

$$\mathcal{Z} = \frac{\begin{array}{c|c|c|c} a_{r:\vartheta} & 0 & 0 & b_{r:\vartheta} \\ \hline 0 & p_{r:\vartheta}/q_r & 0 & 0 \\ \hline 0 & 0 & p_{r:\vartheta} & 0 \\ \hline b_{r:\vartheta} & 0 & 0 & c_{r:\vartheta} \end{array}}{\begin{array}{c|c|c|c} a & 0 & 0 & b \\ \hline 0 & p/q & 0 & 0 \\ \hline 0 & 0 & p & 0 \\ \hline b & 0 & 0 & c \end{array}}$$

$$ac - b^2 = s^2 q_r$$

$$\mathcal{P}^{-1} = \begin{array}{c|c|c|c} c/s^2q & 0 & 0 & -b/s^2q \\ \hline 0 & q/p & 0 & 0 \\ \hline 0 & 0 & p^{-1} & 0 \\ \hline -b/s^2q & 0 & 0 & a/s^2q \end{array}$$

$$\begin{array}{c} \underline{\tau} \\ \underline{x} \\ \gamma = \end{array} \frac{\partial_t}{\partial_r} \begin{array}{c|c|c|c|c} a & 0 & 0 & b \\ \hline 0 & p/q & 0 & 0 \\ \hline 0 & 0 & p & 0 \\ \hline b & 0 & 0 & c \end{array} = \frac{\bar{\partial}}{\partial_\varphi} \begin{array}{c|c|c|c} a & 0 & 0 & b \\ \hline 0 & p/q & 0 & 0 \\ \hline 0 & 0 & p & 0 \\ \hline b & 0 & 0 & c \end{array} = \frac{\partial}{\partial_\varphi} \begin{array}{c|c|c|c} a & 0 & 0 & b \\ \hline 0 & p/q & 0 & 0 \\ \hline 0 & 0 & p & 0 \\ \hline b & 0 & 0 & c \end{array} = \frac{\emptyset}{\emptyset} \begin{array}{c|c|c|c} \bar{a} & 0 & 0 & \bar{b} \\ \hline 0 & p/q & 0 & 0 \\ \hline 0 & 0 & \bar{p} & 0 \\ \hline \bar{b} & 0 & 0 & \bar{c} \\ \hline a & 0 & 0 & b \\ \hline 0 & p/q & 0 & 0 \\ \hline 0 & 0 & p & 0 \\ \hline \bar{b} & 0 & 0 & \bar{c} \end{array}$$

$$\mathfrak{L} \otimes \mathfrak{L} - \mathfrak{L} \otimes^T \mathfrak{L} + \mathfrak{L} \otimes^{T_t} \mathfrak{L} =$$

\emptyset			
\bar{a}	0	0	\bar{b}
0	$\underline{p/q}$	0	0
0	0	\bar{p}	0
\bar{b}	0	0	\bar{c}
\underline{a}	0	0	\underline{b}
0	$\underline{p/q}$	0	0
0	0	\underline{p}	0
\underline{b}	0	0	\underline{c}
\emptyset			

0	\bar{a}	\underline{a}	0
0	0	0	0
0	0	0	0
0	\bar{b}	\underline{b}	0
0	0	0	0
0	$\underline{p/q}$	$\underline{p/q}$	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	\bar{p}	\underline{p}	0
0	0	0	0
0	\bar{b}	\underline{b}	0
0	0	0	0
0	0	0	0
0	\bar{c}	\underline{c}	0

0	0	0	0
\bar{a}	0	0	\bar{b}
\underline{a}	0	0	\underline{b}
0	0	0	0
0	$\underline{p/q}$	0	0
0	$\underline{p/q}$	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

0	$-\bar{a}$	\underline{a}	0
\bar{a}	0	0	\bar{b}
\underline{a}	0	0	\underline{b}
0	$-\bar{b}$	\underline{b}	0
\bar{a}	0	0	\bar{b}
0	$\underline{p/q}$	$-\underline{p/q}$	0
0	$\underline{p/q}$	\bar{p}	0
\bar{b}	0	0	\bar{c}
\underline{a}	0	0	\underline{b}
0	$\underline{p/q}$	\bar{p}	0
0	$-\bar{p}$	\underline{p}	0
\underline{b}	0	0	\underline{c}
0	$-\bar{b}$	\underline{b}	0
\bar{b}	0	0	\bar{c}
\underline{b}	0	0	\underline{c}
0	$-\bar{c}$	$-\underline{c}$	0

