

$$\left\{ \begin{array}{l} \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = -m \mathcal{F}_A \quad \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = {}^A \tilde{\sigma}_{B^\mu}^B \mathcal{F}_B - m \mathcal{F}_A^- \\ \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = -m \mathcal{F}_A^A \quad \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = {}^A \sigma_{B^\mu}^\mu \mathcal{F}_B^- - m \mathcal{F}_A^A \end{array} \right.$$

$$\left\{ \begin{array}{l} \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = \mathcal{F}_A^B \tilde{\sigma}_A^\mu \quad \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = 0 \\ \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = \mathcal{F}_B^B \sigma_A^\mu \quad \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = 0 \end{array} \right.$$

$$\left\{ \begin{array}{l} \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = -m \mathcal{F}_A^x \quad \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = {}^A \tilde{\sigma}_{B^\mu}^\mu \mathcal{F}_B^x - m \mathcal{F}_A^x \\ \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = -m \mathcal{F}_A^A \quad \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = {}^A \sigma_{B^\mu}^\mu \mathcal{F}_B^A - m \mathcal{F}_A^A \end{array} \right.$$

$$\left\{ \begin{array}{l} \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = \mathcal{F}_A^B \tilde{\sigma}_A^\mu \quad \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = 0 \\ \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = \mathcal{F}_B^B \sigma_A^\mu \quad \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = \boxed{\begin{array}{c} \mathcal{F} \\ \mathcal{F}^* \end{array}}_A \Big|_{\mathcal{F}^A} = 0 \end{array} \right.$$

$$-m \overset{x}{\Psi}_A = \boxed{\overset{x}{\Psi}^* \vdots}_A = \boxed{\overset{x}{\Psi}^* \vdots}_A^\mu = \underline{\underline{\overset{x}{\Psi}^B \sigma_B^\mu}}_A$$

$${}^A \tilde{\sigma}_B^\mu \overset{x}{\Psi}_{\mu \bar{A}} - m \overset{x}{\Psi}_{\bar{A}} = \boxed{\overset{x}{\Psi}^* \vdots}_A = \boxed{\overset{x}{\Psi}^* \vdots}_A^\mu = 0$$

$$-m \overset{x}{\Psi}_{\bar{A}} = \boxed{\overset{x}{\Psi}^* \vdots}_{\bar{A}} = \boxed{\overset{x}{\Psi}^* \vdots}_{\bar{A}}^\mu = \underline{\underline{\overset{x}{\Psi}^B \sigma_B^\mu}}_{\bar{A}}$$

$${}^A \sigma_B^\mu \overset{x}{\Psi}_{\mu \bar{B}} - m \overset{x}{\Psi}_{\bar{A}} = \boxed{\overset{x}{\Psi}^* \vdots}_{\bar{A}} = \boxed{\overset{x}{\Psi}^* \vdots}_{\bar{A}}^\mu = 0$$

$$\left\{ \begin{array}{l} \tilde{\mathcal{L}}_{AB}^\mu \overset{x}{\Psi}_{\mu \bar{A}}^* - m \psi_A = \frac{\partial \mathcal{L}}{\partial \psi^A} = \partial_\mu \frac{\partial \mathcal{L}}{\partial_\mu \Psi^A} = 0 \quad -m \psi^A = \frac{\partial \mathcal{L}}{\partial \psi^A} = \partial_\mu \frac{\partial \mathcal{L}}{\partial_\mu \Psi_A} = \overset{x}{\Psi}_{\bar{B}} \tilde{\mathcal{L}}^{\mu \dot{B} A} \\ \tilde{\mathcal{L}}^{\mu \dot{A} B} \overset{x}{\Psi}_{\mu \bar{B}} - m \bar{\psi}^{\dot{A}} = \frac{\partial \mathcal{L}}{\partial \bar{\psi}^{\dot{A}}} = \partial_\mu \frac{\partial \mathcal{L}}{\partial_\mu \bar{\Psi}_{\dot{A}}} = 0 \quad -m \bar{\psi}_{\dot{A}} = \frac{\partial \mathcal{L}}{\partial \bar{\psi}^{\dot{A}}} = \partial_\mu \frac{\partial \mathcal{L}}{\partial_\mu \bar{\Psi}_{\dot{A}}} = \overset{x}{\Psi}_{\bar{B}} \tilde{\mathcal{L}}^{\mu \dot{B} A} \end{array} \right.$$

$\mathcal{D}\psi$

$\mathcal{L}(\psi)$

$$D^g = \underline{\underline{\mathcal{V}}^\mu} \otimes \underline{\underline{\mathcal{H}}}_{\mu \dot{\nu}}^g$$

$$D^g = \underline{\underline{\mathcal{V}}^\mu} \otimes \underline{\underline{\mathcal{H}}}_{\mu \dot{\nu}}^g$$

$$D^g \underline{\gamma}^\nu + \underline{\gamma}^\nu D^g = \underline{\gamma}^\lambda \times \underline{\gamma}^\mu \left( d_{\lambda\mu}^g \right) + 2 \underline{\gamma}^\lambda \times \underline{\gamma}^\nu \underline{\Gamma}_{\lambda\nu}^g$$

$$\text{LHS} = \underline{\gamma}^\lambda \underline{\Gamma}_{\lambda\nu}^g \underline{\gamma}^\nu + \underline{\gamma}^\nu \underline{\gamma}^\lambda \underline{\Gamma}_{\lambda\nu}^g = \underline{\gamma}^\lambda \left( D_{\lambda\nu}^g \times \underline{\gamma}^\nu \right) + \underbrace{\underline{\gamma}^\lambda \underline{\gamma}^\nu + \underline{\gamma}^\nu \underline{\gamma}^\lambda}_{2} \underline{\Gamma}_{\lambda\nu}^g = \text{RHS}$$

$$\underline{\gamma}^\mu D^g \underline{\gamma}^\nu = \underline{\gamma}^\mu \underline{\gamma}^\nu \left( d_{\mu\nu}^g \right) + \underline{\gamma}^\mu \underline{\gamma}^\lambda \left( d_{\lambda\nu}^g \right) = \underline{\gamma}^\mu \underline{\gamma}^\lambda \left( d_{\lambda\nu}^g \right) + \left( d_{\mu\nu}^g \right)$$

$$D = \gamma^\mu \partial_\mu$$

$$\underline{D} = \underline{\gamma}^\mu \partial_\mu$$