# Basis Bern (EFT WET-3)

## Sectors

The effective Lagrangian is defined as

$$\mathcal{L}_{\text{eff}} = -\mathcal{H}_{\text{eff}} = \sum_{O_i = O_i^{\dagger}} C_i O_i + \sum_{O_i \neq O_i^{\dagger}} \left( C_i O_i + C_i^* O_i^{\dagger} \right).$$

#### udenu

WC name	Operator	Type
1udee	$\frac{4G_F}{\sqrt{2}}(\bar{u}P_R\gamma^\mu d)(\bar{e}\gamma_\mu\nu_e)$	C
5udee	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{u}P_Rd)(\bar{e}\nu_e)$	$\mathbf{C}$
1pudee	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{u}P_L\gamma^\mu d)(\bar{e}\gamma_\mu \nu_e)$	$^{\mathrm{C}}$
5pudee	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{u}P_Ld)(\bar{e}\nu_e)$	$\mathbf{C}$
7pudee	$\frac{4\check{G}_F}{\sqrt{2}}(\bar{u}P_L\sigma^{\mu\nu}d)(\bar{e}\sigma_{\mu\nu}\nu_e)$	$\mathbf{C}$
1udemu	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{u}P_R\gamma^\mu d)(\bar{e}\gamma_\mu\nu_\mu)$	$\mathbf{C}$
5udemu	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{u}P_Rd)(\bar{e}\nu_\mu)$	$\mathbf{C}$
1pudemu	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{u}P_L\gamma^\mu d)(\bar{e}\gamma_\mu \nu_\mu)$	$\mathbf{C}$
5pudemu	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{u}P_Ld)(\bar{e}\nu_\mu)$	$\mathbf{C}$
7pudemu	$\frac{4\check{G}_F}{\sqrt{2}}(\bar{u}P_L\sigma^{\mu\nu}d)(\bar{e}\sigma_{\mu\nu}\nu_{\mu})$	$\mathbf{C}$
1udetau	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{u}P_R\gamma^\mu d)(\bar{e}\gamma_\mu \nu_ au)$	$\mathbf{C}$
5udetau	$\frac{4\check{G}_F}{\sqrt{2}}(\bar{u}P_Rd)(\bar{e}\nu_{\tau})$	$\mathbf{C}$
1pudetau	$\frac{4 \overleftarrow{G}_F}{\sqrt{2}} (\bar{u} P_L \gamma^\mu d) (\bar{e} \gamma_\mu \nu_ au)$	$\mathbf{C}$
5pudetau	$\frac{4 \stackrel{AG}{\mathcal{G}_F}}{\sqrt{2}} (\bar{u} P_L d) (\bar{e}  u_{ au})$	$^{\mathrm{C}}$
7pudetau	$\frac{4\tilde{Y}_{F}^{2}}{\sqrt{2}}(\bar{u}P_{L}\sigma^{\mu\nu}d)(\bar{e}\sigma_{\mu\nu}\nu_{\tau})$	С

#### udmunu

WC name	Operator	Type
1udmue	$\frac{4G_F}{\sqrt{2}}(\bar{u}P_R\gamma^\mu d)(\bar{\mu}\gamma_\mu\nu_e)$	C
5udmue	$\frac{4\overleftarrow{G}_F}{\sqrt{2}}(\bar{u}P_Rd)(\bar{\mu}\nu_e)$	$\mathbf{C}$
1pudmue	$\frac{4G_F}{\sqrt{2}}(\bar{u}P_L\gamma^\mu d)(\bar{\mu}\gamma_\mu\nu_e)$	$^{\mathrm{C}}$
5pudmue	$\frac{4\ddot{G}_F}{\sqrt{2}}(\bar{u}P_Ld)(\bar{\mu}\nu_e)$	$^{\mathrm{C}}$
7pudmue	$\frac{4G_F}{\sqrt{2}}(\bar{u}P_L\sigma^{\mu\nu}d)(\bar{\mu}\sigma_{\mu\nu}\nu_e)$	$^{\mathrm{C}}$
1udmumu	$\frac{4G_F}{\sqrt{2}}(\bar{u}P_R\gamma^\mu d)(\bar{\mu}\gamma_\mu\nu_\mu)$	$^{\mathrm{C}}$
5udmumu	$\begin{split} &\frac{4G_{F}}{\sqrt{2}}(\bar{u}P_{R}\gamma^{\mu}d)(\bar{\mu}\gamma_{\mu}\nu_{e}) \\ &\frac{4G_{F}}{\sqrt{2}}(\bar{u}P_{R}d)(\bar{\mu}\nu_{e}) \\ &\frac{4G_{F}}{\sqrt{2}}(\bar{u}P_{L}\gamma^{\mu}d)(\bar{\mu}\gamma_{\mu}\nu_{e}) \\ &\frac{4G_{F}}{\sqrt{2}}(\bar{u}P_{L}d)(\bar{\mu}\nu_{e}) \\ &\frac{4G_{F}}{\sqrt{2}}(\bar{u}P_{L}d)(\bar{\mu}\nu_{e}) \\ &\frac{4G_{F}}{\sqrt{2}}(\bar{u}P_{L}\sigma^{\mu\nu}d)(\bar{\mu}\sigma_{\mu\nu}\nu_{e}) \\ &\frac{4G_{F}}{\sqrt{2}}(\bar{u}P_{R}\gamma^{\mu}d)(\bar{\mu}\gamma_{\mu}\nu_{\mu}) \\ &\frac{4G_{F}}{\sqrt{2}}(\bar{u}P_{R}d)(\bar{\mu}\nu_{\mu}) \end{split}$	$^{\mathrm{C}}$

