

$$\begin{aligned} & \frac{\hbar}{2} \cdot \text{B}^{\nu\lambda} - \frac{1}{4} \frac{1}{g_Y^2} \text{B}^{\nu\lambda} - \frac{1}{24} \frac{\hbar}{\epsilon} \text{G}^{\nu A 2} - \frac{1}{4} \frac{1}{g_S^2} \text{G}^{\nu A 2} - \frac{1}{4} \frac{1}{g_L^2} \text{W}^{\nu I 2} - \frac{1}{36} \hbar \text{B}^{\nu\lambda 2} \text{Log} \left[ \frac{\mu^2}{M_\phi^2} \right] - \\ & \frac{1}{24} \hbar \text{G}^{\nu A 2} \text{Log} \left[ \frac{\mu^2}{M_\phi^2} \right] + \text{D}_\mu \bar{\text{H}}_i \text{D}_\mu \text{H}^i + \text{C}_{\text{H}^2} \bar{\text{H}}_i \text{H}^i + \text{i} \left( \bar{\text{L}}_j^c \cdot \gamma_\mu \text{P}_\text{R} \cdot \text{D}_\mu \text{d}^{\text{ar}} \right) + \text{i} \left( \bar{\text{e}}^c \cdot \gamma_\mu \text{P}_\text{R} \cdot \text{D}_\mu \text{e}^c \right) + \\ & \text{i} \left( \bar{\text{L}}_i^c \cdot \gamma_\mu \text{P}_\text{L} \cdot \text{D}_\mu \text{l}^{\text{ir}} \right) + \text{i} \left( \bar{\text{Q}}_{\text{a}i}^c \cdot \gamma_\mu \text{P}_\text{L} \cdot \text{D}_\mu \text{q}^{\text{air}} \right) + \text{i} \left( \bar{\text{U}}_a^c \cdot \gamma_\mu \text{P}_\text{R} \cdot \text{D}_\mu \text{u}^{\text{ar}} \right) - \frac{1}{2} \lambda \bar{\text{H}}_i \bar{\text{H}}_j \text{H}^i \text{H}^j + \\ & \frac{3}{2} \frac{\hbar}{\epsilon} \frac{1}{\lambda_{\text{H}^c}} \lambda_{\text{H}^c}^2 \bar{\text{H}}_i \bar{\text{H}}_j \text{H}^i \text{H}^j + \frac{3}{2} \frac{\hbar}{\lambda_{\text{H}^c}} \lambda_{\text{H}^c}^2 \bar{\text{H}}_i \bar{\text{H}}_j \text{H}^i \text{H}^j \text{Log} \left[ \frac{\mu^2}{M_\phi^2} \right] - \bar{\nabla}_d^{\text{pr}} \bar{\text{H}}_i \left( \bar{\text{d}}_a^c \cdot \text{P}_\text{L} \cdot \text{q}^{\text{airp}} \right) - \\ & \frac{1}{8} \frac{\hbar}{\text{V}_d^{\text{ps}} \overline{\lambda_{\psi\chi}}^{\text{st}}} \lambda_{\psi\chi}^{\text{rt}} \bar{\text{H}}_i \left( \bar{\text{d}}_a^c \cdot \text{P}_\text{L} \cdot \text{q}^{\text{airp}} \right) + \frac{1}{4} \frac{\hbar}{\epsilon} \frac{1}{\text{V}_d^{\text{ps}} \overline{\lambda_{\psi\chi}}^{\text{st}}} \lambda_{\psi\chi}^{\text{rt}} \bar{\text{H}}_i \left( \bar{\text{d}}_a^c \cdot \text{P}_\text{L} \cdot \text{q}^{\text{airp}} \right) + \\ & \frac{1}{2} \frac{\hbar}{\text{V}_d^{\text{ps}} \overline{\lambda_{\psi\chi}}^{\text{st}}} \lambda_{\psi\chi}^{\text{rt}} \text{LF}_{1,1,0} \left[ \text{M}_\phi, \text{M}_\chi^{\text{t}} \right] \bar{\text{H}}_i \left( \bar{\text{d}}_a^c \cdot \text{P}_\text{L} \cdot \text{q}^{\text{airp}} \right) - \\ & \frac{1}{4} \frac{\hbar}{\text{V}_d^{\text{ps}} \overline{\lambda_{\psi\chi}}^{\text{st}}} \lambda_{\psi\chi}^{\text{rt}} \text{LF}_{2,1,-1} \left[ \text{M}_\chi^{\text{t}}, \text{M}_\phi \right] \bar{\text{H}}_i \left( \bar{\text{d}}_a^c \cdot \text{P}_\text{L} \cdot \text{q}^{\text{airp}} \right) - \bar{\nabla}_e^{\text{or}} \bar{\text{H}}_i \left( \bar{\text{e}}^c \cdot \text{P}_\text{L} \cdot \text{l}^{\text{irp}} \right) - \\ & \text{Y}_e^{\text{rp}} \text{H}^i \left( \bar{\text{L}}_i^c \cdot \text{P}_\text{R} \cdot \text{e}^{\text{p}} \right) - \text{Y}_d^{\text{rp}} \text{H}^i \left( \bar{\text{Q}}_{\text{a}i}^c \cdot \text{P}_\text{R} \cdot \text{d}^{\text{ap}} \right) - \frac{1}{8} \hbar \text{Y}_d^{\text{rt}} \overline{\lambda_{\psi\chi}}^{\text{ps}} \lambda_{\psi\chi}^{\text{ts}} \text{H}^i \left( \bar{\text{Q}}_{\text{a}i}^c \cdot \text{P}_\text{R} \cdot \text{d}^{\text{ap}} \right) + \\ & \frac{1}{4} \frac{\hbar}{\epsilon} \frac{1}{\text{Y}_d^{\text{rt}} \overline{\lambda_{\psi\chi}}^{\text{ps}} \lambda_{\psi\chi}^{\text{ts}} \text{H}^i \left( \bar{\text{Q}}_{\text{a}i}^c \cdot \text{P}_\text{R} \cdot \text{d}^{\text{ap}} \right) + \frac{1}{2} \hbar \text{Y}_d^{\text{rt}} \overline{\lambda_{\psi\chi}}^{\text{ps}} \lambda_{\psi\chi}^{\text{ts}} \text{LF}_{1,1,0} \left[ \text{M}_\phi, \text{M}_\chi^{\text{s}} \right] \text{H}^i \left( \bar{\text{Q}}_{\text{a}i}^c \cdot \text{P}_\text{R} \cdot \text{d}^{\text{ap}} \right) -} \\ & \frac{1}{4} \hbar \text{Y}_d^{\text{rt}} \overline{\lambda_{\psi\chi}}^{\text{ps}} \lambda_{\psi\chi}^{\text{ts}} \text{LF}_{2,1,-1} \left[ \text{M}_\chi^{\text{s}}, \text{M}_\phi \right] \text{H}^i \left( \bar{\text{Q}}_{\text{a}i}^c \cdot \text{P}_\text{R} \cdot \text{d}^{\text{ap}} \right) - \text{Y}_\text{u}^{\text{rp}} \bar{\text{H}}_i \left( \bar{\text{Q}}_{\text{a}j}^c \cdot \text{P}_\text{R} \cdot \text{u}^{\text{ap}} \right) \bar{\epsilon}^{\text{ij}} - \\ & \bar{\text{V}}_\text{u}^{\text{rp}} \text{H}^j \left( \bar{\text{U}}_a^c \cdot \text{P}_\text{L} \cdot \text{q}^{\text{airp}} \right) \bar{\epsilon}^{\text{ij}} - \frac{1}{360} \frac{\hbar}{M_\phi^2} \text{G}^{\nu\text{C}} \text{G}^{\mu\text{B}} \text{G}^{\nu\text{A}} \text{F}^{\text{ABC}} - \frac{1}{360} \hbar \text{C}_{\text{H}^2} \text{g}^{\nu} \frac{1}{M_\phi^2} \bar{\text{H}}_i \bar{\text{H}}_j \text{H}^i \text{H}^j - \\ & \frac{1}{\hbar} \text{C}_{\text{H}^2} \frac{1}{M_\phi^2} \lambda_{\text{H}^c}^2 \bar{\text{H}}_i \bar{\text{H}}_j \text{H}^i \text{H}^j + \frac{1}{360} \frac{\hbar}{\lambda} \text{g}^{\nu} \frac{1}{M_\phi^2} \bar{\text{H}}_i \bar{\text{H}}_j \bar{\text{H}}_k \text{H}^i \text{H}^j \text{H}^k + \frac{1}{2} \frac{\hbar}{\lambda} \frac{1}{M_\phi^2} \lambda_{\text{H}^c}^2 \bar{\text{H}}_i \bar{\text{H}}_j \bar{\text{H}}_k \text{H}^i \text{H}^j \text{H}^k + \\ & \frac{1}{2} \frac{1}{M_\phi^2} \lambda_{\text{H}^c}^3 \bar{\text{H}}_i \bar{\text{H}}_j \bar{\text{H}}_k \text{H}^i \text{H}^j \text{H}^k - \frac{1}{180} \frac{\hbar}{\text{g}^{\nu}} \frac{1}{M_\phi^2} \text{D}_\mu \bar{\text{H}}_i \bar{\text{H}}_j \text{H}^i \text{D}_\mu \text{H}^j - \frac{1}{360} \frac{\hbar}{\text{g}^{\nu}} \frac{1}{M_\phi^2} \bar{\text{H}}_i \text{D}_\mu \bar{\text{H}}_j \text{H}^i \text{D}_\mu \text{H}^j - \\ & \frac{1}{2} \frac{1}{M_\phi^2} \lambda_{\text{H}^c}^2 \bar{\text{H}}_i \text{D}_\mu \bar{\text{H}}_j \text{H}^i \text{D}_\mu \text{H}^j - \frac{1}{36} \frac{\hbar}{\lambda_{\text{H}^c}} \frac{1}{M_\phi^2} \bar{\text{H}}_i \text{H}^i \text{B}^{\mu\nu 2} - \frac{1}{24} \frac{\hbar}{\lambda_{\text{H}^c}} \frac{1}{M_\phi^2} \bar{\text{H}}_i \text{H}^i \text{G}^{\mu\nu A 2} + \\ & \frac{1}{720} \frac{\hbar}{\text{g}^{\nu}} \frac{1}{M_\phi^2} \bar{\nabla}_d^{\text{pr}} \bar{\text{H}}_i \bar{\text{H}}_j \text{H}^i \left( \bar{\text{d}}_a^c \cdot \text{P}_\text{L} \cdot \text{q}^{\text{airp}} \right) + \frac{1}{4} \frac{\hbar}{\lambda} \frac{1}{M_\phi^2} \lambda_{\text{H}^c}^2 \bar{\nabla}_d^{\text{pr}} \bar{\text{H}}_i \bar{\text{H}}_j \text{H}^i \left( \bar{\text{d}}_a^c \cdot \text{P}_\text{L} \cdot \text{q}^{\text{airp}} \right) - \\ & \frac{1}{2} \frac{\hbar}{\lambda_{\text{H}^c}} \bar{\text{V}}_d^{\text{ps}} \overline{\lambda_{\psi\chi}}^{\text{st}} \lambda_{\psi\chi}^{\text{rt}} \text{LF}_{2,1,0} \left[ \text{M}_\phi, \text{M}_\chi^{\text{t}} \right] \bar{\text{H}}_i \bar{\text{H}}_j \text{H}^i \left( \bar{\text{d}}_a^c \cdot \text{P}_\text{L} \cdot \text{q}^{\text{airp}} \right) + \\ & \frac{1}{4} \frac{\hbar}{\lambda_{\text{H}^c}} \bar{\text{V}}_d^{\text{ps}} \overline{\lambda_{\psi\chi}}^{\text{st}} \lambda_{\psi\chi}^{\text{rt}} \text{LF}_{2,2,-1} \left[ \text{M}_\phi, \text{M}_\chi^{\text{t}} \right] \bar{\text{H}}_i \bar{\text{H}}_j \text{H}^i \left( \bar{\text{d}}_a^c \cdot \text{P}_\text{L} \cdot \text{q}^{\text{airp}} \right) - \\ & \frac{1}{2} \frac{\hbar}{\text{V}_d^{\text{ps}} \overline{\lambda_{\psi\chi}}^{\text{st}}} \text{Y}_d^{\text{tr}} \text{Y}_d^{\text{tr}} \overline{\lambda_{\psi\chi}}^{\text{su}} \lambda_{\psi\chi}^{\text{vu}} \text{LF}_{2,1,0} \left[ \text{M}_\chi^{\text{u}}, \text{M}_\phi \right] \bar{\text{H}}_i \bar{\text{H}}_j \text{H}^i \left( \bar{\text{d}}_a^c \cdot \text{P}_\text{L} \cdot \text{q}^{\text{airp}} \right) + \\ & \frac{\hbar}{\text{V}_d^{\text{ps}} \overline{\lambda_{\psi\chi}}^{\text{st}}} \text{Y}_d^{\text{tr}} \text{Y}_d^{\text{tr}} \overline{\lambda_{\psi\chi}}^{\text{su}} \lambda_{\psi\chi}^$$