

## Basis EOS (EFT WET)

Basis used by the EOS package

### Sectors

The effective Lagrangian is defined as

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

sb

WC name	Operator	Type
b->s::c1	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* (\bar{s}_L \gamma^\mu T^a c_L) (\bar{c}_L \gamma_\mu T^a b_L)$	C
b->s::c2	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* (\bar{s}_L \gamma^\mu c_L) (\bar{c}_L \gamma_\mu b_L)$	C
b->s::c3	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* (\bar{s}_L \gamma^\mu b_L) \sum_q (\bar{q} \gamma_\mu q)$	C
b->s::c4	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* (\bar{s}_L \gamma^\mu T^a b_L) \sum_q (\bar{q} \gamma_\mu T^a q)$	C
b->s::c5	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* (\bar{s}_L \gamma^{\mu_1} \gamma^{\mu_2} \gamma^{\mu_3} b_L) \sum_q (\bar{q} \gamma_{\mu_1} \gamma_{\mu_2} \gamma_{\mu_3} q)$	C
b->s::c6	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* (\bar{s}_L \gamma^{\mu_1} \gamma^{\mu_2} \gamma^{\mu_3} T^a b_L) \sum_q (\bar{q} \gamma_{\mu_1} \gamma_{\mu_2} \gamma_{\mu_3} T^a q)$	C
b->s::c7	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e}{16\pi^2} m_b (\bar{s}_L \sigma_{\mu\nu} b_R) F^{\mu\nu}$	C
b->s::c7'	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e}{16\pi^2} m_b (\bar{s}_R \sigma_{\mu\nu} b_L) F^{\mu\nu}$	C
b->s::c8	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{g_s}{16\pi^2} m_b (\bar{s}_L \sigma_{\mu\nu} T^a b_R) G^{a\mu\nu}$	C
b->s::c8'	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{g_s}{16\pi^2} m_b (\bar{s}_R \sigma_{\mu\nu} T^a b_L) G^{a\mu\nu}$	C
b->see::c9	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} (\bar{s}_L \gamma^\mu b_L) (\bar{e} \gamma_\mu e)$	C
b->see::c9'	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} (\bar{s}_R \gamma^\mu b_R) (\bar{e} \gamma_\mu e)$	C
b->see::c10	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} (\bar{s}_L \gamma^\mu b_L) (\bar{e} \gamma_\mu \gamma_5 e)$	C
b->see::c10'	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} (\bar{s}_R \gamma^\mu b_R) (\bar{e} \gamma_\mu \gamma_5 e)$	C
b->see::cS	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} m_b (\bar{s}_L b_R) (\bar{e} e)$	C
b->see::cS'	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} m_b (\bar{s}_R b_L) (\bar{e} e)$	C
b->see::cP	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} m_b (\bar{s}_L b_R) (\bar{e} \gamma_5 e)$	C
b->see::cP'	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} m_b (\bar{s}_R b_L) (\bar{e} \gamma_5 e)$	C
b->see::cT	$\frac{4G_F}{\sqrt{2}} V_{ub} \frac{e^2}{16\pi^2} (\bar{s} \sigma_{\mu\nu} b) (\bar{e} \sigma_{\mu\nu} e)$	C
b->see::cT5	$\frac{4G_F}{\sqrt{2}} V_{ub} \frac{e^2}{16\pi^2} (\bar{s} \sigma_{\mu\nu} b) (\bar{e} \sigma_{\mu\nu} \gamma_5 e)$	C
b->smumu::c9	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} (\bar{s}_L \gamma^\mu b_L) (\bar{\mu} \gamma_\mu \mu)$	C
b->smumu::c9'	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} (\bar{s}_R \gamma^\mu b_R) (\bar{\mu} \gamma_\mu \mu)$	C
b->smumu::c10	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} (\bar{s}_L \gamma^\mu b_L) (\bar{\mu} \gamma_\mu \gamma_5 \mu)$	C

WC name	Operator	Type
b->smumu::c10'	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} (\bar{s}_R \gamma^\mu b_R) (\bar{\mu} \gamma_\mu \gamma_5 \mu)$	C
b->smumu::cS	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} m_b (\bar{s}_L b_R) (\bar{\mu} \mu)$	C
b->smumu::cS'	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} m_b (\bar{s}_R b_L) (\bar{\mu} \mu)$	C
b->smumu::cP	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} m_b (\bar{s}_L b_R) (\bar{\mu} \gamma_5 \mu)$	C
b->smumu::cP'	$\frac{4G_F}{\sqrt{2}} V_{tb} V_{ts}^* \frac{e^2}{16\pi^2} m_b (\bar{s}_R b_L) (\bar{\mu} \gamma_5 \mu)$	C
b->smumu::cT	$\frac{4G_F}{\sqrt{2}} V_{ub} \frac{e^2}{16\pi^2} (\bar{s} \sigma_{\mu\nu} b) (\bar{\mu} \sigma_{\mu\nu} \mu)$	C
b->smumu::cT5	$\frac{4G_F}{\sqrt{2}} V_{ub} \frac{e^2}{16\pi^2} (\bar{s} \sigma_{\mu\nu} b) (\bar{\mu} \sigma_{\mu\nu} \gamma_5 \mu)$	C

