

$\Delta\phi_{||}$ comparison at LHE level

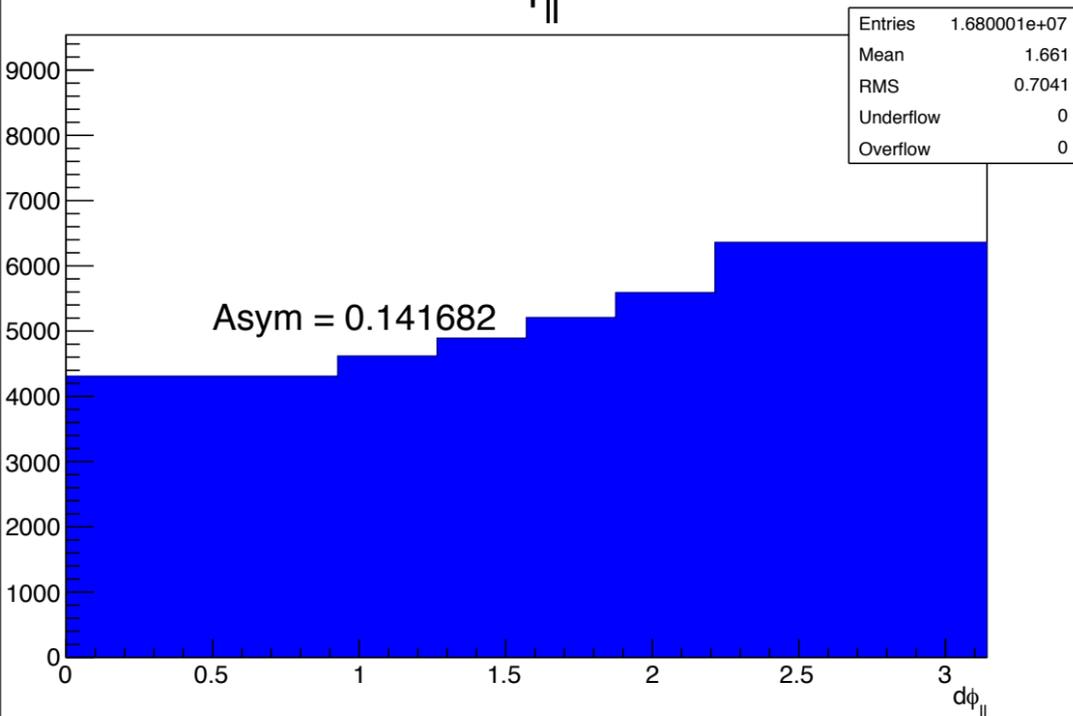
- $\Delta\phi_{||}$ is evaluated in the lab frame (azimuthal angle difference between the two leptons)
- For each sample I plotted $\Delta\phi_{||}$ and calculated the asymmetry variable used in the spin correlation analysis:

$$\text{Asym} = (\mathbf{N}_{\Delta\phi > \pi/2} - \mathbf{N}_{\Delta\phi < \pi/2}) / (\mathbf{N}_{\text{total}})$$

TTJets_FullLeptMGDecays_8TeV-madgraph:

