$-\frac{1}{2}\partial_{\nu}g^a_{\mu}\partial_{\nu}g^a_{\mu} - g_sf^{abc}\partial_{\mu}g^a_{\nu}g^b_{\mu}g^c_{\nu} - \frac{1}{4}g^2_sf^{abc}f^{ade}g^b_{\mu}g^c_{\nu}g^d_{\mu}g^e_{\nu} + \frac{1}{2}ig^2_s(\bar{q}^\sigma_i\gamma^\mu q^\sigma_i)g^a_{\mu} + \bar{G}^a\partial^2G^a + g_sf^{abc}\partial_{\mu}\bar{G}^aG^bg^c_{\mu} - g^a_{\mu}g^a_{\nu}g^a_{\mu}g^c_{\nu}g^a_{\mu}g^c_{\nu}g^c_{\mu}g^c_{\nu}g^c_{\mu}g^c_{\nu}g^c_{\mu}g^c_{\nu}g^c_{\mu}g^c_{\nu}g^c_{\mu}g^c_{\nu}g^c_{\mu}g^c_{\nu}g^c_{\mu}g^c_{\nu}g^c_{\mu}g^c_{\nu}g^c_{\nu}g^c_{\mu}g^c_{\nu}g^c_{\nu}g^c_{\mu}g^c_{\nu}g^$  $\partial_{\nu}W_{\mu}^{\stackrel{7}{+}}\partial_{\nu}W_{\mu}^{\stackrel{7}{-}}-M^{2}W_{\mu}^{+}W_{\mu}^{\stackrel{7}{-}}-\frac{1}{2}\partial_{\nu}Z_{\mu}^{0}\bar{\partial}_{\nu}Z_{\mu}^{0}-\frac{1}{2c_{m}^{2}}M^{2}Z_{\mu}^{0}Z_{\mu}^{0}-\frac{1}{2}\partial_{\mu}A_{\nu}\partial_{\mu}A_{\nu}-\frac{1}{2}\partial_{\mu}H\partial_{\mu}H-\frac{1}{2}m_{h}^{2}H^{2}-\partial_{\mu}\phi^{+}\partial_{\mu}\phi^{-}-\frac{1}{2}a_{\mu}H^{2}-\frac{1$  $M^2\phi^+\phi^- - \tfrac{1}{2}\partial_\mu\phi^0\partial_\mu\phi^0 - \tfrac{1}{2c_w^2}M\phi^0\phi^0 - \beta_h[\tfrac{2M^2}{g^2} + \tfrac{2M}{g}H + \tfrac{1}{2}(H^2 + \phi^0\phi^0 + 2\phi^+\phi^-)] + \tfrac{2M^4}{g^2}\alpha_h - igc_w[\partial_\nu Z_\mu^0(W_\mu^+W_\nu^- - \psi^0)] + \tfrac{2M^4}{g^2}\alpha_h - igc_w[\partial_\nu Z_\mu^0(W_\mu^+W_\mu^- - \psi^0)] + \tfrac{2M^4}{g^2}\alpha_h - igc_w[\partial_\nu Z_\mu^0(W_\mu^-W_\mu^- - \psi^0)] + \tfrac{2M^4}{g^2}\alpha_h - igc_w[\partial_\nu Z_\mu^0(W_\mu^-W_\mu^-W_\mu^- - \psi^0)] + \tfrac{2M^4}{g^2}\alpha_h - igc_w[\partial_\nu Z_\mu^0(W_\mu^-W_\mu^-W_\mu^- - \psi^0)] + \tfrac{2M^4}{g^2}\alpha_h - igc_w[\partial_\nu Z_\mu^0(W_\mu^-W_\mu$  $W_{\nu}^{+}W_{\mu}^{-}) - Z_{\nu}^{0}(W_{\mu}^{+}\partial_{\nu}W_{\mu}^{-} - W_{\mu}^{-}\partial_{\nu}W_{\mu}^{+}) + Z_{\mu}^{0}(\mathring{W}_{\nu}^{+}\partial_{\nu}W_{\mu}^{-} - W_{\nu}^{-}\partial_{\nu}W_{\mu}^{+})] - igs_{w}[\mathring{\partial}_{\nu}A_{\mu}(W_{\mu}^{+}W_{\nu}^{-} - W_{\nu}^{+}W_{\mu}^{-}) - W_{\nu}^{-}\partial_{\nu}W_{\mu}^{-})] - igs_{w}[\mathring{\partial}_{\nu}A_{\mu}(W_{\mu}^{+}W_{\nu}^{-} - W_{\nu}^{+}W_{\mu}^{-})] - igs_{w}[\mathring{\partial}_{\nu}A_{\mu}(W_{\mu}^{+}W_{\nu}^{-} - W_{\nu}^{-}W_{\mu}^{-})] - igs_{w}[\mathring{\partial}_{\nu}A_{\mu}(W_{\mu}^{+}W_{\nu}^{-} - W_{\mu}^{-}W_{\mu}^{-})] - igs_{w}[\mathring{\partial}_{\nu}A_{\mu}(W_{\mu}^{+}W_{\nu}^{-} - W_{\mu}^{-}W_{\mu}^{-})] - igs_{w}[\mathring{\partial}_{\nu}A_{\mu}(W_{\mu}^{+}W_{\nu}^{-} - W_{\mu}^{-}W_{\mu}^{-})] - igs_{w}[\mathring{\partial}_{\nu}A_{\mu}(W_{\mu}^{+}W_{\mu}^{-} - W_{\mu}^{-}W_{\mu}^{-})] - igs_{w}[\mathring{\partial}_{\nu}A_{\mu}(W_{\mu}^{+}W_{\mu}^{-} - W_{\mu}^{-}W_{\mu}^{-})] - igs_{w}[\mathring{\partial}_{\nu}A$  $A_{\nu}^{r}(W_{\mu}^{+}\partial_{\nu}W_{\mu}^{-}-W_{\mu}^{-}\partial_{\nu}W_{\mu}^{+}) + A_{\mu}(W_{\nu}^{+}\partial_{\nu}W_{\mu}^{-}-W_{\nu}^{-}\partial_{\nu}W_{\mu}^{+})] - \frac{1}{2}g^{2}W_{\mu}^{+}W_{\nu}^{-}W_{\nu}^{+}W_{\nu}^{-} + \frac{1}{2}g^{2}W_{\mu}^{+}W_{\nu}^{-}W_{\mu}^{+}W_{\nu}^{-} + \frac{1}{2}g^{2}W_{\mu}^{+}W_{\nu}^{-}W_{\mu}^{+}W_{\nu}^{-}W_{\mu}^{+}W_{\nu}^{-}W_{\nu}^{+}W_{\nu}^{-} + \frac{1}{2}g^{2}W_{\mu}^{+}W_{\nu}^{-}W_{\nu}^{+}W_{\nu}^{-}W_{\nu}^{+}W_{\nu}^{-}W_{\nu}^{+}W_{\nu}^{-}W_{\nu}$  $g^2 c_w^2 (Z_\mu^0 W_\mu^+ Z_\nu^0 W_\nu^- - Z_\mu^0 Z_\mu^0 W_\nu^+ W_\nu^-) + g^2 s_w^2 (A_\mu W_\mu^+ A_\nu W_\nu^- - A_\mu A_\mu W_\nu^+ W_\nu^-) + g^2 s_w c_w [A_\mu Z_\nu^0 (W_\mu^+ W_\nu^- - A_\mu A_\mu W_\nu^+ W_\nu^-) + g^2 s_w c_w [A_\mu Z_\nu^0 (W_\mu^+ W_\nu^- - A_\mu A_\mu W_\nu^+ W_\nu^-)] + g^2 s_w c_w [A_\mu Z_\nu^0 (W_\mu^+ W_\nu^- - A_\mu A_\mu W_\nu^+ W_\nu^-)] + g^2 s_w c_w [A_\mu Z_\nu^0 (W_\mu^+ W_\nu^- - A_\mu A_\mu W_\nu^+ W_\nu^-)] + g^2 s_w c_w [A_\mu Z_\nu^0 (W_\mu^+ W_\nu^- - A_\mu A_\mu W_\nu^+ W_\nu^-)] + g^2 s_w c_w [A_\mu Z_\nu^0 (W_\mu^+ W_\nu^- - A_\mu A_\mu W_\nu^+ W_\nu^-)] + g^2 s_w c_w [A_\mu Z_\nu^0 (W_\mu^+ W_\nu^- - A_\mu A_\mu W_\nu^+ W_\nu^-)] + g^2 s_w c_w [A_\mu Z_\nu^0 (W_\mu^+ W_\nu^- - A_\mu A_\mu W_\nu^+ W_\nu^-)] + g^2 s_w c_w [A_\mu Z_\nu^0 (W_\mu^+ W_\nu^- - A_\mu A_\mu W_\nu^+ W_\nu^-)] + g^2 s_w c_w [A_\mu Z_\nu^0 (W_\mu^+ W_\nu^- - A_\mu A_\mu W_\nu^+ W_\nu^-)] + g^2 s_w c_w [A_\mu Z_\nu^0 (W_\mu^+ W_\nu^- - A_\mu A_\mu W_\nu^- + A_\mu W_\mu^- + A_\mu$  $W_{\nu}^{+}W_{\mu}^{-}$  )  $-2A_{\mu}Z_{\mu}^{0}W_{\nu}^{+}W_{\nu}^{-}$  ]  $-g\alpha[H^{3}+H\phi^{0}\phi^{0}+2H\phi^{+}\phi^{-}]-\frac{1}{8}g^{2}\alpha_{h}[H^{4}+(\phi^{0})^{4}+4(\phi^{+}\phi^{-})^{2}+4(\phi^{0})^{2}\phi^{+}\phi^{-}+$  $4H^{2}\phi^{+}\phi^{-} + 2(\phi^{0})^{2}H^{2}] - gMW_{\mu}^{+}W_{\mu}^{-}H - \frac{1}{2}g\frac{M}{c^{2}}Z_{\mu}^{0}Z_{\mu}^{0}H - \frac{1}{2}ig[W_{\mu}^{+}(\phi^{0}\partial_{\mu}\phi^{-} - \phi^{-}\partial_{\mu}\phi^{0}) - W_{\mu}^{-}(\phi^{0}\partial_{\mu}\phi^{+} - \phi^{+}\partial_{\mu}\phi^{0})] + \frac{1}{2}ig[W_{\mu}^{+}(\phi^{0}\partial_{\mu}\phi^{-} - \phi^{-}\partial_{\mu}\phi^{0}) - W_{\mu}^{-}(\phi^{0}\partial_{\mu}\phi^{-} - \phi^{-}\partial_{\mu}\phi^{0})] + \frac{1}{2}ig[W_{\mu}^{+}(\phi^{0}\partial_{\mu}\phi^{-} - \phi^{-}\partial_{\mu}\phi^{0}) - W_{\mu}^{-}(\phi^{0}\partial_{\mu}\phi^{-} - \phi^{-}\partial_{\mu}\phi^{0})] + \frac{1}{2}ig[W_{\mu}^{+}(\phi^{0}\partial_{\mu}\phi^{-} - \phi^{-}\partial_{\mu}\phi^{0})] + \frac{1}{2}ig[W_{\mu}^{+}$  $\frac{1}{2}g[W_{\mu}^{+}(H\partial_{\mu}\phi^{-} - \phi^{-}\partial_{\mu}H) - W_{\mu}^{-}(H\partial_{\mu}\phi^{+} - \phi^{+}\partial_{\mu}H)] + \frac{1}{2}g\frac{1}{c_{w}}(Z_{\mu}^{0}(H\partial_{\mu}\phi^{0} - \phi^{0}\partial_{\mu}H) - ig\frac{s_{w}^{2}}{c_{w}}MZ_{\mu}^{0}(W_{\mu}^{+}\phi^{-} - \phi^{-}\partial_{\mu}H)) + \frac{1}{2}g\frac{1}{c_{w}}(Z_{\mu}^{0}(H\partial_{\mu}\phi^{0} - \phi^{0}\partial_{\mu}H) - ig\frac{s_{w}^{2}}{c_{w}}MZ_{\mu}^{0}(W_{\mu}^{+}\phi^{-} - \phi^{-}\partial_{\mu}H)) + \frac{1}{2}g\frac{1}{c_{w}}(Z_{\mu}^{0}(H\partial_{\mu}\phi^{0} - \phi^{0}\partial_{\mu}H) - ig\frac{s_{w}^{2}}{c_{w}}MZ_{\mu}^{0}(W_{\mu}^{+}\phi^{-} - \phi^{-}\partial_{\mu}H)) + \frac{1}{2}g\frac{1}{c_{w}}(Z_{\mu}^{0}(H\partial_{\mu}\phi^{0} - \phi^{0}\partial_{\mu}H) - ig\frac{s_{w}^{2}}{c_{w}}MZ_{\mu}^{0}(W_{\mu}^{+}\phi^{-} - \phi^{-}\partial_{\mu}H))$  $W_{\mu}^{-}\phi^{+}) + igs_{w}MA_{\mu}(W_{\mu}^{+}\phi^{-} - W_{\mu}^{-}\phi^{+}) - ig\frac{1-2c_{w}^{2}}{2c_{w}}Z_{\mu}^{0}(\phi^{+}\partial_{\mu}\phi^{-} - \phi^{-}\partial_{\mu}\phi^{+}) + igs_{w}A_{\mu}(\phi^{+}\partial_{\mu}\phi^{-} - \phi^{-}\partial_{\mu}\phi^{+}) - \phi^{-}\partial_{\mu}\phi^{+}) + igs_{w}A_{\mu}(\phi^{-}\partial_{\mu}\phi^{-} - \phi^{-}\partial_{\mu}\phi^{-}) + igs_{w}$  $\frac{1}{4}g^2W_{\mu}^{+}W_{\mu}^{-}[H^2+(\phi^0)^2+2\phi^+\phi^-] - \frac{1}{4}g^2\frac{1}{c_w^2}Z_{\mu}^0Z_{\mu}^0[H^2+(\phi^0)^2+2(2s_w^2-1)^2\phi^+\phi^-] - \frac{1}{2}g^2\frac{s_w^2}{c_w}Z_{\mu}^0\phi^0(W_{\mu}^{+}\phi^-+2s_w^2)$  $W_{\mu}^{-}\phi^{+}) - \frac{1}{2}ig^{2}\frac{s_{w}^{2}}{c}Z_{\mu}^{0}H(W_{\mu}^{+}\phi^{-} - W_{\mu}^{-}\phi^{+}) + \frac{1}{2}g^{2}s_{w}A_{\mu}\phi^{0}(W_{\mu}^{+}\phi^{-} + W_{\mu}^{-}\phi^{+}) + \frac{1}{2}ig^{2}s_{w}A_{\mu}H(W_{\mu}^{+}\phi^{-} - W_{\mu}^{-}\phi^{+}) - \frac{1}{2}ig^{2}s_{w}A_{\mu}H(W_{\mu}^{+}\phi^{-} - W_{\mu}^{-}\phi^{+}) + \frac{1}{2}ig^{2}s_{w}A_{\mu}H(W_{\mu}^{+}\phi^{-} - W_{\mu}^{-}\phi^{-}) + \frac{1}{2}ig^{2}s_{w}A_{\mu}H(W_{\mu$  $g^2 \frac{s_w}{c} (2c_w^2 - 1) Z_u^0 \mathring{A}_u \phi^+ \phi^- - g^1 s_w^2 A_u \mathring{A}_u \phi^+ \phi^- - \bar{e}^{\lambda} (\gamma \partial + m_e^{\lambda}) e^{\lambda} - \bar{\nu}^{\lambda} \gamma \partial \nu^{\lambda} - \bar{u}_i^{\lambda} (\gamma \partial + m_u^{\lambda}) u_i^{\lambda} - \bar{d}_i^{\lambda} (\gamma \partial + m_d^{\lambda}) d_i^{\lambda} + \bar{u}_i^{\lambda} (\gamma \partial + m_u^{\lambda}) u_i^{\lambda} - \bar{d}_i^{\lambda} (\gamma \partial + m_d^{\lambda}) d_i^{\lambda} + \bar{u}_i^{\lambda} (\gamma \partial + m_u^{\lambda}) u_i^{\lambda} - \bar{d}_i^{\lambda} (\gamma \partial + m_u^{\lambda}) u_i^{\lambda} + \bar{d}_i^{\lambda} (\gamma \partial + m_u^$  $igs_wA_{\mu}[-(\bar{e}^{\lambda}\gamma^{\mu}e^{\lambda})+\frac{2}{3}(\bar{u}_j^{\lambda}\gamma^{\mu}u_j^{\lambda})-\frac{1}{3}(\bar{d}_j^{\lambda}\gamma^{\mu}d_j^{\lambda})]+\frac{ig}{4c_w}Z_{\mu}^0[(\bar{\nu}^{\lambda}\gamma^{\mu}(1+\gamma^5)\nu^{\lambda})+(\bar{e}^{\lambda}\gamma^{\mu}(4s_w^2-1-\gamma^5)e^{\lambda})+(\bar{u}_j^{\lambda}\gamma^{\mu}(\frac{4}{3}s_w^2-1-\gamma^5)e^{\lambda})]$  $(1-\gamma^5)u_j^{\lambda}) + (\bar{d}_j^{\lambda}\gamma^{\mu}(1-\tfrac{8}{3}s_w^2-\gamma^5)d_j^{\lambda})] + \tfrac{ig}{2\sqrt{2}}W_{\mu}^+[(\bar{\nu}^{\lambda}\gamma^{\mu}(1+\gamma^5)e^{\lambda}) + (\bar{u}_j^{\lambda}\gamma^{\mu}(1+\gamma^5)C_{\lambda\kappa}d_j^{\kappa})] + \tfrac{ig}{2\sqrt{2}}W_{\mu}^-[(\bar{e}^{\lambda}\gamma^{\mu}(1+\gamma^5)e^{\lambda}) + (\bar{u}_j^{\lambda}\gamma^{\mu}(1+\gamma^5)e^{\lambda})] + \tfrac{ig}{2\sqrt{2}}W_{\mu}^-[(\bar{e}^{\lambda}\gamma^{\mu}(1+\gamma^5)e^{\lambda})] + \tfrac{ig}{$  $(\gamma^5)\nu^\lambda) + (\bar{d}_j^\kappa C_{\lambda\kappa}^\dagger \gamma^\mu (1+\gamma^5) u_j^\lambda)] + \frac{ig}{2\sqrt{2}} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ H(\bar{e}^\lambda e^\lambda) + \bar{e}^\lambda (1+\gamma^5) \bar{e}^\lambda (1+\gamma^5) \bar{e}^\lambda (1+\gamma^5) \bar{e}^\lambda (1+\gamma^5) \bar{e}^\lambda \right] + \frac{ig}{2\sqrt{2}} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] - \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] + \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) \nu^\lambda) \right] + \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) e^\lambda) \right] + \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) e^\lambda) \right] + \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) e^\lambda) \right] + \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) e^\lambda) \right] + \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) e^\lambda) \right] + \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) e^\lambda) \right] + \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{e}^\lambda (1+\gamma^5) e^\lambda) \right] + \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^-(\bar{\nu}^\lambda (1+\gamma^5) e^\lambda) \right] + \frac{g}{2} \frac{m_e^\lambda}{M} \left[ -\phi^+(\bar{\nu}^\lambda (1-\gamma^5) e^\lambda) + \phi^$  $i\phi^0(\bar{e}^{\lambda}\gamma^5 e^{\lambda})] + \frac{ig}{2M\sqrt{2}}\phi^+[-m_d^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa}) + m_u^{\lambda}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1+\gamma^5)d_j^{\kappa}] + \frac{ig}{2M\sqrt{2}}\phi^-[m_d^{\lambda}(\bar{d}_j^{\lambda}C_{\lambda\kappa}^{\dagger}(1+\gamma^5)u_j^{\kappa}) - m_d^{\lambda}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1+\gamma^5)d_j^{\kappa})] + \frac{ig}{2M\sqrt{2}}\phi^+[-m_d^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa}) + m_u^{\lambda}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1+\gamma^5)d_j^{\kappa})] + \frac{ig}{2M\sqrt{2}}\phi^+[m_d^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa}) + m_u^{\lambda}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1+\gamma^5)d_j^{\kappa})] + \frac{ig}{2M\sqrt{2}}\phi^+[m_d^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa}) + m_u^{\lambda}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1+\gamma^5)d_j^{\kappa})] + \frac{ig}{2M\sqrt{2}}\phi^+[m_d^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa}) + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa})] + \frac{ig}{2M\sqrt{2}}\phi^+[m_d^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa}) + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa})] + \frac{ig}{2M\sqrt{2}}\phi^+[m_d^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa}) + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa})] + \frac{ig}{2M\sqrt{2}}\phi^+[m_d^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa})] + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa})] + \frac{ig}{2M\sqrt{2}}\phi^+[m_d^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa})] + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa})] + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa})] + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa}) + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa})] + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa}) + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa})] + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa}) + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa})] + m_u^{\kappa}(\bar{u}_j^{\lambda}C_{\lambda\kappa}(1-\gamma^5)d_j^{\kappa}) + m_u^{\kappa}(\bar{u}_j^{\lambda}C_$  $m_u^{\kappa}(\bar{d}_j^{\lambda}C_{\lambda\kappa}^{\dagger}(1-\gamma^5)u_j^{\kappa}] - \frac{g}{2}\frac{m_u^{\lambda}}{M}H(\bar{u}_j^{\lambda}u_j^{\lambda}) - \frac{g}{2}\frac{m_d^{\lambda}}{M}H(\bar{d}_j^{\lambda}d_j^{\lambda}) + \frac{ig}{2}\frac{m_u^{\lambda}}{M}\phi^0(\bar{u}_j^{\lambda}\gamma^5u_j^{\lambda}) - \frac{ig}{2}\frac{m_d^{\lambda}}{M}\phi^0(\bar{d}_j^{\lambda}\gamma^5d_j^{\lambda}) + \bar{X}^+(\partial^2 - ig)$  $M^2)X^+ + \bar{X}^-(\partial^2 - M^2)X^- + \bar{X}^0(\partial^2 - \frac{M^2}{c_w^2})X^0 + \bar{Y}\partial^2 Y + igc_wW_\mu^+(\partial_\mu \bar{X}^0 X^- - \partial_\mu \bar{X}^+ X^0) + igs_wW_\mu^+(\partial_\mu \bar{Y} X^- - \partial_\mu \bar{X}^- X^0) + igs_wW_\mu^+(\partial_\mu \bar{Y} X^0 - \partial_\mu \bar{Y}^- X^0) + igs_wW_\mu^+(\partial_\mu \bar{Y}^- X^0 - \partial_\mu \bar{Y}^- X^0) + igs_wW_\mu^+(\partial_\mu \bar{Y}^- X^0 - \partial_\mu \bar{Y}^- X^0) + igs_wW_\mu^+(\partial_\mu \bar{Y}^- X^$  $\partial_{\mu}\bar{X}^{+}Y)+igc_{w}W_{\mu}^{-}(\partial_{\mu}\bar{X}^{-}X^{0}-\partial_{\mu}\bar{X}^{0}X^{+})+igs_{w}W_{\mu}^{-}(\partial_{\mu}\bar{X}^{-}Y-\partial_{\mu}\bar{Y}X^{+})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{+}X^{+}-\partial_{\mu}\bar{X}^{-}X^{-})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{-}X^{0}-\partial_{\mu}\bar{X}^{0}X^{+})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{-}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{-}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{-}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{-}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{-}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{-}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{-}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{-}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{\mu}\bar{X}^{0}X^{0}-\partial_{\mu}\bar{X}^{0}X^{0})+igc_{w}Z_{\mu}^{0}(\partial_{$  $igs_w A_{\mu} (\partial_{\mu} \bar{X}^+ X^+ - \partial_{\mu} \bar{X}^- X^-) - \frac{1}{2} gM[\bar{X}^+ X^+ H + \bar{X}^- X^- H + \frac{1}{c_w^2} \bar{X}^0 X^0 H] + \frac{1 - 2c_w^2}{2c_w} igM[\bar{X}^+ X^0 \phi^+ - 2c_w^2] + \frac{1}{2} gM[\bar{X}^+ X^- H + \bar{X}^- X^- H + \frac{1}{c_w^2} \bar{X}^0 X^0 H] + \frac{1}{2} gM[\bar{X}^+ X^- H + \bar{X}^- X^- H + \frac{1}{c_w^2} \bar{X}^0 X^0 H] + \frac{1}{2} gM[\bar{X}^+ X^- H + \bar{X}^- X^- H + \frac{1}{c_w^2} \bar{X}^0 X^0 H] + \frac{1}{2} gM[\bar{X}^+ X^- H + \bar{X}^- X^- H + \frac{1}{c_w^2} \bar{X}^0 X^0 H] + \frac{1}{2} gM[\bar{X}^+ X^- H + \bar{X}^- X^- H + \frac{1}{c_w^2} \bar{X}^0 X^0 H] + \frac{1}{2} gM[\bar{X}^+ X^- H + \frac{1}{2} gM[\bar{X}^- X$  $[\bar{X}^-X^0\phi^-] + \frac{1}{2c_w}igM[\bar{X}^0X^-\phi^+ - \bar{X}^0X^+\phi^-] + igMs_w[\bar{X}^0X^-\phi^+ - \bar{X}^{\bar{0}}X^+\phi^-] + \frac{1}{2}igM[\bar{X}^+X^+\phi^0 - \bar{X}^-X^-\phi^0]$