WC name	Operator	Type
1pudmumu	$\frac{4G_F}{\sqrt{2}}(\bar{u}P_L\gamma^\mu d)(\bar{\mu}\gamma_\mu\nu_\mu)$	C
5pudmumu	$ \frac{4G_{F}}{\sqrt{2}}(\bar{u}P_{L}d)(\bar{\mu}\nu_{\mu}) \\ \frac{4G_{F}}{\sqrt{2}}(\bar{u}P_{L}\sigma^{\mu\nu}d)(\bar{\mu}\sigma_{\mu\nu}\nu_{\mu}) \\ \frac{4G_{F}}{\sqrt{2}}(\bar{u}P_{R}\gamma^{\mu}d)(\bar{\mu}\gamma_{\mu}\nu_{\tau}) $	$\mathbf{C}$
7pudmumu	$\frac{4\check{G}_F}{\sqrt{2}}(\bar{u}P_L\sigma^{\mu\nu}d)(\bar{\mu}\sigma_{\mu\nu}\nu_{\mu})$	$\mathbf{C}$
1udmutau	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{u}P_R\gamma^\mu d)(\bar{\mu}\gamma_\mu\nu_\tau)$	$\mathbf{C}$
5udmutau	$\frac{4G_F}{\sqrt{2}}(\bar{u}P_Rd)(\bar{\mu}\nu_{\tau})$	$\mathbf{C}$
1pudmutau	$\frac{4Q_F^2}{\sqrt{2}}(\bar{u}P_L\gamma^\mu d)(\bar{\mu}\gamma_\mu\nu_ au)$	$\mathbf{C}$
5pudmutau	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{u}P_Ld)(\bar{\mu} u_{ au})$	$\mathbf{C}$
7pudmutau	$\frac{\sqrt[4]{G_F}}{\sqrt{2}}(\bar{u}P_L\sigma^{\mu\nu}d)(\bar{\mu}\sigma_{\mu\nu}\nu_\tau)$	$^{\mathrm{C}}$

## sdsd

WC name	Operator	Type
1dsds	$\frac{\frac{4G_F}{\sqrt{2}}(\bar{d}\gamma_{\mu}P_Ls)(\bar{d}\gamma^{\mu}P_Ls)}{\frac{4G_F}{\sqrt{2}}(\bar{d}_{\alpha}P_Ls_{\beta})(\bar{d}_{\beta}P_Rs_{\alpha})}$	C
5dsds	$\frac{4G_F}{\sqrt{2}}(\bar{d}_{\alpha}P_Ls_{\beta})(\bar{d}_{\beta}P_Rs_{\alpha})$	$\mathbf{C}$
2dsds	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{d}P_Ls)(\bar{d}P_Ls)$	$\mathbf{C}$
1pdsds	$\frac{\frac{4\ddot{G}_F}{\sqrt{2}}(\bar{d}P_L s)(\bar{d}P_L s)}{\frac{4\ddot{G}_F}{\sqrt{2}}(\bar{d}\gamma_\mu P_R s)(\bar{d}\gamma^\mu P_R s)}$	$\mathbf{C}$
3dsds	$\frac{4 \overleftarrow{Q_F}}{\sqrt{2}} (ar{d}_{lpha} P_L s_{eta}) (ar{d}_{eta} P_L s_{lpha})$	$\mathbf{C}$
2pdsds	$\frac{4\ddot{G_F}}{\sqrt{2}}(\bar{d}P_Rs)(\bar{d}P_Rs)$	$\mathbf{C}$
4dsds	$\frac{4\ddot{G_F}}{\sqrt{2}}(\bar{d}P_Ls)(\bar{d}P_Rs)$	$\mathbf{C}$
3pdsds	$rac{4ar{G}_F}{\sqrt{2}}(ar{d}_lpha P_R s_eta)(ar{d}_eta P_R s_lpha)$	$\mathbf{C}$

