

$$X_{\mathbb{C} \setminus \{w\}}^{\mathbb{C}} \overset{\check{C}}{=} \frac{X_{\mathbb{C}}^{\mathbb{C}} \xrightarrow{\gamma} \mathbb{C}}{\int_{d\mu_z^{\nu}} \frac{X_{\mathbb{C}}^{\mathbb{C}} \sqrt{\gamma}^2}{z} < \infty} = X_{\mathbb{C} \setminus \{w\}}^{\mathbb{C}} \underbrace{\Gamma_{\nu}^{\check{C}}}_{\mathbb{C}}$$

$$d\mu_z^{\nu} = \frac{d\bar{z}dz}{(2\pi i)^d} \frac{z + z^* \Delta^{\nu - 2d^*/r}}{\Gamma_{\nu - d/r}}$$

$${}^z \Delta_w^{-\nu} = z + w^* \Delta^{-\nu}$$

$${}^{z_1} \Delta_{z_2}^{-\nu} = \frac{\Gamma_{\nu^*}^{\sharp}}{\Gamma_{\nu - d/r}} \int_{dz/\pi^d}^{X_{\mathbb{C}}^{\mathbb{C}}} {}^{z_1} \Delta_z^{-\nu} {}^z \Delta_z^{\nu} {}^z \Delta_{z_2}^{-\nu}$$

$$\underbrace{{}^z \Delta_w^{-\nu}} = \frac{{}^z \Delta_w^{-\nu}}{w \Delta_w^{-\nu/2}} = \frac{w + w^* \Delta^{\nu/2}}{z + w^* \Delta^{\nu}}$$

$$\int_{dz/\pi^d}^{X_C^C} \frac{\Gamma_\lambda}{z_1 + z^* \Delta_{\lambda^*}} \frac{z + z^* \Delta_{\beta^*}}{\Gamma_{\beta^* + d/r}} \frac{\Gamma_\lambda}{z + z_2^* \Delta_{\lambda^*}} = \frac{\Gamma_{2\lambda - \beta - 2d^*/r}}{z_1 + z_2^* \Delta_{2\lambda^* - \beta^* - 2d/r}}$$

$$\begin{aligned} \text{LHS} &= \int_{dx}^{X_C} 2^d \int_{dy/(2\pi)^d}^{iX} \frac{\Gamma_\lambda}{z_1 + x - y \Delta_{\lambda^*}} \frac{2x \Delta_{\beta^*}}{\Gamma_{\beta^* + d/r}} \frac{\Gamma_\lambda}{x + y + z_2^* \Delta_{\lambda^*}} \\ &= \int_{dx}^{X_C} 2^d \frac{2x \Delta_{\beta^*}}{\Gamma_{\beta^* + d/r}} \int_{dy/(2\pi)^d}^{iX} \int_{X_C^+}^{d\xi_1} z_1 + x - y \mathbf{e}_{\xi_1}^{-1} \lambda - d^*/r \Delta_{\xi_1} \int_{X_C^+}^{d\xi_2} x + y + z_2^* \mathbf{e}_{\xi_2}^{-1} \lambda - d^*/r \Delta_{\xi_2} \\ &= \int_{dx}^{X_C} 2^d \frac{2x \Delta_{\beta^*}}{\Gamma_{\beta^* + d/r}} \int_{X_C^+}^{d\xi} z_1 + z_2^* + 2x \mathbf{e}_\xi^{-1} 2\lambda - 2d^*/r \Delta_\xi = \int_{X_C^+}^{d\xi} z_1 + z_2^* \mathbf{e}_\xi^{-1} 2\lambda - 2d^*/r \Delta_\xi \int_{dx}^{X_C} 2^d \frac{2x \Delta_{\beta^*}}{\Gamma_{\beta^* + d/r}}^{-2x} \mathbf{e}_\xi \\ &= \int_{X_C^+}^{d\xi} z_1 + z_2^* \mathbf{e}_\xi^{-1} 2\lambda - 2d^*/r \Delta_\xi^{-\beta - d^*/r} \Delta_\xi = \int_{X_C^+}^{d\xi} z_1 + z_2^* \mathbf{e}_\xi^{-1} 2\lambda - \beta - 3d^*/r \Delta_\xi = \text{RHS} \end{aligned}$$