$$\vartheta_3^{\mathbb{R}} = \begin{array}{c|c} \vartheta_3 & 0 \\ \hline 0 & \vartheta_3^{\sim} \end{array}$$

$$\vartheta_3 = \begin{array}{c|c|c} \vartheta ⧗ \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \overset{*}{\varepsilon}\lambda\varepsilon \underset{\varkappa}{⧗} \begin{array}{c|c} \overset{*}{d}d & 0 \\ \hline 0 & \overset{*}{e}e \end{array} & \overset{*}{\varepsilon}\lambda\varepsilon \underset{\varkappa}{⧗}\ \overset{*}{d}u \mid 0 & \Gamma\eta \underset{\varkappa}{⧗} \begin{array}{c|c} \overset{*}{d} & 0 \\ \hline 0 & \overset{*}{e} \end{array} \\ \hline \overset{*}{\varepsilon}\lambda\varepsilon \underset{\varkappa}{⧗}\ \overset{*}{u}d \mid 0 & \bar{\vartheta} ⧗ 1 + \overset{*}{\varepsilon}\lambda\varepsilon \underset{\varkappa}{⧗} \overset{*}{u}u & \Gamma\eta \underset{\varkappa}{⧗}\ \overset{*}{u} \mid 0 \\ \hline \xi\Gamma ⧗ \begin{array}{c|c} d & 0 \\ \hline 0 & e \end{array} & \xi\Gamma ⧗ \begin{array}{c} u \\ \hline 0 \end{array} & \Theta ⧗ \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \Lambda \underset{\varkappa}{⧗} \begin{array}{c|c} d\overset{*}{d} & 0 \\ \hline 0 & e\overset{*}{e} \end{array} + \Lambda \underset{\varkappa}{⧗} \begin{array}{c|c} u\overset{*}{u} & 0 \\ \hline 0 & 0 \end{array} \end{array}$$

$$\vartheta_3^{\sim} = \begin{array}{c|c|c} \bar{\vartheta}_a ⧗ \begin{array}{c|c} a & 0 \\ \hline 0 & 0 \end{array} + \bar{\vartheta} ⧗ \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array} & 0 & 0 \\ \hline 0 & \bar{\vartheta}_a ⧗ a & 0 \\ \hline 0 & 0 & \bar{\vartheta}_a ⧗ \begin{array}{c|c} a & 0 \\ \hline 0 & 0 \end{array} + \bar{\vartheta} ⧗ \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array} \end{array}$$

$$\vartheta \in {}^{\hbar}\underset{\infty}{⊿}\ {}^{-\hbar}⊿\ \overset{2}{\mathbb{K}} : \quad \Theta \in {}^{\hbar}\underset{\infty}{⊿}\ {}^{-\hbar}⊿\ {}^{2}\overset{2}{\mathbb{K}}_2 : \quad \vartheta_a ⧗ a \in {}^{\hbar}\underset{\infty}{⊿}\ {}^{-\hbar}⊿\ {}^{3}\overset{2}{\mathbb{K}}_3$$

$$\xi \in {}^{\hbar}\underset{\infty}{⊿}\ {}^{-\hbar}⊿\ {}^{2}\mathbb{K} : \quad \eta \in {}^{\hbar}\underset{\infty}{⊿}\ {}^{-\hbar}⊿\ \mathbb{K}_2 : \quad \lambda \in {}^{\hbar}\underset{\infty}{⊿}\ \mathbb{K} : \quad \Lambda \in {}^{\hbar}\underset{\infty}{⊿}\ {}^{2}\mathbb{K}_2$$

$$\left.\begin{array}{c|c} a & b \\ \hline c & d \end{array}\right._{\sim} = \begin{array}{c|c} \bar{d} & -\bar{c} \\ \hline -\bar{b} & \bar{a} \end{array} \implies (AB)_{\sim} = A_{\sim}\, B_{\sim}$$

$$\Lambda ⧗ \begin{array}{c|c} d\overset{*}{d} & 0 \\ \hline 0 & e\overset{*}{e} \end{array} + \varkappa\Lambda ⧗ \begin{array}{c|c} u\overset{*}{u} & 0 \\ \hline 0 & 0 \end{array} = \frac{\Lambda + \Lambda}{2} ⧗ \begin{array}{c|c} d\overset{*}{d} + u\overset{*}{u} & 0 \\ \hline 0 & e\overset{*}{e} \end{array} + \frac{\Lambda - \Lambda}{2} ⧗ \begin{array}{c|c} d\overset{*}{d} - u\overset{*}{u} & 0 \\ \hline 0 & e\overset{*}{e} \end{array}$$

$$\omega_3^0\, \omega_3^1$$

$$= \begin{array}{c|c|c} \omega^0 \times \omega^1 ⧗ \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \psi^0\varphi^1 \underset{\varkappa}{⧗} \begin{array}{c|c} \overset{*}{d}d & 0 \\ \hline 0 & \overset{*}{e}e \end{array} & \psi^0\varphi^1 \underset{\varkappa}{⧗} \begin{array}{c} \overset{*}{d}u \\ \hline 0 \end{array} & \Gamma\left(\psi^0\Omega^1 - \omega^0\psi^1\right) \underset{\varkappa}{⧗} \begin{array}{c|c} \overset{*}{d} & 0 \\ \hline 0 & \overset{*}{e} \end{array} \\ \hline \psi^0\varphi^1 \underset{\varkappa}{⧗}\ \overset{*}{u}d \mid 0 & \bar{\omega}^0 \times \bar{\omega}^1 ⧗ 1 + \psi^0\varphi^1 \underset{\varkappa}{⧗} \overset{*}{u}u & \Gamma\left(\psi^0\Omega^1 - \bar{\omega}^0\psi^1\right) \underset{\varkappa}{⧗}\ \overset{*}{u} \mid 0 \\ \hline \left(\Omega^0\varphi^1 - \varphi^0\omega^1\right)\Gamma ⧗ \begin{array}{c|c} d & 0 \\ \hline 0 & e \end{array} & \left(\Omega^0\varphi^1 - \varphi^0\bar{\omega}^1\right)\Gamma ⧗ \begin{array}{c} u \\ \hline 0 \end{array} & \Omega^0 \times \Omega^1 ⧗ \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \varphi^0\psi^1 \underset{\varkappa}{⧗} \begin{array}{c|c} d\overset{*}{d} & 0 \\ \hline 0 & e\overset{*}{e} \end{array} + \varphi^0\psi^1 \underset{\varkappa}{⧗} \begin{array}{c|c} u\overset{*}{u} & 0 \\ \hline 0 & 0 \end{array} \end{array}$$

$$\tilde{\omega}_3^0\, \tilde{\omega}_3^1 = \begin{array}{c|c|c} \bar{\omega}_b^0 \times \bar{\omega}_c^1 ⧗ \begin{array}{c|c} \bar{b}\bar{c} & 0 \\ \hline 0 & 0 \end{array} + \bar{\omega}^0 \times \bar{\omega}^1 ⧗ \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array} & 0 & 0 \\ \hline 0 & \bar{\omega}_b^0 \times \bar{\omega}_c^1 ⧗ \bar{b}\bar{c} & 0 \\ \hline 0 & 0 & \bar{\omega}_b^0 \times \bar{\omega}_c^1 ⧗ \begin{array}{c|c} \bar{b}\bar{c} & 0 \\ \hline 0 & 0 \end{array} + \bar{\omega}^0 \times \bar{\omega}^1 ⧗ \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array} \end{array}$$

$$\vartheta = \omega^0 \times \omega^1 : \quad \Theta = \Omega^0 \times \Omega^1 : \quad \vartheta_a ⧗ a = \omega_b^0 \times \omega_c^1 ⧗ bc$$

