

$$b_6 \overline{c_6 c_6} = b_6 \overline{c_6} \overline{c_6} - b_6 \overline{c_6} \overline{c_6} - b_6 \overline{*} \overline{c_6}$$

$$6 \overline{t_1 t_2 t_3} + 6 \overline{t_1 t_2 t_4} + 6 \overline{t_1 t_3 t_4} = 0$$

$$\begin{aligned}
 \text{LHS} &= \overbrace{\mathbf{b} \mathbf{e}^T \mathbf{c}^T \mathbf{c}^T \mathbf{b}^T} - \overbrace{\mathbf{b} \mathbf{e}^T \mathbf{c}^T \mathbf{b}^T \mathbf{c}^T} - \overbrace{\mathbf{b} \mathbf{e}^T \mathbf{e}^T \mathbf{c}^T} \\
 &\quad + \overbrace{\mathbf{e}^T \mathbf{b}^T \mathbf{b}^T \mathbf{c}^T} - \overbrace{\mathbf{e}^T \mathbf{b}^T \mathbf{c}^T \mathbf{b}^T} - \overbrace{\mathbf{e}^T \mathbf{e}^T \mathbf{b}^T \mathbf{c}^T} + \overbrace{\mathbf{e}^T \mathbf{b}^T \mathbf{c}^T \mathbf{b}^T} - \overbrace{\mathbf{e}^T \mathbf{b}^T \mathbf{b}^T \mathbf{b}^T} - \overbrace{\mathbf{e}^T \mathbf{b}^T \mathbf{e}^T} \\
 &= \overbrace{\mathbf{b}^T \mathbf{e}^T \mathbf{c}^T} + \overbrace{\mathbf{e}^T \mathbf{b}^T \mathbf{c}^T} + \overbrace{\mathbf{e}^T \mathbf{e}^T \mathbf{b}^T} - \overbrace{\mathbf{b}^T \mathbf{e}^T \mathbf{b}^T} - \overbrace{\mathbf{b}^T \mathbf{e}^T \mathbf{b}^T} - \overbrace{\mathbf{b}^T \mathbf{e}^T \mathbf{e}^T} \\
 &= \overbrace{\mathbf{b}^T \mathbf{e}^T} \times \mathbf{c} + \overbrace{\mathbf{e}^T \mathbf{b}^T} \times \mathbf{c} + \overbrace{\mathbf{e}^T \mathbf{e}^T} \times \mathbf{b} = 0
 \end{aligned}$$

$$\overbrace{b \text{ 韓} \text{ 司} \text{ 行}} * \text{ 韩} + b * \text{ 韩} \overbrace{b \text{ 韩} \text{ 司} \text{ 行}} = 0$$

$$\begin{aligned}
 \text{LHS} &= \overbrace{\mathfrak{b}_t \mathfrak{b}_t^* \mathfrak{b}_t \mathfrak{b}_t^*}^* - \overbrace{\mathfrak{b}_t \mathfrak{b}_t^* \mathfrak{b}_t \mathfrak{b}_t^*}^* - \mathfrak{b}_t \mathfrak{b}_t^* \mathfrak{b}_t \mathfrak{b}_t^* \\
 &\quad + \overbrace{\mathfrak{b}_t \mathfrak{b}_t^* \mathfrak{b}_t \mathfrak{b}_t^*}^* - \overbrace{\mathfrak{b}_t \mathfrak{b}_t^* \mathfrak{b}_t \mathfrak{b}_t^*}^* - \mathfrak{b}_t \mathfrak{b}_t^* \mathfrak{b}_t \mathfrak{b}_t^* \\
 &= -\overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* - \mathfrak{b}_t \mathfrak{b}_t^* \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* + \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* + \mathfrak{b}_t \mathfrak{b}_t^* \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* + \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* \mathfrak{b}_t \mathfrak{b}_t^* \\
 &\quad - \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* - \mathfrak{b}_t \mathfrak{b}_t^* \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* + \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* + \mathfrak{b}_t \mathfrak{b}_t^* \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* \\
 &= \mathfrak{b}_t \mathfrak{b}_t^* \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* - \mathfrak{b}_t \mathfrak{b}_t^* \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* + \overbrace{\mathfrak{b}_t \mathfrak{b}_t^*}^* \mathfrak{b}_t \mathfrak{b}_t^* = 0
 \end{aligned}$$

$$\overbrace{\text{term}}^{\text{cancel}} \star t = \overbrace{\text{term}}^{\text{cancel}} \star t$$

$$\begin{aligned}
2 \text{ LHS} &= \overbrace{\text{term}}^{\text{cancel}} \star t + t \star \overbrace{\text{term}}^{\text{cancel}} = -\overbrace{\text{term}}^{\text{cancel}} \star t - \overbrace{\text{term}}^{\text{cancel}} \star t \\
&= \overbrace{\text{term}}^{\text{cancel}} \star t + \overbrace{\text{term}}^{\text{cancel}} \star t + \overbrace{\text{term}}^{\text{cancel}} \star t + \overbrace{\text{term}}^{\text{cancel}} \star t \\
&= -t \star \overbrace{\text{term}}^{\text{cancel}} - t \star \overbrace{\text{term}}^{\text{cancel}} - t \star \overbrace{\text{term}}^{\text{cancel}} - t \star \overbrace{\text{term}}^{\text{cancel}} \\
&= t \star \overbrace{\text{term}}^{\text{cancel}} + t \star \overbrace{\text{term}}^{\text{cancel}} = \overbrace{\text{term}}^{\text{cancel}} \star t - \overbrace{\text{term}}^{\text{cancel}} \star t = 2 \text{ RHS}
\end{aligned}$$

$$\mathcal{E}(\pm f) = \mathcal{E}(g) + \mathcal{E}_g(\varphi) = \mathcal{E}(g) + \mathcal{E}_\varphi(g)$$

$$0 = \frac{\partial \mathcal{E}}{\partial g}(\pm f) = \underline{\mathcal{E}}(g) + \underline{\mathcal{E}}_\varphi(g)$$

$\Rightarrow \underline{\mathcal{E}}(g) = -\underline{\mathcal{E}}_\varphi(g) = T$ stress energy tensor

$$0 = \frac{\partial \mathcal{E}}{\partial \varphi}(\pm f) = \underline{\mathcal{E}}_g(\varphi)$$

Yang-Mills

$$\mathcal{Y}(\mathbb{A}f) = \mathcal{Y}(A) + \mathcal{Y}_A(\varphi) = \mathcal{Y}(A) + \mathcal{Y}_\varphi(A)$$

$$0 = \frac{\partial \mathcal{Y}}{\partial A}(\mathbb{A}f) = \underline{\mathcal{Y}}(A) + \underline{\mathcal{Y}}_\varphi(A)$$

$\Rightarrow \underline{\mathcal{Y}}(A) = -\underline{\mathcal{Y}}_\varphi(A) = T$ stress energy tensor

$$0 = \frac{\partial \mathcal{Y}}{\partial \varphi}(\pm f) = \underline{\mathcal{Y}}_A(\varphi)$$