#### cbenu

WC name	Operator	Type
b->cenue::cVL	$-\frac{4G_F}{\sqrt{2}} V_{cb} (\bar{c}_L \gamma^\mu b_L) (\bar{e}_L \gamma_\mu \nu_{eL})$	C
b->cenue::cVR	$-\frac{4G_F}{\sqrt{2}} V_{cb} (\bar{c}_R \gamma^\mu b_R) (\bar{e}_L \gamma_\mu \nu_{eL})$	C
b->cenue::cSR	$-\frac{4G_F}{\sqrt{2}} V_{cb} (\bar{c}_L b_R) (\bar{e}_R \nu_{eL})$	C
b->cenue::cSL	$-\frac{4G_F}{\sqrt{2}} V_{cb} (\bar{c}_R b_L) (\bar{e}_R \nu_{eL})$	C
b->cenue::cT	$-\frac{4G_F}{\sqrt{2}} V_{cb} (\bar{c}_R \sigma^{\mu\nu} b_L) (\bar{e}_R \sigma_{\mu\nu} \nu_{eL})$	C

#### cbmunu

WC name	Operator	Type
b->cmunumu::cVL	$-\frac{4G_F}{\sqrt{2}} V_{ub} (\bar{c}_L \gamma^\mu b_L) (\bar{\mu}_L \gamma_\mu \nu_{\mu L})$	C
b->cmunumu::cVR	$-\frac{4G_F}{\sqrt{2}} V_{ub} (\bar{c}_R \gamma^\mu b_R) (\bar{\mu}_L \gamma_\mu \nu_{\mu L})$	C
b->cmunumu::cSR	$-\frac{4G_F}{\sqrt{2}} V_{ub} (\bar{c}_L b_R) (\bar{\mu}_R \nu_{\mu L})$	C
b->cmunumu::cSL	$-\frac{4G_F}{\sqrt{2}} V_{ub} (\bar{c}_R b_L) (\bar{\mu}_R \nu_{\mu L})$	C
b->cmunumu::cT	$-\frac{4G_F}{\sqrt{2}} V_{ub} (\bar{c}_R \sigma^{\mu\nu} b_L) (\bar{\mu}_R \sigma_{\mu\nu} \nu_{\mu L})$	C

#### ubenu

WC name	Operator	Type
b->uenue::cVL	$-\frac{4G_F}{\sqrt{2}} V_{ub} (\bar{u}_L \gamma^\mu b_L) (\bar{e}_L \gamma_\mu \nu_{eL})$	C
b->uenue::cVR	$-\frac{4G_F}{\sqrt{2}} V_{ub} (\bar{u}_R \gamma^\mu b_R) (\bar{e}_L \gamma_\mu \nu_{eL})$	C
b->uenue::cSR	$-\frac{4G_F}{\sqrt{2}} V_{ub} (\bar{u}_L b_R) (\bar{e}_R \nu_{eL})$	C
b->uenue::cSL	$-\frac{4G_F}{\sqrt{2}} V_{ub} (\bar{u}_R b_L) (\bar{e}_R \nu_{eL})$	C

WC name	Operator	Type
<b>b-&gt;uenue::cT</b>	$-\frac{4G_F}{\sqrt{2}}V_{ub}(\bar{u}_R\sigma^{\mu\nu}b_L)(\bar{e}_R\sigma_{\mu\nu}\nu_{eL})$	C

**ubmunu**

WC name	Operator	Type
<b>b-&gt;umunumu::cVL</b>	$-\frac{4G_F}{\sqrt{2}}V_{ub}(\bar{u}_L\gamma^\mu b_L)(\bar{\mu}_L\gamma_\mu\nu_{\mu L})$	C
<b>b-&gt;umunumu::cVR</b>	$-\frac{4G_F}{\sqrt{2}}V_{ub}(\bar{u}_R\gamma^\mu b_R)(\bar{\mu}_L\gamma_\mu\nu_{\mu L})$	C
<b>b-&gt;umunumu::cSR</b>	$-\frac{4G_F}{\sqrt{2}}V_{ub}(\bar{u}_L b_R)(\bar{\mu}_R\nu_{\mu L})$	C
<b>b-&gt;umunumu::cSL</b>	$-\frac{4G_F}{\sqrt{2}}V_{ub}(\bar{u}_R b_L)(\bar{\mu}_R\nu_{\mu L})$	C
<b>b-&gt;umunumu::cT</b>	$-\frac{4G_F}{\sqrt{2}}V_{ub}(\bar{u}_R\sigma^{\mu\nu}b_L)(\bar{\mu}_R\sigma_{\mu\nu}\nu_{\mu L})$	C