$$\xi = \Omega^0 \varphi^1 - \varphi^0 \omega^1 \Longrightarrow \xi = \Omega^0 \varphi^1 - \varphi^0 \bar{\omega}^1 : \quad \eta = \psi^0 \Omega^1 - \omega^0 \psi^1 \Longrightarrow \eta = \psi^0 \Omega^1 - \bar{\omega}^0 \psi^1$$

$$\Lambda = \varphi^0 \psi^1 \Longrightarrow \Lambda = \varphi^0 \psi^1 : \quad \lambda = \begin{array}{c|c} \psi^0\varphi^1 & \psi^0\varphi^1 \\ \hline \psi^0\varphi^1 & \psi^0\varphi^1 \end{array} \Longrightarrow \lambda = \lambda$$

$$\left(\vartheta \boxtimes \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \overset{*}{\varkappa}\overset{*}{\varepsilon}\lambda\varepsilon \boxtimes \begin{array}{c|c} \overset{*}{d}d & 0 \\ \hline 0 & \overset{*}{e}e \end{array}\right) \left(\vartheta' \boxtimes \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \varkappa\overset{*}{\varepsilon}\lambda'\varepsilon \boxtimes \begin{array}{c|c} \overset{*}{d}d & 0 \\ \hline 0 & \overset{*}{e}e \end{array}\right) I \boxtimes \begin{array}{c|c} x/3 & 0 \\ \hline 0 & y \end{array}$$

$$= \left(\bar{\vartheta} \boxtimes \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \varkappa\overset{*}{\varepsilon}\overset{*}{\lambda}\varepsilon \boxtimes \begin{array}{c|c} \overset{*}{d}d & 0 \\ \hline 0 & \overset{*}{e}e \end{array}\right) \left(\vartheta' \boxtimes \begin{array}{c|c} x/3 & 0 \\ \hline 0 & y \end{array} + \varkappa\overset{*}{\varepsilon}\lambda'\varepsilon \boxtimes \begin{array}{c|c} \overset{*}{d}dx/3 & 0 \\ \hline 0 & \overset{*}{e}ey \end{array}\right)$$

$$= \bar{\vartheta} \times \vartheta' \boxtimes \begin{array}{c|c} x/3 & 0 \\ \hline 0 & y \end{array} + \varkappa\left(\overset{*}{\varepsilon}\overset{*}{\lambda}\varepsilon\vartheta' + \bar{\vartheta}\overset{*}{\varepsilon}\lambda'\varepsilon\right) \boxtimes \begin{array}{c|c} \overset{*}{d}dx/3 & 0 \\ \hline 0 & \overset{*}{e}ey \end{array} + \overset{*}{\varepsilon}\,\overset{*}{\lambda}\varepsilon\,\overset{*}{\varepsilon}\,\lambda'\varepsilon \boxtimes \begin{array}{c|c} \overset{*}{d}d\overset{*}{d}dx/3 & 0 \\ \hline 0 & \overset{*}{e}e\overset{*}{e}ey \end{array}$$

$$\left(\bar{\vartheta} \boxtimes 1 + \overset{*}{\varkappa}\overset{*}{\varepsilon}\lambda\varepsilon \boxtimes \overset{*}{u}u\right)\left(\bar{\vartheta}' \boxtimes 1 + \varkappa\overset{*}{\varepsilon}\lambda'\varepsilon \boxtimes \overset{*}{u}u\right) I \boxtimes x/3$$

$$= \left(\vartheta \boxtimes 1 + \varkappa\overset{*}{\varepsilon}\overset{*}{\lambda}\varepsilon \boxtimes \overset{*}{u}u\right)\left(\bar{\vartheta}' \boxtimes x/3 + \varkappa\overset{*}{\varepsilon}\lambda'\varepsilon \boxtimes \overset{*}{u}ux/3\right)$$

$$= \vartheta \times \bar{\vartheta}' \boxtimes x/3 + \varkappa\left(\overset{*}{\varepsilon}\overset{*}{\lambda}\varepsilon\bar{\vartheta}' + \vartheta\overset{*}{\varepsilon}\lambda'\varepsilon\right) \boxtimes \overset{*}{u}ux/3 + \overset{*}{\varepsilon}\,\overset{*}{\lambda}\varepsilon\,\overset{*}{\varepsilon}\,\lambda'\varepsilon \boxtimes \overset{*}{u}u\overset{*}{u}ux/3$$

$$\left(\Theta \boxtimes \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \varkappa\Lambda \boxtimes \begin{array}{c|c} d\overset{*}{\overset{*}{d}} & 0 \\ \hline 0 & e\overset{*}{e} \end{array} + \varkappa\Lambda \boxtimes \begin{array}{c|c} u\overset{*}{u} & 0 \\ \hline 0 & 0 \end{array}\right)\left(\Theta' \boxtimes \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \varkappa\Lambda' \boxtimes \begin{array}{c|c} d\overset{*}{d} & 0 \\ \hline 0 & e\overset{*}{e} \end{array} + \varkappa\Lambda' \boxtimes \begin{array}{c|c} u\overset{*}{u} & 0 \\ \hline 0 & 0 \end{array}\right) I \boxtimes \begin{array}{c|c} x/3 & 0 \\ \hline 0 & y \end{array}$$

$$= \left(\overset{*}{\Theta} \boxtimes \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \varkappa\overset{*}{\Lambda} \boxtimes \begin{array}{c|c} d\overset{*}{d} & 0 \\ \hline 0 & e\overset{*}{e} \end{array} + \varkappa\overset{*}{\Lambda} \boxtimes \begin{array}{c|c} u\overset{*}{u} & 0 \\ \hline 0 & 0 \end{array}\right)\left(\Theta' \boxtimes \begin{array}{c|c} x/3 & 0 \\ \hline 0 & y \end{array} + \varkappa\Lambda' \boxtimes \begin{array}{c|c} d\overset{*}{d}x/3 & 0 \\ \hline 0 & e\overset{*}{e}y \end{array} + \varkappa\Lambda' \boxtimes \begin{array}{c|c} u\overset{*}{u}x/3 & 0 \\ \hline 0 & 0 \end{array}\right)$$

$$= \overset{*}{\Theta} \times \Theta' \boxtimes \begin{array}{c|c} x/3 & 0 \\ \hline 0 & y \end{array} + \varkappa\left(\overset{*}{\Theta}\Lambda' + \overset{*}{\Lambda}\Theta'\right) \boxtimes \begin{array}{c|c} d\overset{*}{d}x/3 & 0 \\ \hline 0 & e\overset{*}{e}y \end{array} + \varkappa\left(\overset{*}{\Theta}\Lambda' + \overset{*}{\Lambda}\Theta'\right) \boxtimes \begin{array}{c|c} u\overset{*}{u}x/3 & 0 \\ \hline 0 & 0 \end{array} + \overset{*}{\Lambda}\,\Lambda' \boxtimes \begin{array}{c|c} d\overset{*}{d}d\overset{*}{d}x/3 & 0 \\ \hline 0 & e\overset{*}{e}e\overset{*}{e}y \end{array}$$

$$+ \overset{*}{\Lambda}\,\Lambda' \boxtimes \begin{array}{c|c} d\overset{*}{d}u\overset{*}{u}x/3 & 0 \\ \hline 0 & 0 \end{array} + \overset{*}{\Lambda}\,\Lambda' \boxtimes \begin{array}{c|c} u\overset{*}{u}d\overset{*}{d}x/3 & 0 \\ \hline 0 & 0 \end{array} + \overset{*}{\Lambda}\,\Lambda' \boxtimes \begin{array}{c|c} u\overset{*}{u}u\overset{*}{u}x/3 & 0 \\ \hline 0 & 0 \end{array} \left(\bar{\vartheta}_b \boxtimes \begin{array}{c|c} \bar{b} & 0 \\ \hline 0 & 0 \end{array} + \overset{*}{\bar{\vartheta}} \boxtimes \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array}\right)\left(\bar{\vartheta}'_c \boxtimes \begin{array}{c|c} \bar{c} & 0 \\ \hline 0 & 0 \end{array} + \bar{\vartheta}' \boxtimes \ldots\right.$$

