59 = a small number...

Theory

$$\cancel{\mathcal{O}^{ff'}_{LL,RR,LR} = \frac{J^\mu_f J_{f',\mu}}{m_W^2}}$$

$$\cancel{\mathcal{O}^{f\,(3)}_{L,R} = \frac{J^\mu_h J_{f,\mu}}{m_W^2}}$$ 4q+1l

$$\cancel{\mathcal{O}_{W,B} = \frac{J_{h,\mu} J^\mu_{W,B}}{m_W^2}}$$ 2

$$\cancel{\mathcal{O}_T = \frac{J^\mu_h J_{h,\mu}}{m_W^2}}$$ 1

$$\mathcal{O}_{HB,\cancel{HW}} = \frac{ig'}{m_W^2}(D_\mu H)^\dagger (D_\nu H) V^{\mu\nu}_{V=W,B}$$ 2

Experiments

(LEP-II + LHC)$^{\text{High-E}}$ $\sim \frac{E^2}{m_W^2}$

4 LEP-I$^{\text{(leptons)}}$ + LHC$^{\text{(Mw)}}$

3 LEP-I$^{\text{(hadrons)}}$

1 KLOE$^{\text{(beta-decay)}}$

2 LEP-II$^{\text{(ee->WW)}}$

$$\mathcal{O}_{\gamma,g} = \frac{g^2_{\gamma,g}|H|^2}{m_W^2}(F^{\mu\nu}_{\gamma,g})^2,$$ 2 — $hgg,\ h\gamma\gamma$

$$\mathcal{O}^f_y = \frac{y_f}{v^2}|H|^2 \bar{f}_L H f_R$$ 3 — $h\bar{f}f$

$$\mathcal{O}_H = \frac{\left(\partial^\mu \left(H^\dagger H\right)\right)^2}{2v^2}$$ 1 — hVV

LHC$^{\text{(Higgs)}}$

59 = a small number...

Theory

Experiments

$$\cancel{\mathcal{O}^{ff'}_{LL,RR,LR} = \frac{J^\mu_f J_{f',\mu}}{m_W^2}}$$

$$\cancel{\mathcal{O}^{f\,(3)}_{L,R} = \frac{J^\mu_h J_{f,\mu}}{m_W^2}}$$

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$$\cancel{\mathcal{O}_T = \frac{J^\mu_h J_{h,\mu}}{m_W^2}}$$

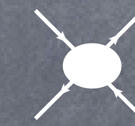
$$\mathcal{O}_{HB,\cancel{HW}} = \frac{ig'}{m_W^2}(D_\mu H)^\dagger (D_\nu H) V^{\mu\nu}_{V=W,B}$$

4q+1l

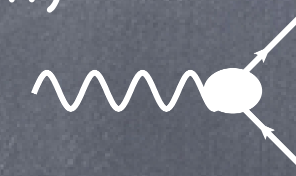
2

1

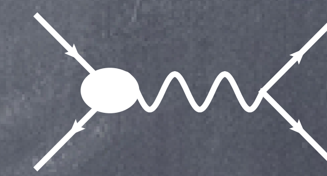
2

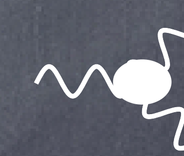
(LEP-II + LHC)High-E  $\sim \frac{E^2}{m_W^2}$

4 LEP-I(leptons) + LHC(Mw)



3 LEP-I(hadrons)

1 KLOE(beta-decay) 

2 LEP-II(ee->WW) 

$$\mathcal{O}_{\gamma,g} = \frac{g^2_{\gamma,g}|H|^2}{m_W^2}(F^{\mu\nu}_{\gamma,g})^2,$$ 2

$$\mathcal{O}^f_y = \frac{y_f}{v^2}|H|^2 \bar{f}_L H f_R$$ 3

$$\mathcal{O}_H = \frac{\left(\partial^\mu \left(H^\dagger H\right)\right)^2}{2v^2}$$ 1

$hZ\gamma$

$hgg,\, h\gamma\gamma$

$h\bar{f}f$

hVV

LHC(Higgs)

59 = a small number...

Even the most general parametrization leads to predictions:

Allowed: deviations in

$$gg \to h \qquad \begin{array}{l} h \to \gamma\gamma \\ h \to \bar{f}f \\ h \to WW, ZZ \quad \text{(not individually)} \\ h \to Z\gamma \end{array}$$

Not Allowed:

$$\frac{\delta(h \to WW)}{h \to WW} \neq \frac{\delta(h \to ZZ)}{h \to ZZ} \qquad (\lambda_{WZ} \neq 1)$$

extra deviations in

$$h \to W\bar{f}f$$

$$h \to Z\bar{f}f$$