#### usenu

WC name	Operator	Type
1usee	$\frac{4G_F}{\sqrt{2}}(\bar{u}P_R\gamma^{\mu}s)(\bar{e}\gamma_{\mu}\nu_e)$	C
5usee	$\frac{4\tilde{Q}_F^2}{\sqrt{2}}(\bar{u}P_Rs)(\bar{e}\nu_e)$	$\mathbf{C}$
1pusee	$\frac{4\tilde{Q}_F^2}{\sqrt{2}}(\bar{u}P_L\gamma^\mu s)(\bar{e}\gamma_\mu\nu_e)$	$\mathbf{C}$
5pusee	$\frac{4\tilde{Q}_F^2}{\sqrt{2}}(\bar{u}P_Ls)(\bar{e}\nu_e)$	$\mathbf{C}$
7pusee	$\frac{4\tilde{Q}_F^2}{\sqrt{2}}(\bar{u}P_L\sigma^{\mu\nu}s)(\bar{e}\sigma_{\mu\nu}\nu_e)$	$\mathbf{C}$
1usemu	$\frac{4\tilde{Q}_F^2}{\sqrt{2}}(\bar{u}P_R\gamma^\mu s)(\bar{e}\gamma_\mu\nu_\mu)$	$\mathbf{C}$
5usemu	$\frac{4\tilde{Y}_{F}^{2}}{\sqrt{2}}(\bar{u}P_{R}s)(\bar{e}\nu_{\mu})$	$\mathbf{C}$
1pusemu	$\frac{4\tilde{G}_F^c}{\sqrt{2}}(\bar{u}P_L\gamma^{\mu}s)(\bar{e}\gamma_{\mu}\nu_{\mu})$	$\mathbf{C}$
5pusemu	$\frac{4\tilde{Q}_F^2}{\sqrt{2}}(\bar{u}P_Ls)(\bar{e}\nu_\mu)$	$\mathbf{C}$
7pusemu		$\mathbf{C}$
1usetau	$\frac{4G_F}{\sqrt{2}}(\bar{u}P_L\sigma^{\mu\nu}s)(\bar{e}\sigma_{\mu\nu}\nu_{\mu})$ $\frac{4G_F}{\sqrt{2}}(\bar{u}P_R\gamma^{\mu}s)(\bar{e}\gamma_{\mu}\nu_{\tau})$	$^{\mathrm{C}}$

WC name	Operator	Type
5usetau	$\frac{4G_F}{\sqrt{2}}(\bar{u}P_Rs)(\bar{e}\nu_{\tau})$	С
1pusetau	$\frac{4G_F}{\sqrt{2}}(\bar{u}P_L\gamma^{\mu}s)(\bar{e}\gamma_{\mu}\nu_{ au})$	$\mathbf{C}$
5pusetau	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{u}P_Ls)(\bar{e}\nu_{\tau})$	$\mathbf{C}$
7pusetau	$\frac{\frac{4G_F}{\sqrt{2}}(\bar{u}P_Rs)(\bar{e}\nu_\tau)}{\frac{4G_F}{\sqrt{2}}(\bar{u}P_L\gamma^\mu s)(\bar{e}\gamma_\mu\nu_\tau)}$ $\frac{\frac{4G_F}{\sqrt{2}}(\bar{u}P_Ls)(\bar{e}\nu_\tau)}{\frac{4G_F}{\sqrt{2}}(\bar{u}P_L\sigma^{\mu\nu}s)(\bar{e}\sigma_{\mu\nu}\nu_\tau)}$	C

#### usmunu

WC name	Operator	Type
1usmue	$\frac{4G_F}{\sqrt{2}}(\bar{u}P_R\gamma^{\mu}s)(\bar{\mu}\gamma_{\mu}\nu_e)$	C
5usmue	$\frac{4\tilde{Q}_F}{\sqrt{2}}(\bar{u}P_Rs)(\bar{\mu}\nu_e)$	$\mathbf{C}$
1pusmue	$\frac{4 \tilde{G}_F}{\sqrt{2}} (\bar{u} P_L \gamma^\mu s) (\bar{\mu} \gamma_\mu \nu_e)$	$\mathbf{C}$
5pusmue	$\frac{4 \tilde{G}_F}{\sqrt{2}} (\bar{u} P_L s) (\bar{\mu} \nu_e)$	$\mathbf{C}$
7pusmue	$\frac{4 \tilde{G}_F}{\sqrt{2}} (\bar{u} P_L \sigma^{\mu\nu} s) (\bar{\mu} \sigma_{\mu\nu} \nu_e)$	$\mathbf{C}$
1usmumu	$\frac{4 \tilde{G}_F}{\sqrt{2}} (\bar{u} P_R \gamma^\mu s) (\bar{\mu} \gamma_\mu \nu_\mu)$	$\mathbf{C}$
5usmumu	$\frac{4 \tilde{G}_F}{\sqrt{2}} (\bar{u} P_R s) (\bar{\mu} \nu_\mu)$	$\mathbf{C}$
1pusmumu	$\frac{4 \tilde{G}_F}{\sqrt{2}} (\bar{u} P_L \gamma^\mu s) (\bar{\mu} \gamma_\mu \nu_\mu)$	$\mathbf{C}$
5pusmumu	$\frac{4 \tilde{G}_F}{\sqrt{2}} (\bar{u} P_L s) (\bar{\mu} \nu_\mu)$	$\mathbf{C}$
7pusmumu	$\frac{4 \tilde{G}_F}{\sqrt{2}} (\bar{u} P_L \sigma^{\mu \nu} s) (\bar{\mu} \sigma_{\mu \nu} \nu_{\mu})$	$\mathbf{C}$
1usmutau	$\frac{4 \tilde{G}_F}{\sqrt{2}} (\bar{u} P_R \gamma^\mu s) (\bar{\mu} \gamma_\mu \nu_\tau)$	$\mathbf{C}$
5usmutau	$\frac{4\tilde{Q}_F}{\sqrt{2}}(\bar{u}P_Rs)(\bar{\mu}\nu_{\tau})$	$\mathbf{C}$
1pusmutau	$\frac{4\tilde{Q}_F}{\sqrt{2}}(\bar{u}P_L\gamma^\mu s)(\bar{\mu}\gamma_\mu\nu_ au)$	$\mathbf{C}$
5pusmutau	$\frac{4 \stackrel{Q}{Q_F}}{\sqrt{2}} (\bar{u} P_L s) (\bar{\mu}  u_{ au})$	$\mathbf{C}$
7pusmutau	$rac{4reve{G}_F}{\sqrt{2}}(ar{u}P_L\sigma^{\mu u}s)(ar{\mu}\sigma_{\mu u} u_ au)$	$^{\mathrm{C}}$