$$\left(\vartheta_b \boxtimes \begin{array}{c|c} b^t & 0 \\ \hline 0 & 0 \end{array} + \vartheta \boxtimes \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array}\right)\left(\bar{\vartheta}'_c \boxtimes \begin{array}{c|c} \bar{c}x^{\sim} & 0 \\ \hline 0 & 0 \end{array} + \bar{\vartheta}' \boxtimes \begin{array}{c|c} 0 & 0 \\ \hline 0 & y^{\sim} \end{array}\right) =$$

$$\vartheta_b \times \bar{\vartheta}'_c \boxtimes \begin{array}{c|c} \bar{b}^{\natural}x^{\sim} & 0 \\ \hline 0 & 0 \end{array} + \vartheta \times \bar{\vartheta}' \boxtimes \begin{array}{c|c} 0 & 0 \\ \hline 0 & y^{\sim} \end{array}$$

$$\left(\overset{*}{\bar{\vartheta}}_b \boxtimes \bar{b}\right)\left(\bar{\vartheta}'_c \boxtimes \bar{c}\right) I \boxtimes x^{\sim} = \left(\vartheta_b \boxtimes b^t\right)\left(\bar{\vartheta}'_c \boxtimes \bar{c}x^{\sim}\right) = \vartheta_b \times \bar{\vartheta}'_c \boxtimes b^t\,\bar{c}\,x^{\sim}$$

$$\left(\bar{\vartheta}_b \boxtimes \begin{array}{c|c} \bar{b} & 0 \\ \hline 0 & 0 \end{array} + \overset{*}{\bar{\vartheta}} \boxtimes \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array}\right)\left(\bar{\vartheta}'_c \boxtimes \begin{array}{c|c} \bar{c} & 0 \\ \hline 0 & 0 \end{array} + \bar{\vartheta}' \boxtimes \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array}\right) I \boxtimes \begin{array}{c|c} x^{\sim} & 0 \\ \hline 0 & y^{\sim} \end{array} =$$

$$\left(\vartheta_b \mathbin{⧗} \begin{array}{c|c} b^t & 0 \\ \hline 0 & 0 \end{array} + \vartheta \mathbin{⧗} \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array}\right)\left(\bar{\vartheta}'_c \mathbin{⧗} \begin{array}{c|c} \bar{c}x^{\sim} & 0 \\ \hline 0 & 0 \end{array} + \bar{\vartheta}' \mathbin{⧗} \begin{array}{c|c} 0 & 0 \\ \hline 0 & y^{\sim} \end{array}\right) =$$

$$\vartheta_b \times \bar{\vartheta}'_c \mathbin{⧗} \begin{array}{c|c} \bar{b}^{\natural} x^{\sim} & 0 \\ \hline 0 & 0 \end{array} + \vartheta \times \bar{\vartheta}' \mathbin{⧗} \begin{array}{c|c} 0 & 0 \\ \hline 0 & y^{\sim} \end{array}$$

$$\left(\varkappa \overset{*}{\varepsilon} \lambda \varepsilon \mathbin{⧗} \overset{*}{\left[\overset{*}{u} d \quad 0\right]}\right)\left(\varkappa \overset{*}{\varepsilon} \lambda' \varepsilon \mathbin{⧗} \left[\overset{*}{u} d \quad 0\right]\right) I \mathbin{⧗} \begin{array}{c|c} x/3 & 0 \\ \hline 0 & y \end{array} =$$

$$\left(\overset{*}{\varepsilon} \overset{*}{\lambda} \varepsilon \mathbin{⧗} \frac{\overset{*}{d} u}{0}\right)\left(\varkappa \overset{*}{\varepsilon} \lambda' \varepsilon \mathbin{⧗} \left[\overset{*}{u} dx/3 \quad 0\right]\right) = \overset{*}{\varepsilon}\, \overset{*}{\lambda} \varepsilon \overset{*}{\varepsilon}\, \lambda' \varepsilon \mathbin{⧗} \begin{array}{c|c} \overset{*}{d} u \overset{*}{u} dx/3 & 0 \\ \hline 0 & 0 \end{array} \left(\varkappa \overset{*}{\varepsilon} \lambda \varepsilon \mathbin{⧗} \overset{*}{\frac{\overset{*}{d} u}{0}}\right)\left(\varkappa \overset{*}{\varepsilon} \lambda' \varepsilon \mathbin{⧗} \frac{\overset{*}{d} u}{0}\right) I \mathbin{⧗} x/3 =$$

$$\left(\overset{*}{\varepsilon} \overset{*}{\lambda} \varepsilon \mathbin{⧗} \left[\overset{*}{u} d \quad 0\right]\right)\left(\overset{*}{\varepsilon} \lambda' \varepsilon \mathbin{⧗} \begin{bmatrix} \overset{*}{d} ux/3 \\ 0 \end{bmatrix}\right) = \overset{*}{\varepsilon}\, \overset{*}{\lambda} \varepsilon \overset{*}{\varepsilon}\, \lambda' \varepsilon \mathbin{⧗} \overset{*}{u}\, d \overset{*}{d} ux/3$$

$$\left(\xi \Gamma \mathbin{⧗} \begin{array}{c|c} \overset{*}{d} & 0 \\ \hline 0 & e \end{array}\right)\left(\xi' \Gamma \mathbin{⧗} \begin{array}{c|c} d & 0 \\ \hline 0 & e \end{array}\right) I \mathbin{⧗} \begin{array}{c|c} x/3 & 0 \\ \hline 0 & y \end{array} = \left(\overset{*}{\Gamma} \overset{*}{\xi} \mathbin{⧗} \begin{array}{c|c} \overset{*}{d} & 0 \\ \hline 0 & \overset{*}{e} \end{array}\right)\left(\xi' \Gamma \mathbin{⧗} \begin{array}{c|c} dx/3 & 0 \\ \hline 0 & ey \end{array}\right) =$$

$$-\varkappa \overset{*}{\xi} \times \xi' \mathbin{⧗} \begin{array}{c|c} \overset{*}{d} dx/3 & 0 \\ \hline 0 & \overset{*}{e} ey \end{array}$$

$$\left(\xi \Gamma \overset{*}{\mathbin{⧗}} \frac{u}{0}\right)\left(\xi' \Gamma \mathbin{⧗} \frac{u}{0}\right) I \mathbin{⧗} x/3 = \left(\overset{*}{\Gamma} \overset{*}{\xi} \mathbin{⧗}\ \overset{*}{u} \mid 0\right)\left(\xi' \Gamma \mathbin{⧗} \begin{bmatrix} ux/3 \\ 0 \end{bmatrix}\right) = -\varkappa \overset{*}{\xi} \times \xi' \mathbin{⧗} \overset{*}{u}\, ux/3$$

