$$\text{electric stability}\ {}^{x}\mathcal{L}_{\natural:\,{}_{\mu}\natural} = {}^{{}^{x}\backsim}\mathcal{L}_{{}^{x}\natural_{\natural}:\,{}^{x}_{\mu}\underline{\backsim}^{-1\nu}\overbrace{{}^{x}\underbrace{\partial_\nu \natural}_{\natural} + {}^{x}\underbrace{\natural\partial}_{\natural}{}_{\nu\tau}\blacktriangleright}}\ \det\ {}^{x}\underline{\backsim}$$

$$x^{\nu}:\ {}_{\sigma}\natural:\ {}_{\mu\sigma}\blacktriangleright \in \mathbb{R}^{d} \times {}^{N}\mathbb{R} \times {}^{N}_{d}\mathbb{R} \xrightarrow[\text{current}]{\mathcal{J}^{\mu}} \mathbb{R} \ni {}^{x}\mathcal{J}^{\mu}_{{}_{\sigma}\natural:\,{}_{\mu\sigma}\blacktriangleright} = {}^{x}\mathcal{J}^{\mu}_{\dot\natural:\,{}_{\mu}\dot\natural}$$

$${}^{x}\mathcal{J}^{\mu}_{\natural:\blacktriangleright} = \mathfrak{b}^{\ \nu}_{x}\overbrace{{}_{\nu}\delta^{\mu x}\mathcal{L}_{\natural:\blacktriangleright} - {}_{\nu\tau}\blacktriangleright^{x}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural:\blacktriangleright}} + {}^{x}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural:\blacktriangleright}{}^{x}\natural_{\natural} = \mathfrak{b}^{\mu}_{x}\,{}^{x}\mathcal{L}_{\natural:\blacktriangleright} - {}^{x}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural:\blacktriangleright}\underbrace{\mathfrak{b}^{\ \nu}_{x\ \nu\tau}\blacktriangleright + {}^{x}\natural_{\natural}}$$

$${}_{\mu}\underline{\mathcal{J}}^{\mu}_{\natural} = \partial_{\mu}\,\mathcal{J}^{\mu}_{\natural} = 0 \text{ conserved current}$$

$${}^{x}\mathcal{L}_{\natural:\,{}_{\mu}\natural} = {}^{{}^{x}\backsim_{\varepsilon}}\mathcal{L}_{{}^{x}_{\varepsilon}\natural_{\natural}:\,{}^{x}_{\mu}\underline{\backsim}^{-1\nu}_{\varepsilon}\overbrace{{}^{x}\underbrace{\partial_\nu\,{}_{\varepsilon}\natural}_{\natural} + {}^{x}\underbrace{{}_{\varepsilon}\natural\partial}_{\natural}{}_{\nu\tau}\blacktriangleright_{\varepsilon}}}\ \det\ {}^{x}\underline{\backsim}_{\varepsilon}$$

$$0 = \partial^{0}_{\varepsilon}\,{}^{x}\mathcal{L}_{\natural:\,{}_{\mu}\natural} = \partial^{0}_{\varepsilon}\,{}^{{}^{x}\backsim_{\varepsilon}}\mathcal{L}_{{}^{x}_{\varepsilon}\natural_{\natural}:\,{}^{x}_{\mu}\underline{\backsim}^{-1\nu}_{\varepsilon}\overbrace{{}^{x}\underbrace{\partial_\nu\,{}_{\varepsilon}\natural}_{\natural} + {}^{x}\underbrace{{}_{\varepsilon}\natural\partial}_{\natural}{}_{\nu\tau}\blacktriangleright_{\varepsilon}}}\ \det\ {}^{x}\underline{\backsim}_{\varepsilon} = \partial^{0}_{\varepsilon}\,{}^{{}^{x}\backsim_{\varepsilon}}\mathcal{L}_{{}^{x}_{\varepsilon}\natural_{\natural}:\,{}^{x}_{\mu}\underline{\backsim}^{-1\nu}_{\varepsilon}\overbrace{{}^{x}\underbrace{\partial_\nu\,{}_{\varepsilon}\natural}_{\natural} + {}^{x}\underbrace{{}_{\varepsilon}\natural\partial}_{\natural}{}_{\nu\tau}\blacktriangleright_{\varepsilon}}} +\cdot\ {}^{x}\mathcal{L}_{\natural:\,{}_{\mu}\natural}\ \underbrace{\partial^{0}_{\varepsilon}\det\ {}^{x}\underline{\backsim}_{\varepsilon}}_{=\,tr\,\underline{\mathfrak{b}}_{x}}$$

