

$$\begin{array}{c} \Psi |^{\mathbb{C}^{1|1}} \triangleright_{\omega} \mathbb{C} \\ \downarrow \left(\right) \text{ symb } / \text{Geod}_{\alpha} / \text{ Toep } / \text{ Weyl} \\ \mathbb{C}^{1|1} \diagup \mathbb{C} \end{array}$$

$$\dot{\bar{\eta}} = \varepsilon \bar{\eta}$$

$$\bar{\eta}^*=\varkappa\eta$$

$$\widehat{\bar{\eta}\eta}^*=\eta^*\bar{\eta}^*=\varepsilon\varkappa\bar{\eta}\eta$$

$$\int\limits_{dw/\pi}^{\mathbb{C}^{1|0}} \int\limits_{d\omega}^{\mathbb{C}^{0|1}} {}_{w|\omega} \mathbb{J} \underset{w|\omega}{\mathbb{L}} = \underline{\overline{\mathbb{J}} \mathbb{L}} \text{ super-trace}$$

$$\overline{\zeta^{00}\mathbb{J} + \zeta^{10}\mathbb{J} + \zeta^{-01}\mathbb{J} + \zeta^{-11}\mathbb{J}} = \frac{a\overline{\mathbb{J}^{00}} + \alpha\overline{\mathbb{J}^{11}}}{c\overline{\mathbb{J}^{10}}} \quad \left| \begin{array}{l} b\overline{\mathbb{J}^{01}} \\ d\overline{\mathbb{J}^{00}} + \delta\overline{\mathbb{J}^{11}} \end{array} \right.$$

$$\Rightarrow \boxed{\begin{array}{|c|c|} \hline 1 & 1 \\ \hline 1 & 1 \\ \hline \end{array}} = \begin{cases} \bar{\alpha} \boxed{\begin{array}{c} \diagup \\ \diagdown \end{array}} - \bar{\delta} \boxed{\begin{array}{c} \diagdown \\ \diagup \end{array}} + \zeta \bar{c} \boxed{\begin{array}{c} \diagup \\ \diagup \end{array}} + \bar{\zeta} \bar{b} \boxed{\begin{array}{c} \diagdown \\ \diagup \end{array}} + \bar{\zeta} \zeta \overbrace{\bar{a} \boxed{\begin{array}{c} \diagup \\ \diagdown \end{array}} - \bar{d} \boxed{\begin{array}{c} \diagdown \\ \diagup \end{array}}}^{} \\ \frac{\bar{\alpha} \boxed{\begin{array}{c} \diagup \\ \diagdown \end{array}} - \bar{\delta} \boxed{\begin{array}{c} \diagdown \\ \diagup \end{array}}}{\varepsilon \kappa} + \zeta \frac{\bar{c} \boxed{\begin{array}{c} \diagup \\ \diagup \end{array}}}{\varepsilon} + \bar{\zeta} \frac{\bar{b} \boxed{\begin{array}{c} \diagdown \\ \diagup \end{array}}}{\kappa} + \bar{\zeta} \zeta \overbrace{\bar{a} \boxed{\begin{array}{c} \diagup \\ \diagdown \end{array}} - \bar{d} \boxed{\begin{array}{c} \diagdown \\ \diagup \end{array}}}^{} \end{cases}$$

$$\begin{array}{c|c} \bar{1} & 1 \\ \hline 1 & 1 \end{array} = {}^0{}^0\sigma + \omega {}^{10}\sigma + \bar{\omega} {}^{01}\sigma + \bar{\omega} \omega {}^{11}\sigma$$

$$\int_{d^2 w / \pi} \int_{d^2 \omega}^{\mathbb{C}^{1|0}} \int_{\mathbb{C}^{0|1}}^{\overbrace{\begin{array}{c} 00 \\ \mathbb{J} + \omega^{10} \mathbb{J} + \bar{\omega}^{01} \mathbb{J} + \bar{\omega} \omega^{11} \mathbb{J} \end{array}}^*} \underbrace{\begin{array}{c} 00 \\ \sigma + \omega^{10} \sigma + \bar{\omega}^{01} \sigma + \bar{\omega} \omega^{11} \sigma \end{array}}$$

