

$$Z_{\mathbb{R}} = Z \times_{\text{diag}} \bar{Z} \subset Z_{\mathbb{C}} = Z \times \bar{Z}$$

$$\underline{z:\bar{w}} \times \underline{u:\bar{v}} = z \times u + v \times w$$

$$\underline{e_1:\bar{e}_1} \times \underline{e_1:\bar{e}_1} = e_1 \times e_1 + e_1 \times e_1 = 2$$

$$Z^{\mathbb{C}} \triangleleft \mathbb{C} = Z \triangleleft \mathbb{C} \times \bar{Z} \triangleleft \mathbb{C}$$

$$\varkappa_{\mathbb{C}} = \varkappa \bar{\varkappa}$$

$$z:\bar{z} p_{\mathbb{C}}^{\varkappa \bar{\varkappa}} = \frac{(d/r)}{d_{\varkappa}^{\text{tri}}} \varkappa z K_z^{\varkappa}$$

$$e:\bar{e} p_{\mathbb{C}}^{\varkappa \bar{\varkappa}} = 1$$

$$d_{\varkappa}^{\text{alg}} p_{\mathbb{C}}^{\varkappa \bar{\varkappa}} \times p_{\mathbb{C}}^{\varkappa \bar{\varkappa}} = \frac{d_{\varkappa}^{\text{alg}}}{d_{\varkappa}^{\text{tri}}} (d/r)_{\varkappa}^2 = (d/r)_{\varkappa} (d_X/r)_{\varkappa} = (d_{\mathbb{R}}/2r)_{\varkappa} (d_X/r)_{\varkappa}$$

$$d_{\varkappa}^{\text{alg}} p_{\mathbb{C}}^{\varkappa \bar{\varkappa}} \times_{\bar{v}} p_{\mathbb{C}}^{\varkappa \bar{\varkappa}} = \frac{d_{\varkappa}^{\text{alg}} p_{\mathbb{C}}^{\varkappa \bar{\varkappa}} \times p_{\mathbb{C}}^{\varkappa \bar{\varkappa}}}{(\nu)_{\varkappa}^2} = \frac{(d/r)_{\varkappa} (d_X/r)_{\varkappa}}{(\nu)_{\varkappa}^2} = \frac{(d_{\mathbb{R}}/2r)_{\varkappa} (d_X/r)_{\varkappa}}{(\nu)_{\varkappa}^2}$$

$$Z = X^{\mathbb{C}} \times V$$

$$Z_{\mathbb{C}} = Z \times \bar{Z}$$

$$\underline{z:w} \times \underline{\zeta:\omega} = z \times \zeta + w \times \omega$$

$$\varkappa_{\mathbb{C}} = \varkappa \bar{\varkappa}$$

$$z:\bar{w} K_{\mathbb{C}}^{\varkappa} = z K_w^{\varkappa}$$

$$\mathcal{B}^{\nu} = \sum_{\varkappa} \frac{\partial K_{\partial}^{\varkappa}}{(\nu)_{\varkappa}} = \sum_{\varkappa} \frac{\partial:\bar{\partial} K_{\mathbb{C}}^{\varkappa}}{(\nu)_{\varkappa}}$$

$${}^z K_w^\varkappa = \sum_{i \in d_\varkappa} {}^z u_i^\varkappa {}^w \bar{u}_i^\varkappa$$

$$K_w^\varkappa = \sum_{i \in d_\varkappa} u_i^\varkappa {}^w \bar{u}_i^\varkappa$$

$$\begin{aligned} \sum_{i \in d_\varkappa} {}^z u_i^\varkappa {}^w \bar{u}_i^\varkappa &= {}^z K_w^\varkappa = K_z^\varkappa \star K_w^\varkappa = \sum_{i \in d_\varkappa \ni j} \underbrace{u_i^\varkappa {}^z \bar{u}_i^\varkappa} \star \underbrace{u_j^\varkappa {}^w \bar{u}_j^\varkappa} \\ &= \sum_{i \in d_\varkappa \ni j} {}^z u_i^\varkappa \underbrace{u_i^\varkappa \star u_j^\varkappa} {}^w \bar{u}_j^\varkappa \\ {}^z K_e^\varkappa &= {}^e K_e^\varkappa {}^z \Phi_\varkappa \end{aligned}$$

$${}^e K_e^\varkappa = \overbrace{{}^e K_e^\varkappa} = K_e^\varkappa \star K_e^\varkappa = {}^e \bar{K}_e^\varkappa \Phi_\varkappa \star \Phi_\varkappa \Rightarrow {}^e \bar{K}_e^\varkappa = \Phi_\varkappa \star \Phi_\varkappa$$

$$\int_{dk} {}^u \varkappa k K_w^\varkappa {}^z K_v^\varkappa \varkappa k = \frac{{}^u K_v^\varkappa {}^z K_w^\varkappa}{d_\varkappa}$$

$$\begin{aligned} \text{LHS} &= \int_{dk} \underbrace{K_{u \varkappa k}^\varkappa \star K_w^\varkappa}_{K_u^\varkappa \star k \varkappa K_w^\varkappa} \underbrace{K_z^\varkappa \star K_{v \varkappa k}^\varkappa}_{k \varkappa K_z^\varkappa \star K_v^\varkappa} = \int_{dk} \overbrace{\bar{k}^\varkappa \varkappa K_u^\varkappa \star K_w^\varkappa}^{-1} \overbrace{K_z^\varkappa \star \bar{k}^\varkappa \varkappa K_v^\varkappa}^{-1} \\ &= \int_{dk} \overbrace{K_u^\varkappa \star k \varkappa K_w^\varkappa} \overbrace{k \varkappa K_z^\varkappa \star K_v^\varkappa} = \frac{\overbrace{K_u^\varkappa \star K_v^\varkappa} \overbrace{K_z^\varkappa \star K_w^\varkappa}}{d_\varkappa} = \text{RHS} \end{aligned}$$

$$K_e^\varkappa \star K_e^\varkappa = {}^e K_e^\varkappa = \frac{d_\varkappa}{(d/r)_\varkappa}$$

$$\frac{{}^e K_e^\varkappa {}^z K_w^\varkappa}{d_\varkappa} = \int_{dk} {}^e \varkappa k K_w^\varkappa {}^z K_e^\varkappa \varkappa k = \int_{ds} {}^s K_w^\varkappa {}^z K_s^\varkappa = \int_{ds} {}^s \bar{K}_z^\varkappa {}^s K_w^\varkappa = K_z^\varkappa \star_S K_w^\varkappa = \frac{1}{(d/r)_\varkappa} K_z^\varkappa \star_Z K_w^\varkappa = \frac{1}{(d/r)_\varkappa} {}^z K_w^\varkappa$$

$$\Phi_\varkappa \star \Phi_\varkappa = \frac{1}{{}^e K_e^\varkappa} = \frac{(d/r)_\varkappa}{d_\varkappa}$$