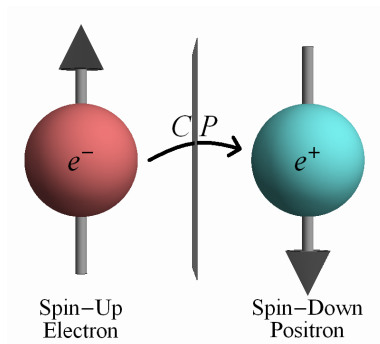




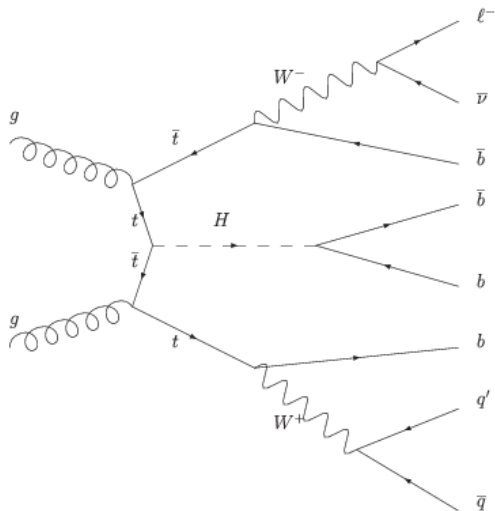
Study of the Higgs couplings to top quarks in ATLAS

Objectives

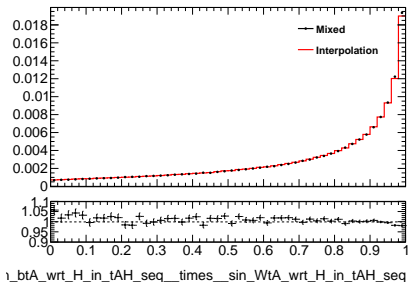
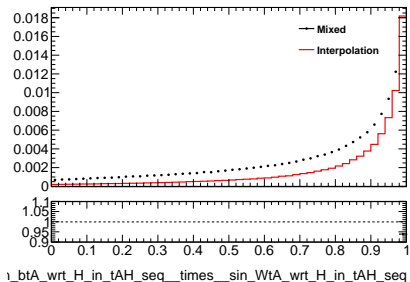


- CP even - SM
- CP odd - BSM
- Mixed (50% CP even / 50% CP odd)

Higgs boson produced in association with a top-quark pair

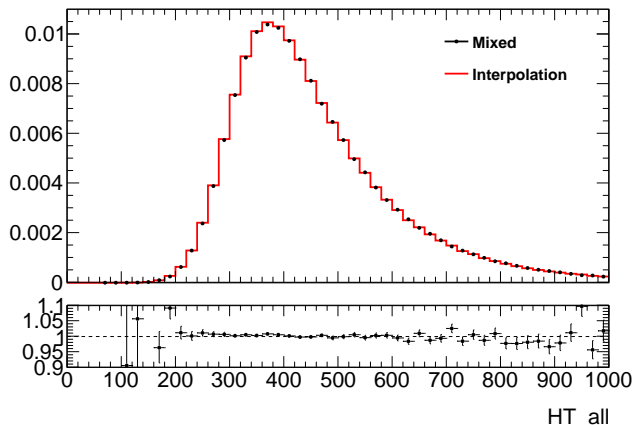


- dileptonic vs semi-leptonic



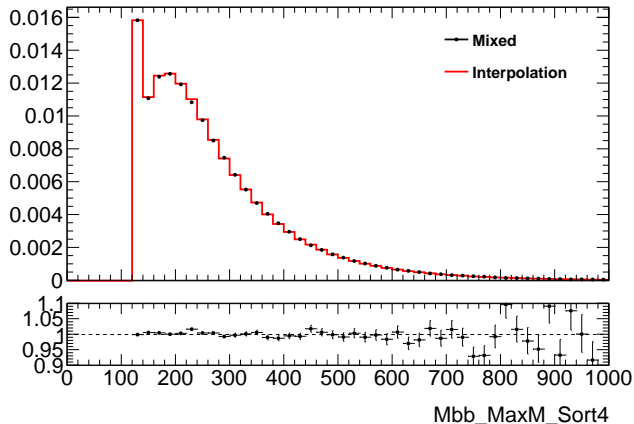
$$\mathcal{L} = \kappa y_t \bar{t} (\cos \alpha + i \gamma_5 \sin \alpha) t h \quad (1)$$

HT_all - Scalar sum of the HT of all final state objects

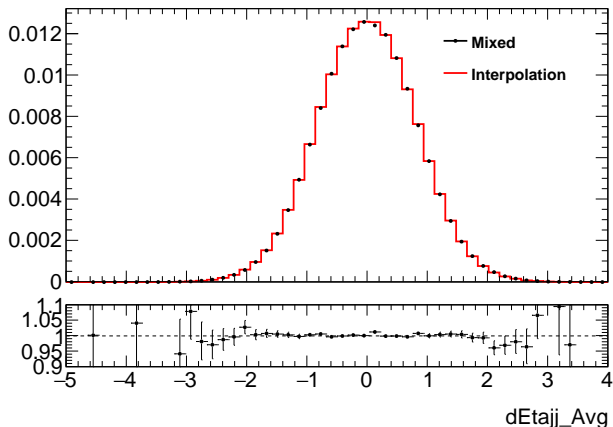


- 2 leptons
- 4 b quarks

Mbb_MaxM_Sort4 - Choose pairing that maximizes invariant mass

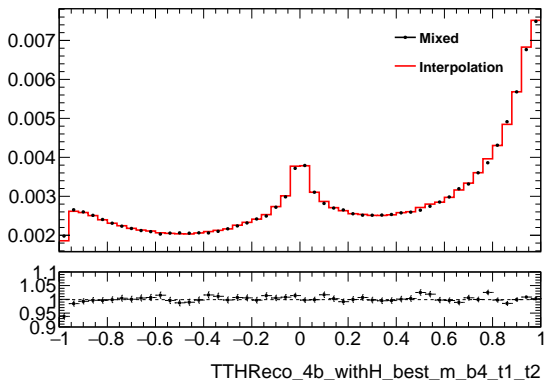


dEta_{j,j}_Avg - average delta Eta between all jet pairs including b jets



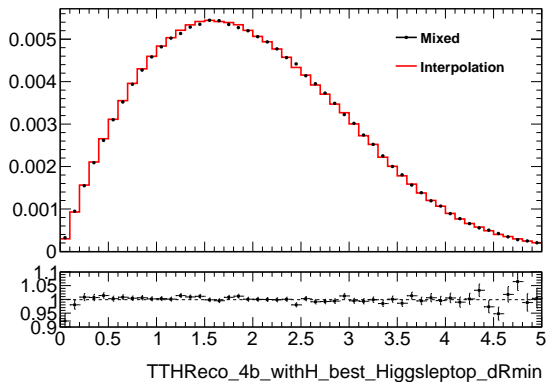
$$\eta = -\ln\left(\tan\frac{\theta}{2}\right) \quad (2)$$

TTHReco_4b_withH_best_m_b4_t1_t2 - b4 variable computed for the top and anti top



$$\frac{p_z(t_1) \cdot p_z(t_2)}{p(t_1) \cdot p(t_2)} \quad (3)$$

TTHReco_4b_withH_best_Higgslepton_dRmin - dRmin between lep and Higgs



$$dR = \sqrt{(\Delta\eta)^2 + (\Delta\phi)^2} \quad (4)$$