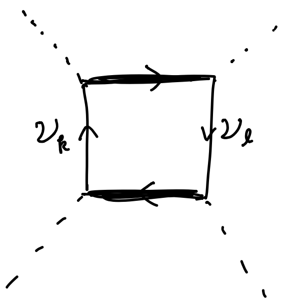
Weyl $\qquad\qquad\qquad$ Peskin 4-component

$$\mathcal{L} \supset H_0\, y_{k\alpha}\, \nu_k\, \bar{N}_\alpha = y_{k\alpha} H_0\, \bar{N}_\alpha P_L \nu_k$$



no chirality flip.

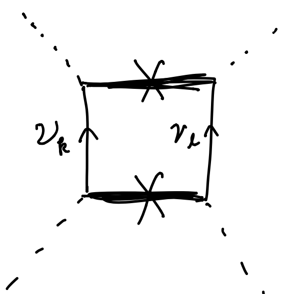
$$(y_{k\alpha}\bar{N}_\alpha P_L \nu_k)(y_{k\beta}\bar{N}_\beta P_L \nu_k)^*$$

contraction

$$(y_{\ell\alpha}\bar{N}_\alpha P_L \nu_\ell)^*(y_{\ell\beta}\bar{N}_\beta P_L \nu_\ell)$$

$$\propto y_{k\alpha}\, y^*_{k\beta}\, y^*_{\ell\alpha}\, y_{\ell\beta} \equiv (\omega^*_\beta\cdot\omega_\alpha)(\omega^*_\alpha\cdot\omega_\beta)$$

[Brivio's]



with chirality flips.

$$(y_{k\alpha}\bar{N}_\alpha P_L \nu_k)(y_{k\beta}\bar{N}_\beta P_L \nu_k)^*$$

contraction

$$(y_{\ell\alpha}\bar{N}_\alpha P_L \nu_\ell)(y_{\ell\beta}\bar{N}_\beta P_L \nu_\ell)^*$$

$$\propto y_{k\alpha}\, y^*_{k\beta}\, y_{\ell\alpha}\, y^*_{\ell\beta} \equiv (\omega^*_\beta\cdot\omega_\alpha)^2 \quad \text{[Sho's]}$$