$$\underbrace{\partial_\mu \mathcal{L}}_{\blacksquare:\blacksquare} = 0$$

$$\underbrace{\mathcal{L}\partial^\sigma}_{\blacksquare:\blacksquare} = \frac{\partial \mathcal{L}}{\partial_\sigma \blacksquare} = 0$$

$$\underbrace{\mathcal{L}^\sigma \partial^\tau}_{\blacksquare:\blacksquare} = \frac{\partial \mathcal{L}}{\partial_{\sigma\tau} \blacksquare} = 4\,\eta^{\sigma\mu}\,\eta^{\tau\nu}\,\overbrace{{}_{\mu\nu}\blacksquare - {}_{\nu\mu}\blacksquare}$$

$$\frac{1}{2}\underbrace{\mathcal{L}^\sigma \partial^\tau}_{\blacksquare:\blacksquare} = \frac{\partial \mathcal{L}}{\partial_{\sigma\tau} \blacksquare}$$

$$= \eta^{\sigma\mu}\,\eta^{\tau\nu}\,\overbrace{{}_{\mu\nu}\blacksquare - {}_{\nu\mu}\blacksquare} - \eta^{\tau\mu}\,\eta^{\sigma\nu}\,\overbrace{{}_{\mu\nu}\blacksquare - {}_{\nu\mu}\blacksquare} + \overbrace{{}_{\alpha\beta}\blacksquare - {}_{\beta\alpha}\blacksquare}\,\eta^{\alpha\sigma}\,\eta^{\beta\tau} - \overbrace{{}_{\alpha\beta}\blacksquare - {}_{\beta\alpha}\blacksquare}\,\eta^{\alpha\tau}\,\eta^{\beta\sigma}$$

$$= \eta^{\sigma\mu}\,\eta^{\tau\nu}\,\overbrace{{}_{\mu\nu}\blacksquare - {}_{\nu\mu}\blacksquare} + \eta^{\sigma\nu}\,\eta^{\tau\mu}\,\overbrace{{}_{\nu\mu}\blacksquare - {}_{\mu\nu}\blacksquare} + \overbrace{{}_{\alpha\beta}\blacksquare - {}_{\beta\alpha}\blacksquare}\,\eta^{\sigma\alpha}\,\eta^{\tau\beta} + \overbrace{{}_{\beta\alpha}\blacksquare - {}_{\alpha\beta}\blacksquare}\,\eta^{\sigma\beta}\,\eta^{\tau\alpha} = 4\,\eta^{\sigma\mu}\,\eta^{\tau\nu}\,\overbrace{{}_{\mu\nu}\blacksquare - {}_{\nu\mu}\blacksquare}$$

$$\text{motion } \partial^\mu F_{\mu\nu} = \eta^{\mu\sigma}\,\underbrace{\overbrace{{}_{\mu}\overline{\blacksquare} - {}_{\nu}\overline{\blacksquare}}}_{\sigma}$$

$$\underbrace{\mathcal{L}\partial^\tau}_{\blacksquare} = \underbrace{\mathcal{L}\partial^\tau}_{{}_{x\blacksquare:{}^{x}\underline{\blacksquare}}} = 0$$

$$\underbrace{\mathcal{L}^\sigma \partial^\tau}_{\blacksquare} = \underbrace{\mathcal{L}^\sigma \partial^\tau}_{{}_{x\blacksquare:{}^{x}\underline{\blacksquare}}} = 4\,\eta^{\sigma\mu}\,\eta^{\tau\nu}\,\overbrace{{}_{\mu}\overline{\blacksquare} - {}_{\nu}\overline{\blacksquare}}$$

