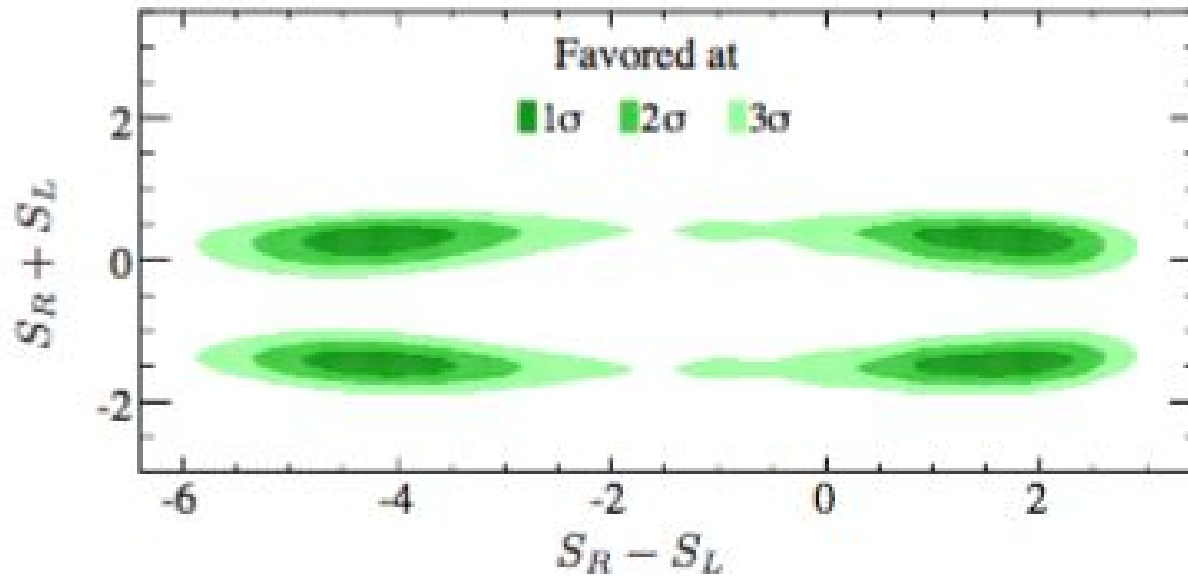


# 2HDM type III with $\gamma$ Combo

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# Idea & Input

Provide sensitivities for the generalized couplings  $S_R$  &  $S_L$  in the 2HDM type III



$$\mathcal{H}_{\text{eff}} = \frac{4G_F V_{cb}}{\sqrt{2}} \left[ (\bar{c}\gamma_\mu P_L b) (\bar{\tau}\gamma^\mu P_L \nu_\tau) \right. \\ \left. + S_L (\bar{c} P_L b) (\bar{\tau} P_L \nu_\tau) + S_R (\bar{c} P_R b) (\bar{\tau} P_L \nu_\tau) \right],$$

# Input & Todo

Measured  $\mathcal{R}(D)$  and  $\mathcal{R}(D^*)$  plus SM predictions

$$\begin{aligned}\mathcal{R}(D) &= \mathcal{R}(D)_{\text{SM}} + A'_D \text{Re}(S_R + S_L) + B'_D |S_R + S_L|^2, \\ \mathcal{R}(D^*) &= \mathcal{R}(D^*)_{\text{SM}} + A'_D \cdot \text{Re}(S_R - S_L) + B'_D \cdot |S_R - S_L|^2.\end{aligned}$$

Need finer scanning grid, maybe discard ruled out solutions; do scans with SM assumption

# Current Version

