z D_w^n \overbrace{\zeta + z}^w - 2z^w \mathbf{1}$$