$$\left(\varkappa \Gamma \eta \mathbin{⧗} \begin{array}{c|c} \overset{**}{d} & 0 \\ \hline 0 & \overset{*}{e} \end{array}\right)\left(\varkappa \Gamma \eta' \mathbin{⧗} \begin{array}{c|c} \overset{*}{d} & 0 \\ \hline 0 & \overset{*}{e} \end{array}\right) I \mathbin{⧗} \begin{array}{c|c} x/3 & 0 \\ \hline 0 & y \end{array} = \left(\overset{*}{\eta} \overset{*}{\Gamma} \mathbin{⧗} \begin{array}{c|c} d & 0 \\ \hline 0 & e \end{array}\right)\left(\Gamma \eta' \mathbin{⧗} \begin{array}{c|c} \overset{*}{d} x/3 & 0 \\ \hline 0 & \overset{*}{e} \end{array}\right) = -\varkappa \overset{*}{\eta} \times \eta' \mathbin{⧗} \begin{array}{c|c} d \overset{*}{d} x/3 & 0 \\ \hline 0 & e \overset{*}{e} y \end{array}$$

$$\left(\varkappa \Gamma \eta \overset{*}{\mathbin{⧗}}\ \overset{*}{u} \mid 0\right)\left(\varkappa \Gamma \eta' \mathbin{⧗}\ \overset{*}{u} \mid 0\right) I \mathbin{⧗} \begin{array}{c|c} x/3 & 0 \\ \hline 0 & y \end{array} =$$

$$\left(\overset{*}{\eta} \overset{*}{\Gamma} \mathbin{⧗} \frac{u}{0}\right)\left(\Gamma \eta' \mathbin{⧗} \left[\overset{*}{u} x/3 \quad 0\right]\right) = -\varkappa \overset{*}{\eta} \times \eta' \mathbin{⧗} \begin{array}{c|c} u \overset{*}{u} x/3 & 0 \\ \hline 0 & 0 \end{array} \begin{array}{c|c} \vartheta_3 & 0 \\ \hline 0 & \vartheta_3^{\sim} \end{array} \mathbin{\overline{\times}} \begin{array}{c|c} \vartheta_3 & 0 \\ \hline 0 & \vartheta_3^{\sim} \end{array} = \operatorname{ReTr}\left(\overset{*}{\vartheta}_3 \vartheta_3 I_3 + (\overset{*}{\vartheta}{}_3^{\sim}) \vartheta_3^{\sim} I_3^{\sim}\right) =$$

$$s \vartheta \mathbin{\overline{\times}} \vartheta' + t \Theta \mathbin{\overline{\times}} \Theta' + 4 \operatorname{tr}\ x^{\sim} \vartheta_b \mathbin{⧗} b \mathbin{\overline{\times}} \vartheta'_c \mathbin{⧗} c + r \varkappa \left(\vartheta \mathbin{\overline{\times}} \overset{*}{\varepsilon} \lambda' \varepsilon + \overset{*}{\varepsilon} \lambda \varepsilon \mathbin{\overline{\times}} \vartheta' + \Theta \mathbin{\overline{\times}} \Lambda' + \Lambda \mathbin{\overline{\times}} \Theta' - \xi \mathbin{\overline{\times}} \xi' - \xi \mathbin{⊮} \eta'\right) + \underbrace{\left(d \overset{*}{d}\right)^2 x + \left(\overset{*}{u} u\right)^2 x + (e}$$

$$2 \underbrace{\overset{*}{u} d \overset{*}{d} ux} \left(\overset{*}{\varepsilon} \lambda \varepsilon \mathbin{\overline{\times}} \overset{*}{\varepsilon} \lambda' \varepsilon + \Lambda \mathbin{\overline{\times}} \Lambda'\right)$$

$$r = \underbrace{\overset{*}{d} dx + \overset{*}{u} ux + \overset{*}{e} ey} : \quad s = \underbrace{2x + y + 3y^{\sim}} : \quad t = \underbrace{x + y}$$

$$\underbrace{\overset{*}{\vartheta}_3 \vartheta_3 I_3} = \operatorname{tr}\ (x+y)\, \vartheta \mathbin{\overline{\times}} \vartheta, + \operatorname{tr}\ x \bar{\vartheta} \mathbin{\overline{\times}} \bar{\vartheta}' + \operatorname{tr}\ y^{\sim} \bar{\vartheta} \mathbin{\overline{\times}} \bar{\vartheta}' + 2 \operatorname{tr}\ y^{\sim} \bar{\vartheta} \mathbin{\overline{\times}} \bar{\vartheta}' + \operatorname{tr}\ (x+y)\, \Theta \mathbin{\overline{\times}} \Theta'$$

$$\operatorname{tr}\ b^t\, \bar{c}\, x^{\sim} \bar{\vartheta}_b \mathbin{\overline{\times}} \bar{\vartheta}'_c + \operatorname{tr}\ b^t\, \bar{c}\, x^{\sim} \bar{\vartheta}_b \mathbin{\overline{\times}} \bar{\vartheta}'_c + 2 \operatorname{tr}\ b^t\, \bar{c}\, x^{\sim} \bar{\vartheta}_b \mathbin{\overline{\times}} \bar{\vartheta}'_c$$

$$\varkappa \underbrace{\overset{*}{d}dx+\overset{*}{e}ey} \left(\overset{*}{\varepsilon}\lambda\varepsilon \mathbin{\bar{\times}} \vartheta' + \vartheta \mathbin{\bar{\times}} \overset{*}{\varepsilon}\lambda'\varepsilon\right) + \varkappa \underbrace{\overset{*}{u}ux} \left(\overset{*}{\varepsilon}\lambda\varepsilon \mathbin{\bar{\times}} \bar{\vartheta}' + \bar{\vartheta} \mathbin{\bar{\times}} \overset{*}{\varepsilon}\lambda'\varepsilon\right)$$

$$\varkappa \operatorname{tr} d\overset{*}{d}x + e\overset{*}{e}y \left(\Theta \mathbin{\bar{\times}} \Lambda' + \Lambda \mathbin{\bar{\times}} \Theta'\right) + \varkappa \operatorname{tr} u\overset{*}{u}x \left(\Theta \mathbin{\bar{\times}} \Lambda' + \Lambda \mathbin{\bar{\times}} \Theta'\right)$$

$$\underbrace{\left(\overset{*}{d}d\right)^2 x + \left(\overset{*}{e}e\right)^2 y} \overset{*}{\varepsilon}\lambda\varepsilon \mathbin{\bar{\times}} \overset{*}{\varepsilon}\lambda'\varepsilon + \operatorname{tr} \left(\overset{*}{u}u\right)^2 x \overset{*}{\varepsilon}\lambda\varepsilon \mathbin{\bar{\times}} \overset{*}{\varepsilon}\lambda'\varepsilon + \operatorname{tr} \overset{*}{d}u\overset{*}{u}dx \overset{*}{\varepsilon}\lambda\varepsilon \mathbin{\bar{\times}} \overset{*}{\varepsilon}\lambda'\varepsilon + \underbrace{\overset{*}{u}d\overset{*}{d}ux} \overset{*}{\varepsilon}\lambda\varepsilon \mathbin{\bar{\times}} \overset{*}{\varepsilon}\lambda'\varepsilon$$

$$\underbrace{\left(d\overset{*}{d}\right)^2 x + \left(e\overset{*}{e}\right)^2 y} \Lambda \mathbin{\bar{\times}} \Lambda' + \underbrace{u\overset{*}{u}d\overset{*}{d}x} \Lambda \mathbin{\bar{\times}} \Lambda' + \underbrace{\left(u\overset{*}{u}\right)^2 x} \Lambda \mathbin{\bar{\times}} \Lambda' + \underbrace{d\overset{*}{d}u\overset{*}{u}x} \Lambda \mathbin{\bar{\times}} \Lambda'$$

$$-\varkappa \underbrace{\overset{*}{d}dx+\overset{*}{e}ey} \xi \mathbin{\bar{\times}} \xi' - \varkappa \underbrace{\overset{*}{u}ux} \xi \mathbin{\bar{\times}} \xi' - \varkappa \underbrace{d\overset{*}{d}x + e\overset{*}{e}y} \xi \Vdash \eta' - \varkappa \underbrace{u\overset{*}{u}x} \xi \Vdash \eta'$$