#### sd

WC name	Operator	Type
7gammads	$\frac{4G_F}{\sqrt{2}}\frac{e}{a^2}m_s(\bar{d}P_R\sigma_{\mu\nu}s)F^{\mu\nu}$	$\overline{\mathbf{C}}$
8gds	$rac{4G_F}{\sqrt{2}} rac{e}{g_s^2} m_s (ar{d} P_R \sigma_{\mu  u} s) F^{\mu  u} \ rac{4G_F}{\sqrt{2}} rac{1}{g_s} m_s (ar{d} P_R \sigma_{\mu  u} T^A s) G_A^{\mu  u}$	$\mathbf{C}$
7pgammads	$\frac{4\tilde{G}_F}{\sqrt{2}}\frac{e}{q_s^2}m_s(\bar{d}P_L\sigma_{\mu\nu}s)F^{\mu\nu}$	$\mathbf{C}$
8pgds	$\frac{4G_F}{\sqrt{2}}\frac{3}{q_s}m_s(\bar{d}P_L\sigma_{\mu\nu}T^As)G_A^{\mu\nu}$	$\mathbf{C}$
1dsuu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{u}\gamma^\mu u)$	$\mathbf{C}$
2dsuu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu T^A s)(\bar{u}\gamma^\mu T^A u)$	$\mathbf{C}$
3dsuu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu\nu\rho}s)(\bar{u}\gamma^{\mu\nu\rho}u)$	$\mathbf{C}$
4dsuu	$ \frac{{}^{4}\!G_{F}}{\sqrt{2}}(\bar{d}P_{R}\gamma_{\mu}T^{A}s)(\bar{u}\gamma^{\mu}T^{A}u)  \frac{{}^{4}\!G_{F}}{\sqrt{2}}(\bar{d}P_{R}\gamma_{\mu\nu\rho}s)(\bar{u}\gamma^{\mu\nu\rho}u)  \frac{{}^{4}\!G_{F}}{\sqrt{2}}(\bar{d}P_{R}\gamma_{\mu\nu\rho}T^{A}s)(\bar{u}\gamma^{\mu\nu\rho}T^{A}u) $	С

