

Further simplification:

$$\begin{aligned}
(T_{\hat{L}})^{\mu\nu} = & -\frac{1}{8} \left( 3(\partial_\lambda e^c{}_\kappa) + (\partial_\kappa e^c{}_\lambda) \right) e_c{}^\kappa \bar{\psi} (g^{\lambda\mu} \gamma^\nu + g^{\lambda\nu} \gamma^\mu) \psi \\
& + \frac{1}{2} g^{\mu\nu} [(\partial_\lambda e^c{}_\kappa) + (\partial_\kappa e^c{}_\lambda)] e_c{}^\kappa \bar{\psi} \gamma^\lambda \psi \\
& + \frac{i}{4} \bar{\psi} \left[ -e_{c\rho} [(\partial_\lambda e^c{}_\kappa) - (\partial_\kappa e^c{}_\lambda)] (g^{\kappa\nu} \sigma^{\mu\lambda} + g^{\kappa\mu} \sigma^{\nu\lambda}) \gamma^\rho - (\partial_\lambda e^c{}_\kappa) \sigma^{\lambda\kappa} (e_c{}^\mu \gamma^\nu + e_c{}^\nu \gamma^\mu) \right] \psi \\
& - \frac{1}{2} g^{\mu\nu} \left[ (\partial_\lambda \bar{\psi}) \gamma^\lambda \psi + \bar{\psi} \gamma^\lambda (\partial_\lambda \psi) \right] + \frac{1}{4} (\partial_\lambda \bar{\psi}) (g^{\lambda\mu} \gamma^\nu + g^{\lambda\nu} \gamma^\mu) \psi + \frac{1}{4} \bar{\psi} (g^{\lambda\mu} \gamma^\nu + g^{\lambda\nu} \gamma^\mu) (\partial_\lambda \psi)
\end{aligned}$$