$$= \int_{d^2 w / \pi} \int_{d^2 \omega} \left\{ \frac{\overline{00}^* \mathbb{J} + \bar{\omega}^{-10} \mathbb{J} + \omega^{01} \mathbb{J} + \bar{\omega}\omega^{11} \mathbb{J}}{\overline{00}^* \mathbb{J} + \varepsilon \bar{\omega}^{-10} \mathbb{J} + \varkappa \omega^{01} \mathbb{J} + \varepsilon \bar{\kappa} \bar{\omega} \omega^{11} \mathbb{J}} \right\} \underbrace{\overline{00} \sigma + \omega^{10} \sigma + \bar{\omega}^{01} \sigma + \bar{\omega} \omega^{11} \sigma}_{\text{(1.1)}}$$

$$= \int_{d^2 w / \pi} \int_{d^2 \omega} \left\{ \begin{array}{l} {}^{00}\mathbb{J}^{00}\sigma + \omega \underline{{}^{01}\mathbb{J}^{00}\sigma + {}^{00}\mathbb{J}^{10}\sigma} + \bar{\omega} \underline{{}^{10}\mathbb{J}^{00}\sigma + {}^{00}\mathbb{J}^{01}\sigma} + \bar{\omega}\omega \underline{{}^{11}\mathbb{J}^{00}\sigma + {}^{10}\mathbb{J}^{10}\sigma - {}^{01}\mathbb{J}^{01}\sigma + {}^{00}\mathbb{J}^{11}\sigma} \\ {}^{00}\mathbb{J}^{00}\sigma + \omega \varkappa \underline{{}^{01}\mathbb{J}^{00}\sigma + {}^{00}\mathbb{J}^{10}\sigma} + \bar{\omega} \varepsilon \underline{{}^{10}\mathbb{J}^{00}\sigma + {}^{00}\mathbb{J}^{01}\sigma} + \bar{\omega}\omega \varepsilon \underline{{}^{11}\mathbb{J}^{00}\sigma + {}^{10}\mathbb{J}^{10}\sigma - \varkappa {}^{01}\mathbb{J}^{01}\sigma + {}^{00}\mathbb{J}^{11}\sigma} \end{array} \right.$$

$$= \int_{d^2 w / \pi}^{\mathbb{C}^{1|0}} \left\{ \frac{^{11}\mathbb{J}^{00}\sigma + {}^{10}\mathbb{J}^{10}\sigma - {}^{01}\mathbb{J}^{01}\sigma + {}^{00}\mathbb{J}^{11}\sigma}{\varepsilon \kappa {}^{11}\mathbb{J}^{00}\sigma + \varepsilon {}^{10}\mathbb{J}^{10}\sigma - \kappa {}^{01}\mathbb{J}^{01}\sigma + {}^{00}\mathbb{J}^{11}\sigma} \right\} = \underbrace{\begin{array}{c|c} {}^*\mathbb{J} & \mathbb{J} \\ \hline \mathbb{L} & \mathbb{L} \end{array}}_{\longrightarrow} = \underbrace{\begin{array}{c|c} \overline{a} {}^{00}\mathbb{J} + \overline{\alpha} {}^{11}\mathbb{J} & \overline{c} {}^{10}\mathbb{J} \\ \hline \overline{b} {}^{01}\mathbb{J} & \overline{d} {}^{00}\mathbb{J} + \overline{\delta} {}^{11}\mathbb{J} \end{array}}_{\longleftarrow} \underbrace{\begin{array}{c|c} \mathbb{L} & \mathbb{L} \\ \hline \mathbb{L} & \mathbb{L} \end{array}}_{\longleftarrow}$$

$$= \underbrace{\overline{a}^{00}\mathbb{J} + \overline{\alpha}^{11}\mathbb{J}}_{\mathfrak{L}} + \overline{c}^{10}\mathbb{J}\mathfrak{L} - \underbrace{\overline{b}^{01}\mathbb{J}\mathfrak{N} + \overline{d}^{00}\mathbb{J} + \overline{\delta}^{11}\mathbb{J}}_{\mathfrak{N}}$$

$$= \int_{d^2 w/\pi}^{\mathbb{C}^{1|0}} \underbrace{\bar{a}^{00} \mathbb{J}^* + \bar{\alpha}^{11} \mathbb{J}^*}_{\mathfrak{L}} + \bar{c}^{10} \mathbb{J} \mathfrak{L} - \bar{b}^{01} \mathbb{J} \mathfrak{L} - \underbrace{\bar{d}^{00} \mathbb{J}^* + \bar{\delta}^{11} \mathbb{J}^*}_{\mathfrak{L}}$$

