

$$SU(3)_c \times SU(2)_L \times U(1)_Y$$

$$\begin{array}{c}
 Z^0 \\
 \gamma
 \end{array}
 \left\{ \begin{array}{c} G_1 \\ G_2 \\ \vdots \\ G_8 \end{array} \right.
 \left\{ \begin{array}{c} W^\pm \\ W^\pm \end{array} \right.
 \left\{ \begin{array}{c} d_L^1 \quad d_L^2 \quad d_L^3 \quad s_L^1 \quad s_L^2 \quad s_L^3 \quad b_L^1 \quad b_L^2 \quad b_L^3 \\
 u_L^1 \quad u_L^2 \quad u_L^3 \quad c_L^1 \quad c_L^2 \quad c_L^3 \quad t_L^1 \quad t_L^2 \quad t_L^3 \\
 d_R^1 \quad d_R^2 \quad d_R^3 \quad s_R^1 \quad s_R^2 \quad s_R^3 \quad b_R^1 \quad b_R^2 \quad b_R^3 \\
 u_R^1 \quad u_R^2 \quad u_R^3 \quad c_R^1 \quad c_R^2 \quad c_R^3 \quad t_R^1 \quad t_R^2 \quad t_R^3 \end{array} \right.
 \begin{array}{c} \rightarrow \\ \rightarrow \\ \rightarrow \\ \rightarrow \end{array}
 \begin{array}{c} e_R \quad \mu_R \quad \tau_R \\
 e_L \quad \mu_L \quad \tau_L \\
 \nu_L^e \quad \nu_L^\mu \quad \nu_L^\tau \\
 d_L^\alpha \quad s_L^\alpha \quad b_L^\alpha \\
 u_L^\alpha \quad c_L^\alpha \quad t_L^\alpha \\
 d_R^\alpha \quad s_R^\alpha \quad b_R^\alpha \\
 u_R^\alpha \quad c_R^\alpha \quad t_R^\alpha \end{array}
 \left\{ \begin{array}{c} L_1 \quad L_2 \quad L_3 \\
 Q_1^\alpha \quad Q_2^\alpha \quad Q_3^\alpha \end{array} \right.$$

$$m_i = 0$$

$$Y_{u_L} = Y_{d_L}$$