$$\vartheta \mathbin{\bar{\times}} \vartheta' = \bar{\vartheta} \mathbin{\bar{\times}} \bar{\vartheta}'$$

$$\bar{\vartheta}_b \boxtimes \bar{b} \mathbin{\bar{\times}} \bar{\vartheta}'_c \boxtimes \bar{c} = \vartheta_b \boxtimes b \mathbin{\bar{\times}} \vartheta'_c \boxtimes c$$

$$\overset{*}{\varepsilon}\lambda\varepsilon \mathbin{\bar{\times}} \vartheta' = \overset{*}{\varepsilon}\lambda\varepsilon \mathbin{\bar{\times}} \bar{\vartheta}' \vartheta \mathbin{\bar{\times}} \overset{*}{\varepsilon}\lambda'\varepsilon = \bar{\vartheta} \mathbin{\bar{\times}} \overset{*}{\varepsilon}\lambda'\varepsilon$$

$$\Theta \mathbin{\bar{\times}} \Lambda' = \Theta \mathbin{\bar{\times}} \Lambda' : \quad \Lambda \mathbin{\bar{\times}} \Theta' = \Lambda \mathbin{\bar{\times}} \Theta'$$

$$\overset{*}{\varepsilon}\lambda\varepsilon \mathbin{\bar{\times}} \overset{*}{\varepsilon}\lambda'\varepsilon = \overset{*}{\varepsilon}\lambda\varepsilon \mathbin{\bar{\times}} \overset{*}{\varepsilon}\lambda'\varepsilon \overset{*}{\varepsilon}\lambda\varepsilon \mathbin{\bar{\times}} \overset{*}{\varepsilon}\lambda'\varepsilon = \overset{*}{\varepsilon}\lambda\varepsilon \mathbin{\bar{\times}} \overset{*}{\varepsilon}\lambda'\varepsilon$$

$$\Lambda \mathbin{\bar{\times}} \Lambda' = \Lambda \mathbin{\bar{\times}} \Lambda' : \quad \Lambda \mathbin{\bar{\times}} \Lambda' = \Lambda \mathbin{\bar{\times}} \Lambda' : \quad \xi \mathbin{\bar{\times}} \xi' = \xi : \quad \xi T f \eta' = \xi T f \eta'$$

$$s = \operatorname{tr} \left(2x + Y + 3Y^{\sim}\right) = 6x + \operatorname{tr} Y + 3 \operatorname{tr} Y^{\sim} = 6x + y + 3y^{\sim} : \quad t = \operatorname{tr} (x+Y) = 3x + \operatorname{tr} Y = 3x + y : \quad r = \underbrace{d^2 x + u^2}$$

$$\pi_2 \, d \, \pi_1^{-1} \begin{array}{c|c} \omega_3 & 0 \\ \hline 0 & \omega_3^{\sim} \end{array} \ni \begin{array}{c|c} \vartheta_3 & 0 \\ \hline 0 & \vartheta_3^{\sim} \end{array}$$

$$\vartheta_3 = \begin{array}{c|c|c}
\begin{array}{c} (f + d\omega) \bowtie \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \\ \varkappa \left(\overset{*}{\varepsilon}\varphi + \psi\varepsilon \right) \bowtie \begin{array}{c|c} \overset{*}{d}d & 0 \\ \hline 0 & \overset{*}{e}e \end{array} \end{array} & \varkappa \left(\overset{*}{\varepsilon}\varphi + \psi\varepsilon \right) \bowtie \frac{\overset{*}{d}u}{0} & \varkappa\Gamma \left(\overset{*}{\varepsilon}\Omega - \omega\overset{*}{\varepsilon} - d\psi \right) \bowtie \begin{array}{c|c} \overset{*}{d} & 0 \\ \hline 0 & \overset{*}{e} \end{array} \\ \hline
\varkappa \left(\overset{*}{\varepsilon}\Omega - \omega\overset{*}{\varepsilon} - d\psi \right) \bowtie \left[\overset{*}{u}d \quad 0 \right] & \begin{array}{c} \left(\bar{f} + d\bar{\omega} \right) \bowtie 1 + \\ \varkappa \left(\overset{*}{\varepsilon}\varphi + \psi\varepsilon \right) \bowtie \overset{*}{u}u \end{array} & \varkappa\Gamma\eta \bowtie \begin{array}{c|c} \overset{*}{u} & 0 \end{array} \\ \hline
\left(d\varphi + \Omega\varepsilon - \varepsilon\omega \right) \Gamma \bowtie \begin{array}{c|c} d & 0 \\ \hline 0 & e \end{array} & \left(d\varphi + \Omega\varepsilon - \varepsilon\omega \right) \Gamma \bowtie \frac{u}{0} & \begin{array}{c} (F + d\Omega) \bowtie \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \\ G \bowtie \begin{array}{c|c} d\overset{*}{d} - u\overset{*}{u} & 0 \\ \hline 0 & e\overset{*}{e} \end{array} + \\ \varkappa \frac{\varepsilon\psi + \varphi\overset{*}{\varepsilon} + \varepsilon\psi + \varphi\overset{*}{\varepsilon}}{2} \bowtie \begin{array}{c|c} d\overset{*}{d} + u\overset{*}{u} & 0 \\ \hline 0 & e\overset{*}{e} \end{array} \end{array}
\end{array}$$

$$\vartheta_3^{\sim} = \begin{array}{c|c|c}
\left(\bar{f}_a + d\bar{\omega}_a \right) \bowtie \begin{array}{c|c} a & 0 \\ \hline 0 & 0 \end{array} + \left(\bar{f} + d\bar{\omega} \right) \bowtie \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array} & 0 & 0 \\ \hline
0 & \left(\bar{f}_a + d\bar{\omega}_a \right) \bowtie a & 0 \\ \hline
0 & 0 & \left(\bar{f}_a + d\bar{\omega}_a \right) \bowtie \begin{array}{c|c} a & 0 \\ \hline 0 & 0 \end{array} + \left(\bar{f} + d\bar{\omega} \right) \bowtie \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array}
\end{array}$$

$$F \in \hbar\triangle_{\infty}^{2}\mathbb{K}_2 : \quad f \in \hbar\triangle_{\infty}\mathbb{K} : \quad f_a \bowtie a \in \hbar\triangle_{\infty}^{3}\mathbb{K}_3$$

$$G = \begin{array}{c|c} g_1 & g_2 \\ \hline \bar{g}_2 & -\bar{g}_1 \end{array} \in \hbar\triangle_{\infty}^{2}\mathbb{K}_2$$

