$$\underbrace{y|\eta} \bowtie \underbrace{\widetilde{y}|\widetilde{\eta}} = \eta|\,\widetilde{y} \,-\, y|\,\widetilde{\eta}$$

$$\mathbb{R}^n \times_n \mathbb{R} \xrightarrow[\text{proj}]{\ltimes} \cup\Big|^{\mathbb{R}^n} \overset{2}{\underset{m}{\triangle}} \mathbb{C}$$

$$\overset{x}{\overbrace{(y|\eta) \ltimes u}} \;=\; {}^{x\,-\,y}u\; e^{i\,(x\,-\,y/2)\,\eta}$$

$$\overset{x}{\overbrace{(y|0) \ltimes u}} \;=\; {}^{x\,-\,y}u$$

$$\overset{x}{\overbrace{(0|\eta) \ltimes u}} \;=\; {}^{x}u\; e^{ix\eta}$$

$$\overbrace{\underbrace{y|\eta}\ltimes}\;\overbrace{\underbrace{\widetilde{y}|\widetilde{\eta}}\ltimes} \;=\; \overbrace{\underbrace{y+\widetilde{y}|\eta+\widetilde{\eta}}\ltimes}\,\exp\frac{i}{2}\underbrace{y|\eta} \bowtie \underbrace{\widetilde{y}|\widetilde{\eta}} \;=\; \overbrace{\underbrace{y+\widetilde{y}|\eta+\widetilde{\eta}}\ltimes}\,\exp\frac{i}{2}\underbrace{\eta|\widetilde{y}-y|\widetilde{\eta}}$$

$$\left.\begin{array}{c|c} a & b \\ \hline c & d \end{array}\right. \ltimes {}_{\pm}z \;=\; \underbrace{\left.\begin{array}{c|c} a & b \\ \hline c & d \end{array}\right. \ltimes z}_{\pm} \;=\; {}_{\pm}\underbrace{\frac{az+b}{cz+d}}$$