$$M{:}x \in {}^{\ell}\mathbb{K}_{\ell} \bowtie {}^{\ell}\mathbb{K}_{\ell}^{\mho} \to {}^{\ell}\mathbb{K}_{\ell} \ni Mx$$

$$2M|N = \mathrm{tr}\ \underbrace{M\overset{*}{N} + N\overset{*}{M}}$$

$$M|N = \mathrm{Re\ tr}\ M\overset{*}{N}$$

$$Q_{M} = \overset{*}{M} M \in {}^{\ell}\mathbb{K}_{\ell}^{\mho}$$

$$x \barwedge Q_{M} = Mx|M = \frac{1}{2}\ \mathrm{tr}\ \underbrace{Mx\overset{*}{M} + M\overbrace{Mx}^{*}} = \frac{1}{2}\ \mathrm{tr}\ \underbrace{Mx\overset{*}{M} + Mx\overset{*}{M}} = \mathrm{tr}\ x\underbrace{\overset{*}{M}M} = x\barwedge\underbrace{\overset{*}{M}M}$$

$${}^{\ell}\mathbb{K}_{\ell}^{\mho} = \frac{M \in {}^{\ell}\mathbb{K}_{\ell}}{{}_{M}Q = 1}$$

$$\zeta{:}\omega \in {}^{r}\mathbb{K}_{\ell} \bowtie \mathbb{C}$$

$${}^{r}\mathbb{K}_{\ell} = \frac{\zeta \in {}^{r}\mathbb{K}_{\ell} \bowtie \mathbb{C}}{\tilde{\zeta} = \zeta}$$

$$\int_{dh}^{{}^{\ell}\mathbb{K}_{\ell}^{\mho}} \mathfrak{e}^{2\zeta h|\omega} = \mathcal{J}\left(\overset{*}{\omega}\zeta\overset{+}{\zeta}\tilde{\omega}\right) = {}^{\zeta\overset{+}{\zeta}}\mathcal{J}_{\omega\overset{+}{\omega}}$$

$$\zeta = \tilde{\zeta} \in {}^{\ell}\mathbb{K}_{\ell} \ni \omega = \tilde{\omega} \implies M = \overset{+}{\zeta}\omega \in {}^{\ell}\mathbb{K}_{\ell}$$

$$\zeta h|\omega = \mathrm{Re\ tr}\ \zeta h\overset{*}{\omega} = \mathrm{Re\ tr}\ h\overset{*}{\omega}\zeta = \mathrm{Re\ tr}\ h\overset{*}{\omega}\tilde{\zeta} = \mathrm{Re\ tr}\ h\overbrace{\overset{+}{\zeta}\omega}^{*} = h|\overset{+}{\zeta}\omega \in \mathbb{R}$$

$$\int_{dh}^{{}^{\ell}\mathbb{K}_{\ell}^{\mho}} \mathfrak{e}^{i\zeta h|\omega} = \int_{dh}^{{}^{\ell}\mathbb{K}_{\ell}^{\mho}} \mathfrak{e}^{ih|\overset{+}{\zeta}\omega} \overset{\mathrm{FK}}{\underset{354}{=}} \mathcal{J}\left(-\frac{1}{4}Q_{\overset{+}{\zeta}\omega}\right) = \mathcal{J}\left(-\frac{1}{4}\overset{*}{\omega}\tilde{\zeta}\overset{+}{\zeta}\omega\right) = \mathcal{J}\left(-\frac{1}{4}\overset{*}{\omega}\zeta\overset{+}{\zeta}\tilde{\omega}\right)$$