$$\pi \left(df_3^0 \right) \pi \left(df_3^1 \right) =$$

$df^0 \times df^1 \boxtimes \begin{array}{cc} 1 & 0 \\ 0 & 1 \end{array} + \varkappa\left(\overset{*}{\varepsilon}F^0 - f^0\overset{*}{\varepsilon}\right)\left(\varepsilon f^1 - F^1\varepsilon\right)\boxtimes \begin{array}{cc} \overset{*}{d}d & 0 \\ 0 & \overset{*}{e}e \end{array}$	$\varkappa\left(\overset{*}{\varepsilon}F^0 - f^0\overset{*}{\varepsilon}\right)\left(\varepsilon\bar{f}^1 - F^1\varepsilon\right)\boxtimes\frac{\overset{*}{d}u}{0}$	$\varkappa\Gamma\left(\overset{*}{\varepsilon}F^0 - f^0\overset{*}{\varepsilon}\right)dF^1$
$\varkappa\left(\overset{*}{\varepsilon}F^0 - \bar{f}^0\overset{*}{\varepsilon}\right)\left(\varepsilon f^1 - F^1\varepsilon\right)\boxtimes\left[\overset{*}{u}d \quad 0\right]$	$d\bar{f}^0 \times d\bar{f}^1 \boxtimes 1 + \varkappa\left(\overset{*}{\varepsilon}F^0 - f^0\overset{*}{\varepsilon}\right)\left(\varepsilon f^1 - F^1\varepsilon\right)\boxtimes\overset{*}{u}u$	$\varkappa\Gamma\left(\overset{*}{\varepsilon}F^0 - \bar{f}^0\overset{*}{\varepsilon}\right)dF^1 - d$
$\left(dF^0\left(\varepsilon f^1 - F^1\varepsilon\right) - \left(\varepsilon f^0 - F^0\varepsilon\right)df^1\right)\Gamma\boxtimes\begin{array}{cc} d & 0 \\ 0 & e \end{array}$	$\left(dF^0\left(\varepsilon\bar{f}^1 - F^1\varepsilon\right) - \left(\varepsilon\bar{f}^0 - F^0\varepsilon\right)d\bar{f}^1\right)\Gamma\boxtimes\frac{u}{0}$	$dF^0 \times d$ $\varkappa\left(\varepsilon f^0 - F^0\varepsilon\right)($ $+\varkappa\left(\varepsilon\bar{f}^0 - F^0\varepsilon\right)$

$$\vartheta = df^0 \times df^1 \omega = f^0 df^1 \Rightarrow d\omega = df^0 \boxtimes df^1 = \vartheta^{\perp} \Rightarrow \vartheta = dw^{\perp} + f: \quad \Theta = dF^0 \times dF^1 \Omega = F^0 dF^1 \Rightarrow d\Omega = dF^0 \boxtimes dF$$

$$\varphi = F^0 \underbrace{\varepsilon f^1 - F^1\varepsilon}_{} \Rightarrow d\varphi + \Omega\varepsilon - \varepsilon\omega = dF^0 \underbrace{\varepsilon f^1 - F^1\varepsilon}_{} + F^0 \underbrace{\varepsilon df^1 - dF^1\varepsilon}_{} + F^0 dF^1 \varepsilon - \varepsilon f^0 df^1 = dF^0\left(\varepsilon f^1 - F^1\varepsilon\right) + \left(F\right.$$

$$\psi = f^0 \underbrace{\overset{*}{\varepsilon}F^1 - f^1\overset{*}{\varepsilon}}_{} \Rightarrow \overset{*}{\varepsilon}\Omega - \omega\overset{*}{\varepsilon} - d\psi = \overset{*}{\varepsilon} F^0 dF^1 - f^0 df^1 \overset{*}{\varepsilon} - df^0\left(\overset{*}{\varepsilon}F^1 - f^1\overset{*}{\varepsilon}\right) - f^0\left(\overset{*}{\varepsilon}dF^1 - df^1\overset{*}{\varepsilon}\right) = \overset{*}{\varepsilon} F^0 - f^0 \overset{*}{\varepsilon} dF^1 -$$

$$\overset{*}{\varepsilon}\lambda\varepsilon - \overset{*}{\varepsilon}\varphi = -f^0 f^1 + f^0 \overset{*}{\varepsilon} F^1 \varepsilon = \psi\varepsilon\overset{*}{\varepsilon}\lambda\varepsilon - \overset{*}{\varepsilon}\varphi = \bar{f}^0 \overset{*}{\varepsilon} F^1 \varepsilon = \psi\varepsilon\overset{*}{\varepsilon}\lambda\varepsilon - \overset{*}{\varepsilon}\varphi = f^0 \overset{*}{\varepsilon} F^1 \varepsilon = \psi\varepsilon\overset{*}{\varepsilon}\lambda\varepsilon - \overset{*}{\varepsilon}\varphi = -\bar{f}^0 \bar{f}^1 + \bar{f}^0 \overset{*}{\varepsilon} F$$

$$\Lambda = \left(\varepsilon f^0 - F^0\varepsilon\right) \underbrace{\overset{*}{\varepsilon}F^1 - f^1\overset{*}{\varepsilon}}_{} = \varepsilon\psi + \varphi\overset{*}{\varepsilon} + F^0\left(F^1\varepsilon\overset{*}{\varepsilon} - \varepsilon\overset{*}{\varepsilon}F^1\right)$$

$$\Lambda = \underbrace{\varepsilon\bar{f}^0 - F^0\varepsilon}_{} \underbrace{\overset{*}{\varepsilon}F^1 - \bar{f}^1\overset{*}{\varepsilon}}_{} = \varepsilon\psi + \varphi\overset{*}{\varepsilon} + F^0 \underbrace{F^1\varepsilon\overset{*}{\varepsilon} - \varepsilon\overset{*}{\varepsilon}F^1}_{}$$

$$\Lambda + \Lambda = \varepsilon\psi + \varphi\overset{*}{\varepsilon} + \varepsilon\psi + \varphi\overset{*}{\varepsilon}\varepsilon\overset{*}{\varepsilon} + \varepsilon\overset{*}{\varepsilon} = I$$

$$G = \frac{\varkappa}{2}\left(\Lambda - \Lambda\right)$$

$$\widetilde{\pi}\left(d\widetilde{f}^0_3\right)\widetilde{\pi}\left(d\widetilde{f}^1_3\right) =$$

$d\bar{f}^0_b \times d\bar{f}^1_c \boxtimes \begin{array}{cc} \bar{b}\bar{c} & 0 \\ 0 & 0 \end{array} + d\bar{f}^0 \times d\bar{f}^1 \boxtimes \begin{array}{cc} 0 & 0 \\ 0 & 1 \end{array}$	0	0
0	$d\bar{f}^0_b \times d\bar{f}^1_c \boxtimes \bar{b}\bar{c}$	0
0	0	$d\bar{f}^0_b \times d\bar{f}^1_c \boxtimes \begin{array}{cc} \bar{b}\bar{c} & 0 \\ 0 & 0 \end{array} + d\bar{f}^0 \times d\bar{f}^1 \boxtimes \begin{array}{cc} 0 & 0 \\ 0 & 1 \end{array}$

$$\vartheta_a \boxtimes a = df^0_b \times df^1_c \boxtimes bc\,\omega_a \boxtimes a = f^0_b df^1_c \boxtimes bc \Rightarrow d\left(\omega_a \boxtimes a\right) = df^0_b \boxtimes df^1_c \boxtimes bc = \left(\vartheta_a \boxtimes a\right)^{\perp} \Rightarrow \vartheta_a \boxtimes a = d\left(\omega_a \boxtimes a\right) + f_a$$

$$\pi_2 d\pi_1^{-1}(0) = \pi_2 \ \mathrm{dKer}\ \pi_1 \ni$$

$$
\left[\begin{array}{c|c|c}
f\bowtie\begin{array}{c|c}1&0\\\hline 0&1\end{array} & 0 & 0\\\hline
0 & \bar f\bowtie 1 & 0\\\hline
0 & 0 & \begin{array}{c}F\bowtie\begin{array}{c|c}1&0\\\hline 0&1\end{array}+\\ G\bowtie\begin{array}{c|c}d\overset{*}{d}-u\overset{*}{u}&0\\\hline 0&e\overset{*}{e}\end{array}\end{array}
\end{array}\right]
\oplus
\left[\begin{array}{c|c|c}
\begin{array}{c}\bar f_a\bowtie\begin{array}{c|c}a&0\\\hline 0&0\end{array}\\ +\bar f\bowtie\begin{array}{c|c}0&0\\\hline 0&1\end{array}\end{array} & 0 & 0\\\hline
0 & \bar f_a\bowtie a & 0\\\hline
0 & 0 & \begin{array}{c}\bar f_a\bowtie\begin{array}{c|c}a&0\\\hline 0&0\end{array}\\ +\bar f\bowtie\begin{array}{c|c}0&0\\\hline 0&1\end{array}\end{array}
\end{array}\right]
$$

