

$${}_{=}^{\ell}\mathbb{C}_r^{\mathbb{C}} \rtimes G_{\mathbb{R}} \rightarrow {}_{=}^{\ell}\mathbb{C}_r^{\mathbb{C}}$$

$$\mathbb{C}_r^{\mathbb{C}} \rtimes G_{\mathbb{R}} \rightarrow \mathbb{C}_r^{\mathbb{C}}$$

$$g_{\mathbb{R}} = \frac{m}{q} \Big| \frac{p}{n}$$

$$\check{g}_{\mathbb{R}}^* J g_{\mathbb{R}} = J = \frac{0}{1} \Big| \frac{1}{0}$$

$$\eta \Big| \xi \frac{m}{q} \Big| \frac{p}{n} = [\eta m + \xi q \quad \eta p + \xi n]$$

$$\frac{1}{-1} \Big| \frac{1}{1} \frac{m}{q} \Big| \frac{p}{n} \frac{1}{1} \Big| \frac{-1}{1} = \frac{m+n+p+q}{n-m-p+q} \Big| \frac{n-m+p-q}{m+n-p-q} = \frac{a}{\bar{b}} \Big| \frac{b}{\bar{a}}$$

$$\frac{1}{-1} \Big| \frac{1}{1} \frac{m}{-q} \Big| \frac{-p}{n} \frac{1}{1} \Big| \frac{-1}{1} = \frac{m+n-p-q}{n-m+p-q} \Big| \frac{n-m-p+q}{m+n+p+q} = \frac{\bar{a}}{b} \Big| \frac{\bar{b}}{a}$$

$$\eta \Big| \xi \frac{m}{q} \Big| \frac{p}{n} = \zeta a + \bar{\zeta} \bar{b}$$

$$\begin{aligned} \eta \Big| \xi \frac{m}{q} \Big| \frac{p}{n} &= [\eta m + \xi q \quad \eta p + \xi n] = \underline{\eta m + \xi q} + \underline{\eta p + \xi n} \\ &= \eta \underline{m+p} + \xi \underline{q+n} = \eta \underline{a-\bar{b}} + \xi \underline{a+\bar{b}} = \underline{\xi+\eta} a + \underline{\xi-\eta} \bar{b} = \zeta a + \bar{\zeta} \bar{b} \end{aligned}$$

$$\eta \Big| \xi \frac{m}{-q} \Big| \frac{-p}{n} = \zeta \bar{a} + \bar{\zeta} b$$