$$\begin{aligned}
\mathbf{a}_1 = \underbrace{\mathbf{1}_X \mathbf{a}_1 - \mathbf{1}_X^T \mathbf{a}_1 + \mathbf{1}_X^{Tt} \mathbf{a}_1}_{\mathbf{a}_1} \quad \mathbf{a}_1^{-1} = & \begin{array}{c|c|c|c} 0 & -\bar{a} & \underline{a} & 0 \\ \hline \bar{a} & 0 & 0 & \bar{b} \\ \hline \underline{a} & 0 & 0 & \underline{b} \\ \hline 0 & -\bar{b} & \underline{b} & 0 \end{array} \\
& \begin{array}{c|c|c|c} \bar{a} & 0 & 0 & \bar{b} \\ \hline 0 & \underline{p/q} & -\underline{p/q} & 0 \\ \hline 0 & \underline{p/q} & \bar{p} & 0 \\ \hline \bar{b} & 0 & 0 & \bar{c} \end{array} \quad \begin{array}{c|c|c|c} c/s^2q & 0 & 0 & -b/s^2q \\ \hline 0 & q/p & 0 & 0 \\ \hline 0 & 0 & p^{-1} & 0 \\ \hline -b/s^2q & 0 & 0 & a/s^2q \end{array} \\
& \begin{array}{c|c|c|c} \underline{a} & 0 & 0 & \underline{b} \\ \hline 0 & \underline{p/q} & \bar{p} & 0 \\ \hline 0 & -\bar{p} & \underline{p} & 0 \\ \hline \underline{b} & 0 & 0 & \underline{c} \end{array} \\
& \begin{array}{c|c|c|c} 0 & -\bar{b} & \underline{b} & 0 \\ \hline \bar{b} & 0 & 0 & \bar{c} \\ \hline \underline{b} & 0 & 0 & \underline{c} \\ \hline 0 & -\bar{c} & -\underline{c} & 0 \end{array}
\end{aligned}$$

$$\begin{array}{c}
\begin{array}{c|c|c|c}
0 & -\bar{a} & \underline{a} & 0 \\
\hline
\bar{a} & 0 & 0 & \bar{b} \\
\hline
\underline{a} & 0 & 0 & \underline{b} \\
\hline
0 & -\bar{b} & \underline{b} & 0
\end{array} &
\begin{array}{c|c|c|c}
c/s^2q & 0 & 0 & -b/s^2q \\
\hline
0 & q/p & 0 & 0 \\
\hline
0 & 0 & p^{-1} & 0 \\
\hline
-b/s^2q & 0 & 0 & a/s^2q
\end{array} \\
= \begin{array}{c|c|c|c}
\bar{a} & 0 & 0 & \bar{b} \\
\hline
0 & \underline{p/q} & -\underline{p/q} & 0 \\
\hline
0 & \underline{p/q} & \bar{p} & 0 \\
\hline
\bar{b} & 0 & 0 & \bar{c}
\end{array} &
\begin{array}{c|c|c|c}
c/s^2q & 0 & 0 & -b/s^2q \\
\hline
0 & q/p & 0 & 0 \\
\hline
0 & 0 & p^{-1} & 0 \\
\hline
-b/s^2q & 0 & 0 & a/s^2q
\end{array} \\
= \begin{array}{c|c|c|c}
\underline{a} & 0 & 0 & \underline{b} \\
\hline
0 & \underline{p/q} & \bar{p} & 0 \\
\hline
0 & -\bar{p} & \underline{p} & 0 \\
\hline
\underline{b} & 0 & 0 & \underline{c}
\end{array} &
\begin{array}{c|c|c|c}
c/s^2q & 0 & 0 & -b/s^2q \\
\hline
0 & q/p & 0 & 0 \\
\hline
0 & 0 & p^{-1} & 0 \\
\hline
-b/s^2q & 0 & 0 & a/s^2q
\end{array} \\
\begin{array}{c|c|c|c}
0 & -\bar{b} & \underline{b} & 0 \\
\hline
\bar{b} & 0 & 0 & \bar{c} \\
\hline
\underline{b} & 0 & 0 & \underline{c} \\
\hline
0 & -\bar{c} & -\underline{c} & 0
\end{array} &
\begin{array}{c|c|c|c}
c/s^2q & 0 & 0 & -b/s^2q \\
\hline
0 & q/p & 0 & 0 \\
\hline
0 & 0 & p^{-1} & 0 \\
\hline
-b/s^2q & 0 & 0 & a/s^2q
\end{array}
\end{array}$$