$$= \int_{d^2 w / \pi} {}^{11}\overline{J} \overbrace{\bar{\alpha} \underline{L} - \bar{\delta} \underline{V}} + {}^{10}\overline{J} \bar{c} \underline{L} - {}^{01}\overline{J} \bar{b} \underline{V} + {}^{00}\overline{J} \overbrace{\bar{a} \underline{L} - \bar{d} \underline{V}}$$

$$\Rightarrow \frac{\begin{array}{c|c} \left\{ \begin{array}{l} 00\sigma \\ \varepsilon \varkappa^{00}\sigma \end{array} \right. & \left\{ \begin{array}{l} 10\sigma \\ \varepsilon^{10}\sigma \end{array} \right. \\ \hline \left\{ \begin{array}{l} 01\sigma \\ \varkappa^{01}\sigma \end{array} \right. & 11\sigma \end{array}}{= \frac{\bar{\alpha} \downarrow \bar{\delta} \nearrow}{b \nearrow} = \frac{\bar{c} \downarrow \bar{d} \nearrow}{\bar{a} \downarrow - \bar{d} \nearrow}}$$

$$\boxed{\begin{array}{c|c} \mathfrak{L} & \mathfrak{N} \\ \hline \mathfrak{L} & \mathfrak{N} \end{array}} = \frac{1}{\nu} + \zeta \frac{1}{\nu} + \nu \bar{\zeta} \frac{\mathfrak{N}}{\nu} + \nu \zeta \bar{\zeta} \frac{\mathfrak{N} - \mathfrak{L}}{\nu} \text{ Toeplitz}$$

$$\boxed{\begin{array}{c|c} \mathfrak{L} & \mathfrak{N} \\ \hline \mathfrak{L} & \mathfrak{N} \end{array}} = {}^{00}\sigma + \omega {}^{10}\sigma + \bar{\omega} {}^{01}\sigma + \omega \bar{\omega} {}^{11}\sigma$$