VC name	Operator	Type
dsuu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_Rs)(\bar{u}u)$	C
dsuu	$\frac{4\ddot{G_F}}{\sqrt{2}}(\bar{d}P_BT^As)(\bar{u}T^Au)$	$\mathbf{C}$
lsuu	$\frac{4Q_F^2}{\sqrt{2}}(\bar{d}P_R\sigma^{\mu\nu}s)(\bar{u}\sigma_{\mu\nu}u)$	$\mathbf{C}$
suu	$\frac{4G_F^2}{\sqrt{2}}(\bar{d}P_R\sigma^{\mu\nu}T^As)(\bar{u}\sigma_{\mu\nu}T^Au)$	$\mathbf{C}$
suu	$\frac{4G_F^2}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu\nu\rho\sigma}s)(\bar{u}\gamma^{\mu\nu\rho\sigma}u)$	$\mathbf{C}$
dsuu	$\frac{\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\sigma^{\mu\nu}s)(\bar{u}\sigma_{\mu\nu}u)}{\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\sigma^{\mu\nu}T^As)(\bar{u}\sigma_{\mu\nu}T^Au)}$ $\frac{\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu\nu\rho\sigma}s)(\bar{u}\gamma^{\mu\nu\rho\sigma}u)}{\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu\nu\rho\sigma}T^As)(\bar{u}\gamma^{\mu\nu\rho\sigma}T^Au)}$	$\mathbf{C}$
dsuu	$\frac{4\overset{A}{G_F}}{\sqrt{2}}(\bar{d}P_L\gamma_\mu s)(\bar{u}\gamma^\mu u)$	$\mathbf{C}$
dsuu	$ \frac{1}{\sqrt{2}} (dP_R \gamma_{\mu\nu\rho\sigma} T s)(u\gamma^{\mu} T u)  \frac{4G_F}{\sqrt{2}} (\bar{d}P_L \gamma_{\mu} s)(\bar{u}\gamma^{\mu} u)  \frac{4G_F}{\sqrt{2}} (\bar{d}P_L \gamma_{\mu} T^A s)(\bar{u}\gamma^{\mu} T^A u)  \frac{4G_F}{\sqrt{2}} (\bar{d}P_L \gamma_{\mu\nu\rho} s)(\bar{u}\gamma^{\mu\nu\rho} u)  \frac{4G_F}{\sqrt{2}} (\bar{d}P_L \gamma_{\mu\nu\rho} T^A s)(\bar{u}\gamma^{\mu\nu\rho} T^A u) $	$^{\mathrm{C}}$
dsuu	$\frac{4G_F^2}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho}s)(\bar{u}\gamma^{\mu\nu\rho}u)$	$^{\mathrm{C}}$
dsuu	$\frac{4 \overset{Q}{G_F}}{\sqrt{2}} (\bar{d} P_L \gamma_{\mu\nu\rho} T^A s) (\bar{u} \gamma^{\mu\nu\rho} T^A u)$	$\mathbf{C}$
dsuu	$\frac{4\overset{Y}{G_F}}{\sqrt{2}}(\bar{d}P_Ls)(\bar{u}u)$	$\mathbf{C}$
dsuu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_L s)(\bar{u}u)$ $\frac{4G_F}{\sqrt{2}}(\bar{d}P_L T^A s)(\bar{u}T^A u)$	$\mathbf{C}$
odsuu	$4G_F(dD\sigma^{\mu\nu}\alpha)(\bar{a}\sigma\alpha)$	$\mathbf{C}$
dsuu	$ \frac{\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\sigma^{\mu\nu}T^As)(\bar{u}\sigma_{\mu\nu}T^Au)}{\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\sigma^{\mu\nu}T^As)(\bar{u}\gamma^{\mu\nu\rho\sigma}u)} \\ \frac{\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho\sigma}s)(\bar{u}\gamma^{\mu\nu\rho\sigma}u)}{\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho\sigma}T^As)(\bar{u}\gamma^{\mu\nu\rho\sigma}T^Au)} $	$^{\mathrm{C}}$
dsuu	$\frac{4Q_F^2}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho\sigma}s)(\bar{u}\gamma^{\mu\nu\rho\sigma}u)$	$^{\mathrm{C}}$
pdsuu	$\frac{4\dot{Q}_F^2}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho\sigma}T^As)(\bar{u}\gamma^{\mu\nu\rho\sigma}T^Au)$	$\mathbf{C}$
SSS	$rac{4 {\sf Y}_{G_F}^C}{\sqrt{2}} (ar{d} P_R \gamma_\mu s) (ar{s} \gamma^\mu s)$	$\mathbf{C}$
lsss	$rac{\sqrt{2}}{\sqrt{2}}(ar{d}P_R\gamma_\mu s)(ar{s}\gamma^\mu s) \ rac{4G_F}{\sqrt{2}}(ar{d}P_R\gamma_{\mu u ho}s)(ar{s}\gamma^{\mu u ho}s)$	$^{\mathrm{C}}$
SSS	$\frac{4G_F}{dP_{DS}}(dP_{DS})(\bar{s}_S)$	$^{\mathrm{C}}$
SSS	$ \frac{\sqrt{2}}{4G_F} (\bar{d}P_R \sigma^{\mu\nu} s) (\bar{s}\sigma_{\mu\nu} s)  \frac{4G_F}{\sqrt{2}} (\bar{d}P_R \gamma_{\mu\nu\rho\sigma} s) (\bar{s}\gamma^{\mu\nu\rho\sigma} s)  \frac{4G_F}{\sqrt{2}} (\bar{d}P_L \gamma_{\mu} s) (\bar{s}\gamma^{\mu} s)  \frac{4G_F}{\sqrt{2}} (\bar{d}P_L \gamma_{\mu\nu\rho} s) (\bar{s}\gamma^{\mu\nu\rho} s)  \frac{4G_F}{\sqrt{2}} (\bar{d}P_L \gamma_{\mu\nu\rho} s) (\bar{s}\gamma^{\mu\nu\rho} s) $	$^{\mathrm{C}}$
SSS	$\frac{4G_F^2}{\sqrt{2}}(ar{d}P_R\gamma_{\mu u ho\sigma}s)(ar{s}\gamma^{\mu u ho\sigma}s)$	$^{\mathrm{C}}$
dsss	$rac{4Q_F^2}{\sqrt{2}}(ar{d}P_L\gamma_\mu s)(ar{s}\gamma^\mu s)$	$\mathbf{C}$
dsss	$rac{4Q_F^2}{\sqrt{2}}(ar{d}P_L\gamma_{\mu u ho}s)(ar{s}\gamma^{\mu u ho}s)$	$\mathbf{C}$
dsss	$\frac{4G_F}{G}(dP_{I,S})(\bar{s}s)$	$\mathbf{C}$
dsss	$rac{4Q_F^2}{\sqrt{2}}(ar{d}P_L\sigma^{\mu u}s)(ar{s}\sigma_{\mu u}s)$	$^{\mathrm{C}}$
dsss	$\frac{\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\sigma^{\mu\nu}s)(\bar{s}\sigma_{\mu\nu}s)}{\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho\sigma}s)(\bar{s}\gamma^{\mu\nu\rho\sigma}s)}$ $\frac{\frac{4G_F}{\sqrt{2}}(\bar{d}\gamma_{\mu}P_Ls)(\bar{d}\gamma^{\mu}d)}{\frac{4G_F}{\sqrt{2}}(\bar{d}\gamma_{\mu}P_Rs)(\bar{d}\gamma^{\mu}d)}$	$\mathbf{C}$
sdd	$rac{4Q_F^2}{\sqrt{2}}(ar{d}\gamma_\mu P_L s)(ar{d}\gamma^\mu d)$	$\mathbf{C}$
dsdd	$rac{4\overset{Y_{G}}{\sqrt{2}}}{\sqrt{2}}(ar{d}\gamma_{\mu}P_{R}s)(ar{d}\gamma^{\mu}d)$	$^{\mathrm{C}}$
sdd	$\frac{4Q_F^2}{\sqrt{2}}(ar{d}\gamma_{\mu u ho}P_Ls)(ar{d}\gamma^{\mu u ho}d)$	$^{\mathrm{C}}$
dsdd	$rac{4G_F^c}{\sqrt{2}}(ar{d}\gamma_{\mu u ho}P_Ls)(ar{d}\gamma^{\mu u ho}d) \ rac{4G_F^c}{\sqrt{2}}(ar{d}\gamma_{\mu u ho}P_Rs)(ar{d}\gamma^{\mu u ho}d) \ rac{4G_F^c}{\sqrt{2}}(ar{d}P_Ls)(ar{d}d)$	$\mathbf{C}$
sdd	$\frac{4\tilde{Q}_F^2}{\sqrt{2}}(\bar{d}P_L s)(\bar{d}d)$	$\mathbf{C}$
dsdd	$\frac{4G_F}{c}(dP_R s)(dd)$	$\mathbf{C}$
sdd	$\frac{4\check{G}_F^F}{\sqrt{2}}(\bar{d}\sigma^{\mu\nu}P_Ls)(\bar{d}\sigma_{\mu\nu}d)$	$\mathbf{C}$
dsdd	$\frac{4\check{G}_F}{\sqrt{2}}(\bar{d}\sigma^{\mu\nu}P_Rs)(\bar{d}\sigma_{\mu\nu}d)$	$\mathbf{C}$
sdd	$\frac{4\check{G}_{F}}{\sqrt{2}}(\bar{d}\gamma_{\mu u ho\sigma}P_{L}s)(\bar{d}\gamma^{\mu u ho\sigma}d)$	$\mathbf{C}$
dsdd	$ \frac{4G_F}{\sqrt{2}}(\bar{d}\sigma^{\mu\nu}P_Ls)(\bar{d}\sigma_{\mu\nu}d)  \frac{4G_F}{\sqrt{2}}(\bar{d}\sigma^{\mu\nu}P_Rs)(\bar{d}\sigma_{\mu\nu}d)  \frac{4G_F}{\sqrt{2}}(\bar{d}\gamma_{\mu\nu\rho\sigma}P_Ls)(\bar{d}\gamma^{\mu\nu\rho\sigma}d)  \frac{4G_F}{\sqrt{2}}(\bar{d}\gamma_{\mu\nu\rho\sigma}P_Rs)(\bar{d}\gamma^{\mu\nu\rho\sigma}d)  \frac{4G_F}{\sqrt{2}}(\bar{d}\gamma_{\mu\nu\rho\sigma}P_Rs)(\bar{d}\gamma^{\mu\nu\rho\sigma}d)  \frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu}s)(\bar{e}\gamma^{\mu}e) $	$\mathbf{C}$
see	$\frac{4\ddot{Q}_{R}^{2}}{\sqrt{e}}(\bar{d}P_{R}\gamma_{\mu}s)(\bar{e}\gamma^{\mu}e)$	$^{\mathrm{C}}$