$$= {}^{x}\mathfrak{b}^{\nu}\,{}^{x}\underbrace{\partial_{\nu}\mathcal{L}}_{\natural:\blacktriangleright} + {}^{x}\underbrace{\mathcal{L}\partial^{\sigma}}_{\natural:\blacktriangleright}{}^{x}\natural_{\natural} + {}^{x}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural:\blacktriangleright}\overbrace{{}^{x}\underbrace{\partial_{\mu}\natural}_{\natural} + {}^{x}\underbrace{\natural\partial}_{\natural}{}_{\mu}\natural - {}^{x}_{\mu}\underline{\mathfrak{b}}^{\nu}{}_{\nu\tau}\blacktriangleright} + {}^{x}\mathcal{L}_{\natural:\blacktriangleright}\,{}^{x}_{\mu}\underline{\mathfrak{b}}^{\mu}$$

$$= {}^{x}\mathfrak{b}^{\nu}\,{}^{x}\underbrace{\partial_{\nu}\mathcal{L}}_{\natural:\blacktriangleright} + {}^{x}\underbrace{\mathcal{L}\partial^{\sigma}}_{\natural:\blacktriangleright}{}^{x}\natural_{\natural} + {}^{x}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural:\blacktriangleright}\overbrace{{}^{x}\underbrace{\partial_{\mu}\natural}_{\natural} + {}^{x}\underbrace{\natural\partial}_{\natural}{}_{\mu}\natural} + {}^{x}_{\mu}\underline{\mathfrak{b}}^{\nu}\overbrace{{}_{\nu}\delta^{\mu x}\mathcal{L}_{\natural:\blacktriangleright} - {}_{\nu\tau}\blacktriangleright^{x}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural:\blacktriangleright}}$$

$$\text{fields } 0 = {}^{x}\mathfrak{b}^{\nu}\,{}^{x}\underbrace{\partial_{\nu}\mathcal{L}}_{\natural} + {}^{x}\underbrace{\mathcal{L}\partial^{\sigma}}_{\natural}{}^{x}\natural_{\natural} + {}^{x}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural}\overbrace{{}^{x}\underbrace{\partial_{\mu}\natural}_{\natural} + {}^{x}\underbrace{\natural\partial}_{\natural}{}^{x}_{\mu}\underline{\natural}}^{=\,{}^{x}_{\mu}\natural_{\natural}} + {}^{x}_{\mu}\underline{\mathfrak{b}}^{\nu}\overbrace{{}_{\nu}\delta^{\mu x}\mathcal{L}_{\natural} - {}^{x}_{\nu}\underline{\natural}^{x}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural}}$$

$$\underset{\text{harmonic}}{=} {}^{x}\mathfrak{b}^{\nu}\,\underbrace{{}^{x}_{\mu}\left({}_{\nu}\delta^{\mu}\mathcal{L}_{\natural} - {}_{\nu}\underline{\natural}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural}\right)}_{=\,{}^{x}\underbrace{\partial_{\nu}\mathcal{L}}_{\natural}} + \underbrace{{}^{x}_{\mu}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural}}_{=\,{}^{x}\underbrace{\mathcal{L}\partial^{\sigma}}_{\natural}}{}^{x}\natural_{\natural} + {}^{x}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural}\,{}^{x}_{\mu}\natural_{\natural} + {}^{x}_{\mu}\underline{\mathfrak{b}}^{\nu}\overbrace{{}_{\nu}\delta^{\mu x}\mathcal{L}_{\natural} - {}^{x}_{\nu}\underline{\natural}^{x}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural}}$$

$$= {}^{x}\mathfrak{b}^{\nu}\,{}_{\mu}\left(\overbrace{{}_{\nu}\delta^{\mu}\mathcal{L}_{\natural} - {}_{\nu}\underline{\natural}\underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural}} + \underbrace{\mathcal{L}^{\mu}\partial^{\sigma}}_{\natural}\natural_{\natural}\right)$$

conserved electric charge $\partial_t \int\limits_S^{ds} \mathcal{J}^0 = 0$

$$0 = \partial_\mu \mathcal{J}^\mu = \mathfrak{d} \cdot \bar{\mathcal{J}} + \partial_t \mathcal{J}^0$$

