$$\mathcal{L}\left(e{:}\mathsf{L}^{\mu}\right) = \frac{1}{e\left(\tau\right)}\,\partial_{\tau}\,\mathsf{L}^{\mu}\;\eta_{\mu\nu}\,\partial_{\tau}\,\mathsf{L}^{\nu}$$

$$\text{cl sta } = \begin{cases} \partial_{\tau}^{2}\mathsf{L}^{\mu} = 0 & \text{extr} \\ \dfrac{\partial\mathcal{L}}{\partial e} = \partial_{\tau}\mathsf{L}^{\mu}\,\eta_{\mu\nu}\partial_{\tau}\mathsf{L}^{\nu} = 0 & \text{gauge} \end{cases}$$

$$\frac{x{:}\xi \in \mathbb{R}^{n}\times\mathbb{R}^{n}}{\xi^{\mu}\eta_{\mu\nu}\xi^{\nu} = 0}\ \text{non-lin}$$

$$\text{cl obs } \frac{\partial\mathcal{L}}{\partial\underline{\mathsf{L}}^{\mu}} = \eta_{\mu\nu}\,\partial_{\tau}\,\mathsf{L}^{\nu}$$

$$\frac{\partial\mathcal{L}}{\partial e} = \partial_{\tau}\,\mathsf{L}^{\mu}\;\eta_{\mu\nu}\,\partial_{\tau}\,\mathsf{L}^{\nu} = 0$$

$$\text{qu obs } \overline{\frac{\partial\mathcal{L}}{\partial\underline{\mathsf{L}}^{\mu}}} = \overline{\eta_{\mu\nu}\partial_{\tau}\mathsf{L}^{\nu}} = \frac{\partial}{\partial x^{\mu}}$$

$$\text{qu sta } \frac{\partial}{\partial x^{\mu}}\,\eta^{\mu\nu}\,\frac{\partial}{\partial x^{\nu}}\varphi = 0 \text{ lin KG}$$