WC name	Operator	Type
1pdsee	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\gamma_\mu s)(\bar{e}\gamma^\mu e)$	C
3dsee	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu\nu\rho}s)(\bar{e}\gamma^{\mu\nu\rho}e)$	$\mathbf{C}$
3pdsee	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho}s)(\bar{e}\gamma^{\mu\nu\rho}e)$	$\mathbf{C}$
5dsee	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_Rs)(\bar{e}e)$	$^{\mathrm{C}}$
5pdsee	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_Ls)(\bar{e}e)$	$^{\mathrm{C}}$
7dsee	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\sigma^{\mu\nu}s)(\bar{e}\sigma_{\mu\nu}e)$	$^{\mathrm{C}}$
7pdsee	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{d}P_L\sigma^{\mu\nu}s)(\bar{e}\sigma_{\mu\nu}e)$	$^{\mathrm{C}}$
9dsee	$\frac{4\tilde{Q}_F}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu\nu\rho\sigma}s)(\bar{e}\gamma^{\mu\nu\rho\sigma}e)$	$\mathbf{C}$
9pdsee	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho\sigma}s)(\bar{e}\gamma^{\mu\nu\rho\sigma}e)$	$\mathbf{C}$
1dsmumu	$\frac{4\tilde{G}_F^c}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{\mu}\gamma^\mu\mu)$	$\mathbf{C}$
1pdsmumu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\gamma_\mu s)(\bar{\mu}\gamma^\mu\mu)$	$^{\mathrm{C}}$
3dsmumu	$\frac{4\overset{Q^2}{G_F}}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu u ho}s)(\bar{\mu}\gamma^{\mu u ho}\mu)$	$\mathbf{C}$
3pdsmumu	$\frac{4\tilde{G}_F^2}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho}s)(\bar{\mu}\gamma^{\mu\nu\rho}\mu)$	$\mathbf{C}$
5dsmumu	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{d}P_Rs)(\bar{\mu}\mu)$	$\mathbf{C}$
5pdsmumu	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{d}P_L s)(\bar{\mu}\mu)$	$\mathbf{C}$
7dsmumu	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{d}P_R\sigma^{\mu\nu}s)(\bar{\mu}\sigma_{\mu\nu}\mu)$	$\mathbf{C}$
7pdsmumu	$\frac{4Q_F^2}{\sqrt{2}}(\bar{d}P_L\sigma^{\mu\nu}s)(\bar{\mu}\sigma_{\mu\nu}\mu)$	$\mathbf{C}$
9dsmumu	$\frac{4\overset{Q^2}{G_F}}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu\nu\rho\sigma}s)(\bar{\mu}\gamma^{\mu\nu\rho\sigma}\mu)$	$\mathbf{C}$
9pdsmumu	$\frac{4G_F^2}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho\sigma}s)(\bar{\mu}\gamma^{\mu\nu\rho\sigma}\mu)$	$\mathbf{C}$

