



$$\begin{aligned}
\overline{\tau_{ij}^{\bar{a}} \eta} &= \overline{\tau_{ij}^{\bar{a}} \eta} = \tau_{ij}^{\bar{a}} \times \tau_{ij}^{\bar{a}} \eta - \tau_{ij}^{\bar{a}} \times \tau_{ij}^{\bar{a}} \eta \\
&- \left( \tau_{ij}^{\bar{a}} \tau_{ij}^{\bar{a}} \eta^k - \tau_{ji}^{\bar{a}} \tau_{ij}^{\bar{a}} \eta^k \right) \tau_{ij}^{\bar{a}} \eta + \tau_{ij}^{\bar{a}} \tau_{ij}^{\bar{a}} \eta \times \tau_{ij}^{\bar{a}} \eta \\
&\quad \overline{\tau_{\mu\nu}^{\bar{a}} \eta} = \overline{\tau_{\mu\nu}^{\bar{a}} \eta} \\
&= \tau_{\mu\nu}^{\bar{a}} \times \tau_{\mu\nu}^{\bar{a}} \eta - \tau_{\nu\mu}^{\bar{a}} \times \tau_{\mu\nu}^{\bar{a}} \eta + \tau_{\mu\nu}^{\bar{a}} \tau_{\mu\nu}^{\bar{a}} \eta \times \tau_{\mu\nu}^{\bar{a}} \eta \\
&\quad \overline{\tau_{\mu\nu}^{\bar{a}} \eta} = \overline{\tau_{\mu\nu}^{\bar{a}} \eta} \\
&= \tau_{\mu\nu}^{\bar{a}} \times \tau_{\mu\nu}^{\bar{a}} \eta - \tau_{\nu\mu}^{\bar{a}} \times \tau_{\mu\nu}^{\bar{a}} \eta + \tau_{\mu\nu}^{\bar{a}} \tau_{\mu\nu}^{\bar{a}} \eta \times \tau_{\mu\nu}^{\bar{a}} \eta \\
&\quad \overline{\tau_{ij}^{\bar{a}} \eta} \in \mathbb{E}_{p,q}^{\mathbb{R}^{p,q}}
\end{aligned}$$

$$\tau_{ij}^{\bar{a}} \eta_{\ell m} + \tau_{kl}^{\bar{a}} \eta_m \tau_{ij}^{\bar{a}} = 0$$

$$\begin{aligned}
\text{LHS} &= \tau_{ij}^{\bar{a}} \eta_{\ell} \tau_{m}^{\bar{a}} + \tau_{k}^{\bar{a}} \tau_{\ell}^{\bar{a}} \tau_{m}^{\bar{a}} \tau_{ij}^{\bar{a}} \\
&= \overline{\tau_{ij}^{\bar{a}} \eta_{\ell} \tau_{m}^{\bar{a}}} + \tau_{k}^{\bar{a}} \tau_{\ell}^{\bar{a}} \tau_{m}^{\bar{a}} \tau_{ij}^{\bar{a}} = \overline{\tau_{i:j}^{\bar{a}} | \tau_{\ell}^{\bar{a}} \eta} \tau_{m}^{\bar{a}} + \tau_{k}^{\bar{a}} \tau_{\ell}^{\bar{a}} \tau_{m}^{\bar{a}} \tau_{ij}^{\bar{a}} = 0
\end{aligned}$$

$$\tau_{ij}^{\bar{a}} \eta_{\ell n} = \tau_{i}^{\bar{a}} \tau_{mn}^{\bar{a}} \eta_{\ell}$$

$$\text{LHS} = \overline{\tau_{i:j}^{\bar{a}} | \tau_{\ell}^{\bar{a}} \eta} \tau_{n}^{\bar{a}} = \overline{\tau_{i:j}^{\bar{a}} | \tau_{\ell}^{\bar{a}} \eta} \tau_{n}^{\bar{a}}$$

$$= \overline{\tau_{i:j}^{\bar{a}} | \tau_{\ell}^{\bar{a}} \eta} \tau_{n}^{\bar{a}} = \tau_{i}^{\bar{a}} \tau_{m:n}^{\bar{a}} \tau_{\ell}^{\bar{a}} \tau_{j}^{\bar{a}} = \tau_{i}^{\bar{a}} \tau_{m:n}^{\bar{a}} \tau_{\ell}^{\bar{a}} \tau_{j}^{\bar{a}} = \tau_{i}^{\bar{a}} \tau_{\ell}^{\bar{a}} \tau_{m:n}^{\bar{a}} \tau_{j}^{\bar{a}} = \text{RHS}$$

$$\overline{\underline{\lambda} \underline{\mu} \underline{\nu}} + \overline{\underline{\mu} \underline{\nu} \underline{\lambda}} + \overline{\underline{\nu} \underline{\lambda} \underline{\mu}} = 0 = \overline{\underline{i} \underline{j} \underline{k}} + \overline{\underline{j} \underline{k} \underline{i}} + \overline{\underline{k} \underline{i} \underline{j}}$$

$$\text{LHS}^x = \overline{\underline{\lambda} \underline{\mu} \underline{\nu} | \underline{\mu} \underline{\nu} \underline{\lambda}} + \overline{\underline{\mu} \underline{\nu} \underline{\lambda} | \underline{\nu} \underline{\lambda} \underline{\mu}} + \overline{\underline{\nu} \underline{\lambda} \underline{\mu} | \underline{\lambda} \underline{\mu} \underline{\nu}}$$

$$= \overline{\underline{\lambda} \underline{\mu} \underline{\nu} | \underline{\nu} \underline{\lambda} \underline{\mu}} + \overline{\underline{\mu} \underline{\nu} \underline{\lambda} | \underline{\lambda} \underline{\mu} \underline{\nu}} + \overline{\underline{\nu} \underline{\lambda} \underline{\mu} | \underline{\mu} \underline{\nu} \underline{\lambda}} = 0$$

$$\text{RHS}^\ell = \overline{\underline{i} \underline{j} \underline{k} | \underline{j} \underline{k} \underline{i}} + \overline{\underline{j} \underline{k} \underline{i} | \underline{k} \underline{i} \underline{j}} + \overline{\underline{k} \underline{i} \underline{j} | \underline{i} \underline{j} \underline{k}}$$

$$= \overline{\underline{i} \underline{j} \underline{k} | \underline{j} \underline{k} \underline{i}} + \overline{\underline{j} \underline{k} \underline{i} | \underline{k} \underline{i} \underline{j}} + \overline{\underline{k} \underline{i} \underline{j} | \underline{i} \underline{j} \underline{k}} = 0$$