$$G \in \hbar\triangle_\infty{}^2\mathbb{K}_2$$

$$\left(\pi_2 \operatorname{dKer} \pi_1\right)^\perp \ni$$

$$
\left[\begin{array}{c|c|c}
\begin{array}{c}\sigma\bowtie\begin{array}{c|c}1&0\\\hline 0&1\end{array}+\\ \overset{*}{\varepsilon}\lambda\varepsilon\bowtie\begin{array}{c|c}\overset{*}{d}d-r/s&0\\\hline 0&\overset{*}{e}e-r/s\end{array}\end{array} & \overset{*}{\varepsilon}\lambda\varepsilon\bowtie\begin{array}{c}\overset{*}{d}u\\\hline 0\end{array} & \varkappa\Gamma\eta\bowtie\begin{array}{c|c}\overset{*}{d}&0\\\hline 0&\overset{*}{e}\end{array}\\\hline
\overset{*}{\varepsilon}\lambda\varepsilon\bowtie\left[\overset{*}{u}d\quad 0\right] & \begin{array}{c}\bar\sigma\bowtie 1+\\ \overset{*}{\varepsilon}\lambda\varepsilon\bowtie(\overset{*}{u}u-r/s)\end{array} & \varkappa\Gamma\eta\bowtie\ \overset{*}{u}\ \big|\ 0\\\hline
\xi\Gamma\bowtie\begin{array}{c|c}d&0\\\hline 0&e\end{array} & \xi\Gamma\bowtie\begin{array}{c}u\\\hline 0\end{array} & \begin{array}{c}\Sigma\bowtie\begin{array}{c|c}1&0\\\hline 0&1\end{array}+\\ \Lambda\bowtie\begin{array}{c|c}d\overset{*}{d}+u\overset{*}{u}-r/t&0\\\hline 0&e\overset{*}{e}-r/t\end{array}\end{array}
\end{array}\right]
$$

$$
\left[\begin{array}{c|c|c}
\bar\sigma_a\bowtie\begin{array}{c|c}a&0\\\hline 0&0\end{array}+\left(\bar\sigma-r/s\overset{*}{\varepsilon}\lambda\varepsilon\right)\bowtie\begin{array}{c|c}0&0\\\hline 0&1\end{array} & 0 & 0\\\hline
0 & \bar\sigma_a\bowtie a & 0\\\hline
0 & 0 & \bar\sigma_a\bowtie\begin{array}{c|c}a&0\\\hline 0&0\end{array}+\left(\bar\sigma-r/s\overset{*}{\varepsilon}\lambda\varepsilon\right)\bowtie\begin{array}{c|c}0&0\\\hline 0&1\end{array}
\end{array}\right]
$$

$$\lambda\in\hbar\triangle_\infty\mathbb{K}:\quad \Lambda\in\hbar\triangle_\infty{}^2\mathbb{K}_2:\quad \sigma\in\hbar\triangle_\infty\bar{\hbar}\triangle\overset{2}{\mathbb{K}}:\quad \Sigma\in\hbar\triangle_\infty\bar{\hbar}\triangle{}^2\overset{2}{\mathbb{K}}_2$$

$$\vartheta_3\in\left(\operatorname{dKer}\pi_1\right)^\perp\vartheta_3'\in\operatorname{dKer}\pi_1\Longrightarrow\vartheta'=f\,\Theta'=F:\quad \vartheta_a'\bowtie a=f_a\bowtie a$$

$$\lambda'=0:\quad \xi'=0:\quad \eta'=0:\quad \Lambda'=-\Lambda'=G\in\Longrightarrow$$

$$0=\vartheta_3\divideontimes\vartheta_{3'}=s\vartheta\divideontimes f+t\Theta\divideontimes F+4\operatorname{tr}\widetilde{x}\,\vartheta_b\bowtie b\divideontimes f_c\bowtie c+r\left(\overset{*}{\varepsilon}\lambda\varepsilon\divideontimes f+\Theta\divideontimes G+\Lambda\divideontimes F\right)+\operatorname{tr}\left(\left(\left(\left(\overset{*}{d}d\right)^2+\left(\overset{*}{u}u\right)^2-2\overset{*}{u}d\overset{*}{d}u\right)x+\right.\right.\right.$$

$$=s\left(\vartheta+\overset{*}{\varepsilon}\lambda\varepsilon r/s\right)\divideontimes f+t\left(\Theta+\Lambda r/t\right)\divideontimes F+4\operatorname{tr}\widetilde{x}\,\vartheta_b\bowtie b\divideontimes f_c\bowtie c+\underbrace{\left(\overset{*}{d}d-\overset{*}{u}u\right)^2x+\left(\overset{*}{e}e\right)^2y}\,\Lambda\divideontimes G\Longrightarrow$$

$$\vartheta + \overset{*}{\varepsilon}\lambda\varepsilon r/s = \left(\vartheta + \overset{*}{\varepsilon}\lambda\varepsilon r/s\right)^{\perp} = \vartheta^{\perp} = \sigma^{\perp}: \quad \Theta + \Lambda r/t = (\Theta + \Lambda r/t)^{\perp} = \Theta^{\perp} = \Sigma^{\perp}: \quad \vartheta_b \boxtimes b = \left(\vartheta_b \boxtimes b\right)^{\perp} = \sigma_b \boxtimes a^{\perp}$$

$$\Lambda \bowtie G = 0 \Longrightarrow \Lambda = \Lambda \in {}^{\hbar}\!\underset{\infty}{\triangle}{}^{2}\mathbb{K}_2$$

$$\left(\pi_2 \text{ dKer } \pi_1\right)^{\perp} \ni \begin{array}{c|c} \vartheta_3 & 0 \\ \hline 0 & \widetilde{\vartheta}_3 \end{array}^{\perp} = \begin{array}{c|c} \vartheta_3^{\perp} & 0 \\ \hline 0 & \widetilde{\vartheta}_3^{\perp} \end{array}$$

$$\vartheta_3^{\perp} = \begin{array}{c|c|c} \vartheta^{\perp} \boxtimes \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \overset{*}{\varepsilon}\lambda\varepsilon \boxtimes \begin{array}{c|c} \overset{*}{d}d - r/s & 0 \\ \hline 0 & \overset{*}{e}e - r/s \end{array} & \overset{*}{\varepsilon}\lambda\varepsilon \boxtimes \begin{array}{c} \overset{*}{d}u \\ \hline 0 \end{array} & \varkappa\Gamma\eta \boxtimes \begin{array}{c|c} \overset{*}{d} & 0 \\ \hline 0 & \overset{*}{e} \end{array} \\ \hline \overset{*}{\varepsilon}\lambda\varepsilon \boxtimes \left[\overset{*}{u}d \quad 0\right] & \bar{\vartheta}^{\perp} \boxtimes 1 + \overset{*}{\varepsilon}\lambda\varepsilon \boxtimes (\overset{*}{u}u - r/s) & \varkappa\Gamma\eta \boxtimes \ \overset{*}{u} \mid 0 \\ \hline \xi\Gamma \boxtimes \begin{array}{c|c} d & 0 \\ \hline 0 & e \end{array} & \xi\Gamma \boxtimes \begin{array}{c} u \\ \hline 0 \end{array} & \Theta^{\perp} \boxtimes \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \frac{\Lambda + \Lambda}{2} \boxtimes \begin{array}{c|c} d\overset{*}{d} + u\overset{*}{u} - r/t & 0 \\ \hline 0 & e\overset{*}{e} - r/t \end{array} \end{array}$$