$$\bigwedge_\tau 0 = \frac{1}{4}\underbrace{\mathcal{L}^\sigma \partial^\tau}_{\sigma\blacksquare} = \eta^{\sigma\mu}\,\eta^{\tau\nu}\,\underbrace{\overbrace{{}_{\mu}\overline{\blacksquare} - {}_{\nu}\overline{\blacksquare}}}_{\sigma} = \eta^{\tau\nu}\,\eta^{\mu\sigma}\,\underbrace{\overbrace{{}_{\mu}\overline{\blacksquare} - {}_{\nu}\overline{\blacksquare}}}_{\sigma} \underset{\tau \text{ bel}}{\Longrightarrow} \eta^{\mu\sigma}\,\underbrace{\overbrace{{}_{\mu}\overline{\blacksquare} - {}_{\nu}\overline{\blacksquare}}}_{\sigma} = 0$$

alt

$$\underbrace{\partial_\mu \mathcal{L}}_{\blacksquare:\blacksquare} = 0$$

$$\underbrace{\mathcal{L}\partial^\sigma}_{\blacksquare:\blacksquare} = \frac{\partial \mathcal{L}}{\partial_\sigma \blacksquare} = 0$$

$$\underbrace{\mathcal{L}^\lambda \partial^\sigma}_{\blacksquare:\blacksquare} = \frac{\partial \mathcal{L}}{\partial_{\lambda\sigma} \blacksquare} = 4\underbrace{_{\mu\nu}\blacksquare - _{\nu\mu}\blacksquare}\,\eta^{\mu\lambda}\,\eta^{\nu\sigma}$$

$$\frac{1}{2}\underbrace{\mathcal{L}^\lambda \partial^\sigma}_{\blacksquare:\blacksquare} = \underbrace{_{\mu\nu}\blacksquare - _{\nu\mu}\blacksquare}\,\eta^{\mu\alpha}\,\eta^{\nu\beta}\,\underbrace{{}^{\lambda}_{\alpha}\delta^{\sigma}_{\beta} - {}^{\lambda}_{\beta}\delta^{\sigma}_{\alpha}} = \underbrace{_{\mu\nu}\blacksquare - _{\nu\mu}\blacksquare}\,\underbrace{\eta^{\mu\lambda}\eta^{\nu\sigma} - \eta^{\mu\sigma}\eta^{\nu\lambda}}$$

$$= \underbrace{_{\mu\nu}\blacksquare - _{\nu\mu}\blacksquare}\,\eta^{\mu\lambda}\,\eta^{\nu\sigma} + \underbrace{_{\nu\mu}\blacksquare - _{\mu\nu}\blacksquare}\,\eta^{\nu\lambda}\,\eta^{\mu\sigma} = 2\underbrace{_{\mu\nu}\blacksquare - _{\nu\mu}\blacksquare}\,\eta^{\mu\lambda}\,\eta^{\nu\sigma}$$

$$0 = \underbrace{\underbrace{\mathcal{L}^\lambda \partial^\sigma}_{\blacksquare}}_{\lambda} = \overbrace{\underbrace{_{\mu\nu}\blacksquare - _{\nu\mu}\blacksquare}_{\lambda}}^{x}\,\eta^{\mu\lambda}\,\eta^{\nu\sigma} = \overbrace{{}^{x}_{\lambda\mu}\underline{\blacksquare} - {}^{x}_{\lambda\nu}\underline{\blacksquare}}\,\eta^{\mu\lambda}\,\eta^{\nu\sigma}$$

$$0 = \overbrace{{}^{x}_{\lambda\mu}\underline{\blacksquare} - {}^{x}_{\lambda\sigma}\underline{\blacksquare}}\,\eta^{\mu\lambda}$$

$$\underbrace{\mathcal{L}\partial^\sigma}_{\blacksquare} = \underbrace{\mathcal{L}\partial^\sigma}_{{}^{x}\blacksquare:\underline{\blacksquare}} = 0$$

$$\frac{1}{4}\underbrace{\mathcal{L}^\lambda \partial^\sigma}_{\blacksquare} = \frac{1}{4}\underbrace{\mathcal{L}^\lambda \partial}_{{}^{x}\blacksquare:\underline{\blacksquare}} = \overbrace{\underline{_{\mu}\blacksquare} - \underline{_{\nu}\blacksquare}}\,\eta^{\mu\lambda}\,\eta^{\nu\sigma}$$