

$$\begin{aligned}
m_Q^2 &= \tilde{m}^2 (a_1 \mathbb{I} + b_1 Y_u Y_u^\dagger + b_2 Y_d Y_d^\dagger + b_3 Y_d Y_d^\dagger Y_u Y_u^\dagger) \\
m_{U^c}^2 &= \tilde{m}^2 (a_2 \mathbb{I} + b_5 Y_u^\dagger Y_u + c_1 Y_u^\dagger Y_d Y_d^\dagger Y_u) \\
m_{D^c}^2 &= \tilde{m}^2 (a_3 \mathbb{I} + b_6 Y_d^\dagger Y_d) \\
a_u &= A (a_4 \mathbb{I} + b_7 Y_d Y_d^\dagger) Y_u \\
a_d &= A (a_5 \mathbb{I} + b_8 Y_u Y_u^\dagger) Y_d
\end{aligned}$$