## sdmue

WC name	Operator	Type
1dsemu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{e}\gamma^\mu\mu)$	С
1pdsemu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{e}\gamma^\mu\mu)$ $\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\gamma_\mu s)(\bar{e}\gamma^\mu\mu)$	$\mathbf{C}$
3dsemu	$\frac{\sqrt{2}}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu\nu\rho}s)(\bar{e}\gamma^{\mu\nu\rho}\mu)$	$\mathbf{C}$
3pdsemu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho}s)(\bar{e}\gamma^{\mu\nu\rho}\mu)$	$\mathbf{C}$
5dsemu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_Rs)(\bar{e}\mu)$	$\mathbf{C}$
5pdsemu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_L s)(\bar{e}\mu)$	$\mathbf{C}$
7dsemu	$\frac{4 G_F}{\sqrt{2}} (\bar{d} P_R \sigma^{\mu \nu} s) (\bar{e} \sigma_{\mu \nu} \mu)$	$\mathbf{C}$
7pdsemu	$\frac{4G_F}{\sqrt{2}}(dP_L\sigma^{\mu\nu}s)(\bar{e}\sigma_{\mu\nu}\mu)$	$\mathbf{C}$
9dsemu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu\nu\rho\sigma}s)(\bar{e}\gamma^{\mu\nu\rho\sigma}\mu)$	$\mathbf{C}$
9pdsemu	$\frac{{}^{4}\!$	$\mathbf{C}$