Asym = 0.142

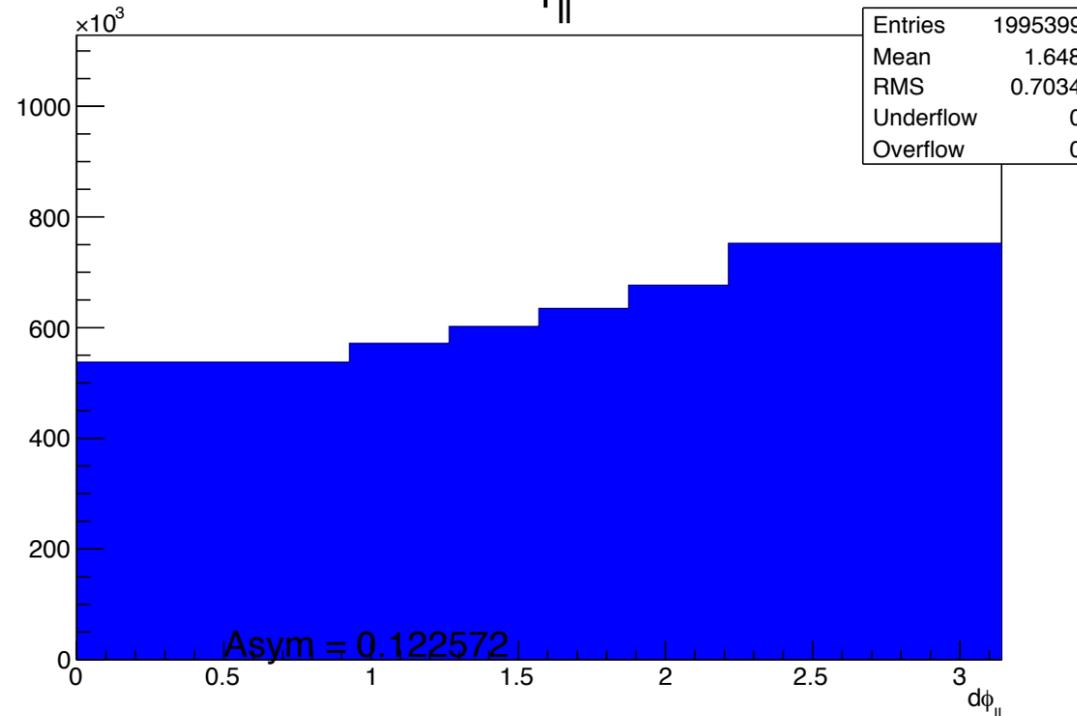
$d\phi_{||}$



TT_CT10_TuneZ2star_8TeV-powheg-tauola:

Asym = 0.123

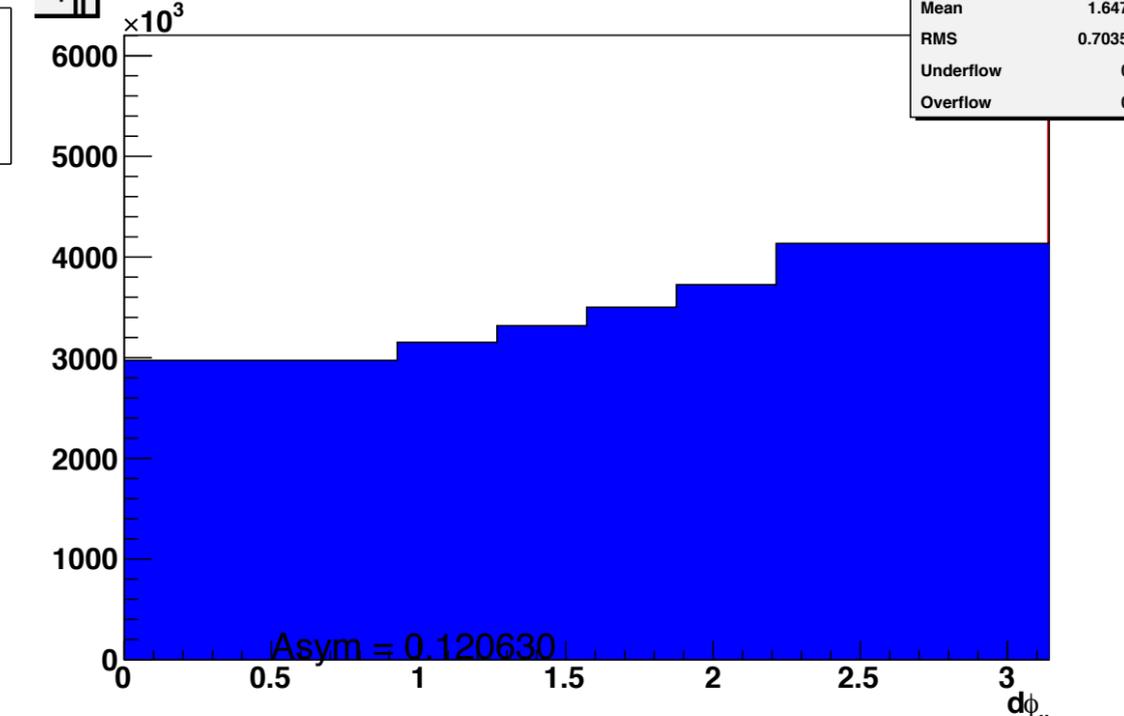
$d\phi_{||}$



TTTo2L2Nu2B_7TeV-powheg-pythia6:

Asym = 0.121

$d\phi_{||}$



- Previously I calculated the asym for the uncorrelated sample, TTJets_MassiveBinDECAY_8TeV-madgraph: Asym = 0.22

- Conclusion: all 3 of the above ttbar samples are produced with spin correlations

- but not sure how to explain difference between madgraph and powheg - are the two generators compatible at LHE level?