$$\Rightarrow 0 = \int\limits_S^{ds} \partial_\mu \mathcal{J}^\mu = \underset{2}{\int\limits_S^{ds} \mathfrak{d} \cdot \bar{\mathcal{J}}} (= 0) + \int\limits_S^{ds} \partial_t \mathcal{J}^0 = \partial_t \int\limits_S^{ds} \mathcal{J}^0$$

energy-momentum tensor

$${}_\lambda\{A\}^\nu = \partial_\lambda A_\mu \partial^{\mu\nu} \{A\} - {}_\lambda\delta^\nu \{A\} = {}_\lambda\partial {}_\mu A \frac{\partial \{A\}}{\partial_\mu A_\nu} - {}_\lambda\delta^\nu \{A\}$$

$$= \partial_\lambda A_\mu \eta^{\mu\varkappa} \eta^{\nu\lambda} \underbrace{\partial_\varkappa A_\lambda - \partial_\lambda A_\varkappa}_{\text{old}} + \frac{{}_\lambda\delta^\nu}{4} \underbrace{\partial_\varrho A_\sigma - \partial_\sigma A_\varrho} \eta^{\zeta\varkappa} \eta^{\sigma\lambda} \underbrace{\partial_\varkappa A_\lambda - \partial_\lambda A_\varkappa}$$

$$\overbrace{\begin{cases} x \\ {}_{\sigma}Ꙟ \\ {}_{\mu\sigma}◥ \end{cases} \ltimes \underbrace{∿ : Ч}} \ltimes \overbrace{◗ : Ⴤ} = \begin{cases} x \\ {}_{\sigma}Ꙟ \\ {}_{\mu\sigma}◥ \end{cases} \ltimes \underbrace{∿ \, ◗ : ЧႴ}$$

$$\text{LHS} = \begin{cases} {}^{x}∿ \\ {}^{x}Ч_{Ꙟ} \\ {}^{x}_{\mu}\underline{∿}^{-1\nu} \; \overbrace{{}^{x}\underbrace{\partial_{\nu} Ч}_{Ꙟ} + {}^{x}\underbrace{Ч\partial}_{Ꙟ}{}^{\nu\tau}◥_{\varepsilon}} \end{cases} \ltimes \underbrace{◗ : Ⴤ} = \begin{cases} {}^{x}∿◗ \\ {}^{x}∿Ⴤ_{{}^{x}Ч_{Ꙟ}} \\ {}^{x}∿_{\mu}\underline{◗}^{-1\nu} \left( {}^{x∿}\underbrace{\partial_{\nu}Ⴤ}_{{}^{x}Ч_{Ꙟ}} + {}^{x∿}\underbrace{Ⴤ\partial}_{{}^{x}Ч_{Ꙟ}} {}^{x}_{\nu}\underline{∿}^{-1\lambda} \overbrace{{}^{x}\underbrace{\partial_{\lambda}Ч}_{Ꙟ} + {}^{x}\underbrace{Ч\partial}_{Ꙟ}{}^{\lambda\varrho}◥} \right) \end{cases}$$

$$\text{RHS} = \begin{cases} {}^{x}\overbrace{∿ \, ◗} \\ {}^{x}∿Ⴤ_{{}^{x}Ч_{Ꙟ}} \\ {}^{x}_{\mu}\underline{∿^{-1}◗}^{\lambda} \; \overbrace{{}^{x}\underbrace{\partial_{\lambda}{}^{\tilde{∿}}Ⴤ_{\tilde{Ч}}}_{Ꙟ} + {}^{x}\underbrace{{}^{\tilde{∿}}Ⴤ_{Ч}\partial}_{Ꙟ}{}^{\lambda\varrho}◥} \end{cases}$$

$$= \begin{cases} {}^{x}∿◗ \\ {}^{x}∿Ⴤ_{{}^{x}Ч_{Ꙟ}} \\ {}^{x}∿_{\mu}\underline{◗}^{-1\nu} {}^{x}_{\nu}\underline{∿}^{-1\lambda} \left( {}^{x}_{\lambda}\underline{∿}^{\varkappa} \, {}^{x∿}\underbrace{\partial_{\varkappa}Ⴤ}_{{}^{x}Ч_{Ꙟ}} + {}^{x∿}\underbrace{Ⴤ\partial}_{{}^{x}Ч_{Ꙟ}} {}^{x}\underbrace{\partial_{\lambda}Ч}_{Ꙟ} + {}^{x∿}\underbrace{Ⴤ\partial}_{{}^{x}Ч_{Ꙟ}} {}^{x}\underbrace{Ч\partial}_{Ꙟ}{}^{\lambda\varrho}◥ \right) \end{cases}$$