## sdemu

WC name	Operator	Type
1dsmue	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{\mu}\gamma^\mu e)$	C
1pdsmue	$\frac{4\check{G}_F}{\sqrt{2}}(\bar{d}P_L\gamma_\mu s)(\bar{\mu}\gamma^\mu e)$	$\mathbf{C}$
3dsmue	$\frac{4\check{G}_F}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu\nu\rho}s)(\bar{\mu}\gamma^{\mu\nu\rho}e)$	$\mathbf{C}$
3pdsmue	$\frac{4\check{G_F}}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho}s)(\bar{\mu}\gamma^{\mu\nu\rho}e)$	$\mathbf{C}$
5dsmue	$\frac{4\ddot{G_F}}{\sqrt{2}}(\bar{d}P_Rs)(\bar{\mu}e)$	$\mathbf{C}$
5pdsmue	$\frac{4\ddot{G_F}}{\sqrt{2}}(\bar{d}P_Ls)(\bar{\mu}e)$	$\mathbf{C}$
7dsmue	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{d}P_R\sigma^{\mu\nu}s)(\bar{\mu}\sigma_{\mu\nu}e)$	$\mathbf{C}$
7pdsmue	$\frac{4\check{G}_F}{\sqrt{2}}(\bar{d}P_L\sigma^{\mu\nu}s)(\bar{\mu}\sigma_{\mu\nu}e)$	$^{\mathrm{C}}$
9dsmue	$\frac{4\check{G}_F}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu\nu\rho\sigma}s)(\bar{\mu}\gamma^{\mu\nu\rho\sigma}e)$	$^{\mathrm{C}}$
9pdsmue	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{d}P_R\gamma_{\mu\nu\rho\sigma}s)(\bar{\mu}\gamma^{\mu\nu\rho\sigma}e)$ $\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\gamma_{\mu\nu\rho\sigma}s)(\bar{\mu}\gamma^{\mu\nu\rho\sigma}e)$	$^{\mathrm{C}}$

## ${\tt sdnunu}$

WC name	Operator	Type
nu1dsee	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{\nu}_e\gamma^\mu\nu_e)$	С
nu1pdsee	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{d}P_L\gamma_\mu s)(\bar{ u}_e\gamma^\mu u_e)$	$^{\mathrm{C}}$
nu1dsmumu	$\frac{4 \tilde{G}_F}{\sqrt{2}} (\bar{d} P_R \gamma_\mu s) (\bar{\nu}_\mu \gamma^\mu \nu_\mu)$	$^{\mathrm{C}}$
nu1pdsmumu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\gamma_\mu s)(\bar{ u}_\mu\gamma^\mu u_\mu)$	$^{\mathrm{C}}$
nu1dstautau	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{\nu}_\tau\gamma^\mu\nu_ au)$	$^{\mathrm{C}}$
nu1pdstautau	$rac{4 \ddot{G}_F}{\sqrt{2}} (ar{d} P_L \gamma_\mu s) (ar{ u}_ au \gamma^\mu  u_ au)$	$^{\mathrm{C}}$
nu1dsemu	$\frac{4\tilde{G}_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{\nu}_e\gamma^\mu\nu_\mu)$	$^{\mathrm{C}}$
nu1pdsemu	$rac{4 \ddot{G}_F}{\sqrt{2}} (ar{d} P_L \gamma_\mu s) (ar{ u}_e \gamma^\mu  u_\mu)$	$^{\mathrm{C}}$
nu1dsmue	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{\nu}_\mu\gamma^\mu\nu_e)$	$^{\mathrm{C}}$
nu1pdsmue	$\frac{4\check{G}_F}{\sqrt{2}}(\bar{d}P_L\gamma_\mu s)(\bar{ u}_\mu\gamma^\mu u_e)$	$^{\mathrm{C}}$
nu1dsetau	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{ u}_e\gamma^\mu u_ au)$	$^{\mathrm{C}}$
nu1pdsetau	$rac{4 \ddot{G}_F}{\sqrt{2}} (ar{d} P_L \gamma_\mu s) (ar{ u}_e \gamma^\mu  u_ au)$	$^{\mathrm{C}}$
nu1dstaue	$\frac{4\ddot{G}_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{\nu}_\tau\gamma^\mu\nu_e)$	$^{\mathrm{C}}$
nu1pdstaue	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_L\gamma_\mu s)(\bar{\nu}_\tau\gamma^\mu\nu_e)$	$^{\mathrm{C}}$
nu1dstaumu	$\frac{4G_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{\nu}_\tau\gamma^\mu\nu_\mu)$	$^{\mathrm{C}}$
nu1pdstaumu	$\frac{4\check{G}_F}{\sqrt{2}}(\bar{d}P_L\gamma_\mu s)(\bar{ u}_ au\gamma^\mu u_\mu)$	$^{\mathrm{C}}$
nu1dsmutau	$\frac{4\check{G}_F}{\sqrt{2}}(\bar{d}P_R\gamma_\mu s)(\bar{ u}_\mu\gamma^\mu u_ au)$	$^{\mathrm{C}}$
nu1pdsmutau	$rac{4  ilde{G}_F}{\sqrt{2}} (ar{d} P_L \gamma_\mu s) (ar{ u}_\mu \gamma^\mu  u_ au)$	$^{\mathrm{C}}$