$$\widetilde{\vartheta}_3^{\perp} = \begin{array}{c|c|c} \bar{\vartheta}_a^{\perp} \boxtimes \begin{array}{c|c} a & 0 \\ \hline 0 & 0 \end{array} + \left(\bar{\vartheta}^{\perp} - r/s\overset{*}{\varepsilon}\lambda\varepsilon\right) \boxtimes \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array} & 0 & 0 \\ \hline 0 & \bar{\vartheta}_a^{\perp} \boxtimes a & 0 \\ \hline 0 & 0 & \bar{\vartheta}_a^{\perp} \boxtimes \begin{array}{c|c} a & 0 \\ \hline 0 & 0 \end{array} + \left(\bar{\vartheta}^{\perp} - r/s\overset{*}{\varepsilon}\lambda\varepsilon\right) \boxtimes \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array} \end{array}$$

$$\text{dKer } \pi_1 \ni \begin{array}{c|c} \vartheta_3 & 0 \\ \hline 0 & \widetilde{\vartheta}_3 \end{array} - \begin{array}{c|c} \vartheta_3^{\perp} & 0 \\ \hline 0 & \widetilde{\vartheta}_3^{\perp} \end{array} =$$

$$\begin{array}{c|c|c} \left(\vartheta - \vartheta^{\perp} + r/s\overset{*}{\varepsilon}\lambda\varepsilon\right) \boxtimes \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} & 0 & 0 \\ \hline 0 & \left(\bar{\vartheta} - \bar{\vartheta}^{\perp} + r/s\overset{*}{\varepsilon}\lambda\varepsilon\right) \boxtimes 1 & 0 \\ \hline 0 & 0 & \left(\Theta - \Theta^{\perp} + \frac{r}{t}\frac{\Lambda + \Lambda}{2}\right) \boxtimes \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \frac{\Lambda - \Lambda}{2} \boxtimes \begin{array}{c|c} d\overset{*}{d} - u\overset{*}{u} & 0 \\ \hline 0 & e\overset{*}{e} \end{array} \end{array}$$

$$
\begin{array}{c|c|c}
\left(\bar{\vartheta}_a - \bar{\vartheta}_a\right)^{\perp} ⧗ \begin{array}{c|c} a & 0 \\ \hline 0 & 0 \end{array} + \left(\bar{\vartheta} - \bar{\vartheta}^{\perp} + r/s\overset{*}{\varepsilon}\lambda\varepsilon\right) ⧗ \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array} & 0 & 0 \\
\hline
0 & \left(\bar{\vartheta}_a - \bar{\vartheta}_a^{\perp}\right) ⧗ a & 0 \\
\hline
0 & 0 & \begin{array}{c} \left(\bar{\vartheta}_a - \bar{\vartheta}_a^{\perp}\right) ⧗ \begin{array}{c|c} a & 0 \\ \hline 0 & 0 \end{array} \\ + \left(\bar{\vartheta} - \bar{\vartheta}^{\perp} + r/s\overset{*}{\varepsilon}\lambda\varepsilon\right) ⧗ \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array} \end{array}
\end{array}
$$

$$
\Delta + \Delta \in {}^{\hbar}\triangle_{\infty}{}^{2}\mathbb{K}_2 : \quad \Delta - \Delta \in {}^{\hbar}\triangle_{\infty}{}^{2}\mathbb{K}_2
$$

$$
\begin{array}{c|c} \omega_3^0 & 0 \\ \hline 0 & \tilde{\omega}_3^0 \end{array} \;\; \begin{array}{c|c} \omega_3^1 & 0 \\ \hline 0 & \tilde{\omega}_3^1 \end{array}^{\perp} =
$$

$$
\begin{array}{c|c|c}
\begin{array}{c} \omega^0 ⧗ \omega^1 ⧗ \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \\ \varkappa\psi^0\varphi^1 ⧗ \begin{array}{c|c} \overset{*}{d}d - r/s & 0 \\ \hline 0 & \overset{*}{e}e - r/s \end{array} \end{array} & \varkappa\psi^0\varphi^1 ⧗ \begin{array}{c} \overset{*}{d}u \\ \hline 0 \end{array} & \varkappa\Gamma\left(\psi^0\Omega^1 - \omega^0\psi^1\right) ⧗ \begin{array}{c|c} \overset{*}{d} & 0 \\ \hline 0 & \overset{*}{e} \end{array} \\
\hline
\varkappa\psi^0\varphi^1 ⧗ \left[\overset{*}{u}d \quad 0\right] & \begin{array}{c} \omega^0 ⧗ \omega^1 ⧗ 1 + \\ \varkappa\psi^0\varphi^1 ⧗ (\overset{*}{u}u - r/s) \end{array} & \varkappa\Gamma\left(\psi^0\Omega^1 - \bar{\omega}^0\psi^1\right) ⧗ \; \overset{*}{u} \mid 0 \\
\hline
\left(\Omega^0\varphi^1 - \varphi^0\omega^1\right)\Gamma ⧗ \begin{array}{c|c} d & 0 \\ \hline 0 & e \end{array} & \left(\Omega^0\varphi^1 - \varphi^0\bar{\omega}^1\right)\Gamma ⧗ \begin{array}{c} u \\ \hline 0 \end{array} & \begin{array}{c} \Omega^0 ⧗ \Omega^1 ⧗ \begin{array}{c|c} 1 & 0 \\ \hline 0 & 1 \end{array} + \\ \varkappa\dfrac{\varphi^0\psi^1 + \varphi^0\psi^1}{2} ⧗ \begin{array}{c|c} d\overset{*}{d} + u\overset{*}{u} - r/t & 0 \\ \hline 0 & e\overset{*}{e} - r/t \end{array} \end{array}
\end{array}
$$

$$
\begin{array}{c|c|c}
\begin{array}{c} \bar{\omega}_b^0 ⧗ \bar{\omega}_c^1 ⧗ \begin{array}{c|c} \bar{b}\bar{c} & 0 \\ \hline 0 & 0 \end{array} + \\ \left(\bar{\omega}^0 ⧗ \bar{\omega}^1 - \varkappa r/s\psi^0\varphi^1\right) ⧗ \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array} \end{array} & 0 & 0 \\
\hline
0 & \bar{\omega}_b^0 ⧗ \bar{\omega}_c^1 ⧗ \bar{b}\bar{c} & 0 \\
\hline
0 & 0 & \begin{array}{c} \bar{\omega}_b^0 ⧗ \bar{\omega}_c^1 ⧗ \begin{array}{c|c} \bar{b}\bar{c} & 0 \\ \hline 0 & 0 \end{array} + \\ \left(\bar{\omega}^0 ⧗ \bar{\omega}^1 - \varkappa r/s\psi^0\varphi^1\right) ⧗ \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array} \end{array}
\end{array}
$$

$$
\vartheta_3 = \begin{array}{c|c|c}
\bar{\vartheta}_a ⧗ \begin{array}{c|c} a & 0 \\ \hline 0 & 0 \end{array} + \bar{\vartheta} ⧗ \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array} & 0 & 0 \\
\hline
0 & \bar{\vartheta}_a ⧗ a & 0 \\
\hline
0 & 0 & \bar{\vartheta}_a ⧗ \begin{array}{c|c} a & 0 \\ \hline 0 & 0 \end{array} + \bar{\vartheta} ⧗ \begin{array}{c|c} 0 & 0 \\ \hline 0 & 1 \end{array}
\end{array}
$$