$$\begin{array}{c|c|c|c}
0 & -\bar{a}q/p & \underline{a}/p & 0 \\
\hline
\frac{\bar{a}c - \bar{b}b}{s^2q} & 0 & 0 & \frac{\bar{b}a - \bar{a}b}{s^2q} \\
\hline
\frac{\underline{a}c - \underline{b}b}{s^2q} & 0 & 0 & \frac{\underline{b}a - \underline{a}b}{s^2q} \\
\hline
0 & -\bar{b}q/p & \underline{b}/p & 0 \\
\hline
\frac{\bar{a}c - \bar{b}b}{s^2q} & 0 & 0 & \frac{\bar{b}a - \bar{a}b}{s^2q} \\
\hline
0 & \underline{p/q}q/p & -\underline{p/q}/p & 0 \\
\hline
0 & \underline{p/q}q/p & \bar{p}/p & 0 \\
\hline
\frac{\bar{b}c - \bar{c}b}{s^2q} & 0 & 0 & \frac{\bar{c}a - \bar{b}b}{s^2q} \\
\hline
\frac{\underline{a}c - \underline{b}b}{s^2q} & 0 & 0 & \frac{\underline{b}a - \underline{a}b}{s^2q} \\
\hline
0 & \underline{p/q}q/p & \bar{p}/p & 0 \\
\hline
0 & -\bar{p}q/p & \underline{p}/p & 0 \\
\hline
\frac{\underline{b}c - \underline{c}b}{s^2q} & 0 & 0 & \frac{\underline{c}a - \underline{b}b}{s^2q} \\
\hline
0 & -\bar{b}q/p & \underline{b}/p & 0 \\
\hline
\frac{\bar{b}c - \bar{c}b}{s^2q} & 0 & 0 & \frac{\bar{c}a - \bar{b}b}{s^2q} \\
\hline
\frac{\underline{b}c - \underline{c}b}{s^2q} & 0 & 0 & \frac{\underline{c}a - \underline{b}b}{s^2q} \\
\hline
0 & -\bar{c}q/p & -\underline{c}/p & 0
\end{array}$$

$$\mathfrak{A}_1 \times \mathfrak{A}_1^\# =$$

0	$-\bar{a}q/p$	\underline{a}/p	0
$\frac{\bar{a}c-\bar{b}b}{s^2q}$	0	0	$\frac{\bar{b}a-\bar{a}b}{s^2q}$
$\frac{\underline{ac}-\underline{bb}}{s^2q}$	0	0	$\frac{\underline{ba}-\underline{ab}}{s^2q}$
0	$-\bar{b}q/p$	\underline{b}/p	0
$\frac{\bar{a}c-\bar{b}b}{s^2q}$	0	0	$\frac{\bar{b}a-\bar{a}b}{s^2q}$
0	$\underline{p}/\underline{q}q/p$	$-\underline{p}/\underline{q}/p$	0
0	$\underline{p}/\underline{q}q/p$	\bar{p}/p	0
$\frac{\bar{b}c-\bar{c}b}{s^2q}$	0	0	$\frac{\bar{c}a-\bar{b}b}{s^2q}$
$\frac{\underline{ac}-\underline{bb}}{s^2q}$	0	0	$\frac{\underline{ba}-\underline{ab}}{s^2q}$
0	$\underline{p}/\underline{q}q/p$	\bar{p}/p	0
0	$-\bar{p}q/p$	\underline{p}/p	0
$\frac{\underline{bc}-\underline{cb}}{s^2q}$	0	0	$\frac{\underline{ca}-\underline{bb}}{s^2q}$
0	$-\bar{b}q/p$	\underline{b}/p	0
$\frac{\bar{b}c-\bar{c}b}{s^2q}$	0	0	$\frac{\bar{c}a-\bar{b}b}{s^2q}$
$\frac{\underline{bc}-\underline{cb}}{s^2q}$	0	0	$\frac{\underline{ca}-\underline{bb}}{s^2q}$
0	$-\bar{c}q/p$	$-\underline{c}/p$	0

0	$-\frac{\bar{a}q}{p}$	$\frac{a}{p}$	0	$\frac{\bar{a}c-\bar{b}b}{s^2q}$	0	0	$\frac{\bar{b}a-\bar{a}b}{s^2q}$	$\frac{\underline{ac}-\underline{bb}}{s^2q}$	0	0	$\frac{\underline{ba}-\underline{ab}}{s^2q}$	0	$-\frac{\bar{b}q}{p}$	$\frac{b}{p}$	0
$\frac{\bar{a}c-\bar{b}b}{s^2q}$	0	0	$\frac{\bar{b}a-\bar{a}b}{s^2q}$	0	$\frac{\underline{p}/q}{p/q}$	$-\frac{\underline{p}/q}{p}$	0	0	$\frac{\underline{p}/q}{p/q}$	$\frac{\bar{p}}{p}$	0	$\frac{\bar{b}c-\bar{c}b}{s^2q}$	0	0	$\frac{\bar{c}a-\bar{b}b}{s^2q}$
$\frac{\underline{ac}-\underline{bb}}{s^2q}$	0	0	$\frac{\underline{ba}-\underline{ab}}{s^2q}$	0	$\frac{\underline{p}/q}{p/q}$	$\frac{\bar{p}}{p}$	0	0	$-\frac{\bar{p}q}{p}$	$\frac{\underline{p}}{p}$	0	$\frac{\underline{bc}-\underline{cb}}{s^2q}$	0	0	$\frac{\underline{ca}-\underline{bb}}{s^2q}$
0	$-\frac{\bar{b}q}{p}$	$\frac{b}{p}$	0	$\frac{\bar{b}c-\bar{c}b}{s^2q}$	0	0	$\frac{\bar{c}a-\bar{b}b}{s^2q}$	$\frac{\underline{bc}-\underline{cb}}{s^2q}$	0	0	$\frac{\underline{ca}-\underline{bb}}{s^2q}$	0	$-\frac{\bar{c}q}{p}$	$-\frac{c}{p}$	0