$$\begin{aligned} & \int_{dw/\pi}^{\mathbb{C}^{1|0}} \int_{d\omega}^{\mathbb{C}^{0|1}} w|\omega \mathbb{J} \underbrace{\begin{array}{c|c} \mathfrak{L} & \mathfrak{N} \\ \hline \mathfrak{L} & \mathfrak{N} \end{array}}_{w|\omega} = \int_{dw/\pi}^{\mathbb{C}^{1|0}} \int_{d\omega}^{\mathbb{C}^{0|1}} \overbrace{{}^{00}\mathbb{J} + \omega {}^{10}\mathbb{J} + \bar{\omega} {}^{01}\mathbb{J} + \omega \bar{\omega} {}^{11}\mathbb{J}}^{{}^{00}\sigma + \omega {}^{10}\sigma + \bar{\omega} {}^{01}\sigma + \omega \bar{\omega} {}^{11}\sigma} \\ &= \int_{dw/\pi}^{\mathbb{C}^{1|0}} \int_{d\omega}^{\mathbb{C}^{0|1}} {}^{00}\mathbb{J} {}^{00}\sigma + \omega \overbrace{{}^{10}\mathbb{J} {}^{00}\sigma + {}^{00}\mathbb{J} {}^{10}\sigma}^{{}^{01}\mathbb{J} {}^{00}\sigma + {}^{00}\mathbb{J} {}^{01}\sigma} + \bar{\omega} \overbrace{{}^{01}\mathbb{J} {}^{00}\sigma + {}^{00}\mathbb{J} {}^{01}\sigma}^{{}^{11}\mathbb{J} {}^{00}\sigma + {}^{00}\mathbb{J} {}^{11}\sigma} + \omega \bar{\omega} \overbrace{{}^{11}\mathbb{J} {}^{00}\sigma + {}^{00}\mathbb{J} {}^{11}\sigma + {}^{10}\mathbb{J} {}^{01}\sigma - {}^{01}\mathbb{J} {}^{10}\sigma}^{{}^{01}\mathbb{J} {}^{00}\sigma + {}^{00}\mathbb{J} {}^{11}\sigma + {}^{10}\mathbb{J} {}^{01}\sigma - {}^{01}\mathbb{J} {}^{10}\sigma} \\ &= \int_{dw/\pi}^{\mathbb{C}^{1|0}} {}^{01}\mathbb{J} {}^{10}\sigma - {}^{11}\mathbb{J} {}^{00}\sigma - {}^{00}\mathbb{J} {}^{11}\sigma - {}^{10}\mathbb{J} {}^{01}\sigma = \underbrace{\mathbb{J} \frac{\mathfrak{L} & \mathfrak{N}}{\mathfrak{L} & \mathfrak{N}}}_{\frac{\nu}{\nu} \frac{\mathfrak{L} & \mathfrak{N}}{\mathfrak{L} & \mathfrak{N}}} = \underbrace{\frac{{}^{00}\mathbb{J} - {}^{11}\mathbb{J}/\nu}{\frac{\nu}{\nu} \frac{{}^{10}\mathbb{J}}{\mathbb{J}}}}_{\frac{{}^{01}\mathbb{J}/\nu}{\frac{\nu}{\nu} \frac{{}^{00}\mathbb{J}}{\mathbb{J}}}} \frac{\mathfrak{L} & \mathfrak{N}}{\mathfrak{L} & \mathfrak{N}} \\ &= \underbrace{{}^{00}\mathbb{J} - {}^{11}\mathbb{J}/\nu}_{\nu dw/\pi} \mathfrak{L} + \underbrace{{}^{01}\mathbb{J}/\nu}_{\nu dw/\pi} \mathfrak{L} - \underbrace{{}^{10}\mathbb{J} \mathfrak{N} + {}^{00}\mathbb{J} \mathfrak{N}}_{\nu dw/\pi} = \int_{\nu dw/\pi}^{\mathbb{C}} \underbrace{{}^{00}\mathbb{J} - {}^{11}\mathbb{J}/\nu}_{\nu dw/\pi} \frac{\mathfrak{L}}{\nu} + \frac{{}^{01}\mathbb{J}}{\nu} \frac{\mathfrak{L}}{\nu} - \frac{{}^{10}\mathbb{J}}{\nu} \frac{\mathfrak{N}}{\nu} - \frac{{}^{00}\mathbb{J}}{\nu} \frac{\mathfrak{N}}{\nu} \\ &= \int_{dw/\pi}^{\mathbb{C}} \underbrace{\nu {}^{00}\mathbb{J} - {}^{11}\mathbb{J}}_{\nu dw/\pi} \frac{\mathfrak{L}}{\nu} + {}^{01}\mathbb{J} \frac{\mathfrak{L}}{\nu} - \nu {}^{10}\mathbb{J} \frac{\mathfrak{N}}{\nu} - \nu {}^{00}\mathbb{J} \frac{\mathfrak{N}}{\nu} = \int_{dw/\pi}^{\mathbb{C}} \underbrace{{}^{00}\mathbb{J} \nu \frac{\mathfrak{L} - \mathfrak{N}}{\nu}}_{{}^{00}\mathbb{J} \nu \frac{\mathfrak{L}}{\nu} - {}^{10}\mathbb{J} \nu \frac{\mathfrak{N}}{\nu}} - \underbrace{{}^{10}\mathbb{J} \nu \frac{\mathfrak{N}}{\nu}}_{{}^{10}\mathbb{J} \nu \frac{\mathfrak{L}}{\nu}} + {}^{01}\mathbb{J} \frac{\mathfrak{L}}{\nu} - {}^{11}\mathbb{J} \frac{\mathfrak{L}}{\nu} \\ &\Rightarrow \underbrace{\frac{{}^{00}\sigma}{{}^{01}\sigma} \left| \begin{array}{c} {}^{10}\sigma \\ {}^{11}\sigma \end{array} \right.}_{\nu \frac{\mathfrak{L}}{\nu} \left| \begin{array}{c} \mathfrak{L} \\ \nu \frac{\mathfrak{L} - \mathfrak{N}}{\nu} \end{array} \right.} = \frac{\frac{\mathfrak{L}}{\nu}}{\nu \frac{\mathfrak{L}}{\nu} \left| \begin{array}{c} \mathfrak{L} \\ \nu \frac{\mathfrak{L} - \mathfrak{N}}{\nu} \end{array} \right.}$$