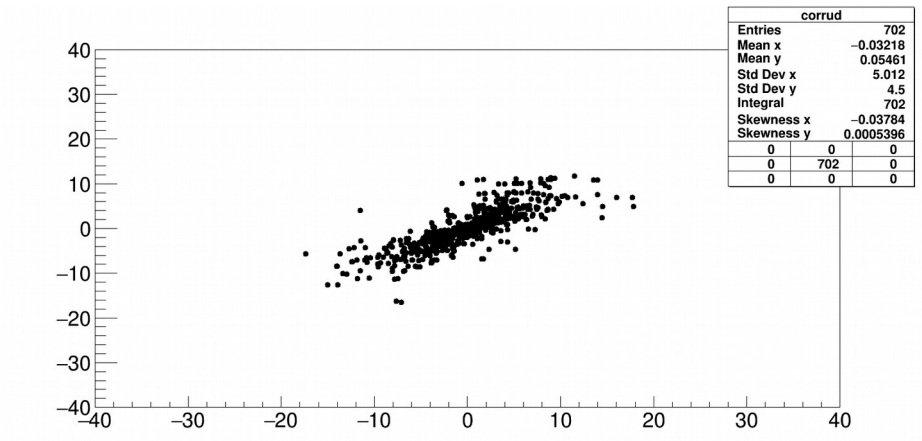
Systematic uncertainty on emulation procedure

- Closure test : how well do the emulated shifts compare to the shifts from the published analyses?

- Idea : use ATLAS data for this comparison, before combination (more statistics and larger effects)
  - 28 categories x 25 shifts
  - up; down; symmetrized
  - pTl, mTW, all

pTl

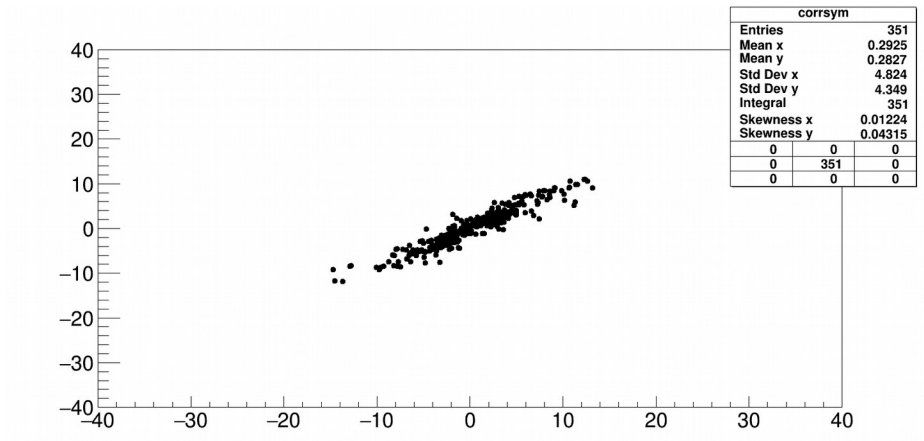
emulated



published

Up, down separately

emulated

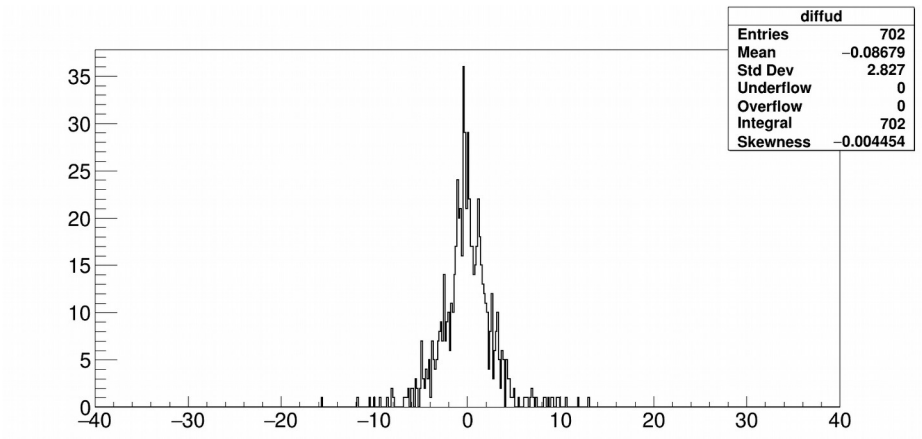


published

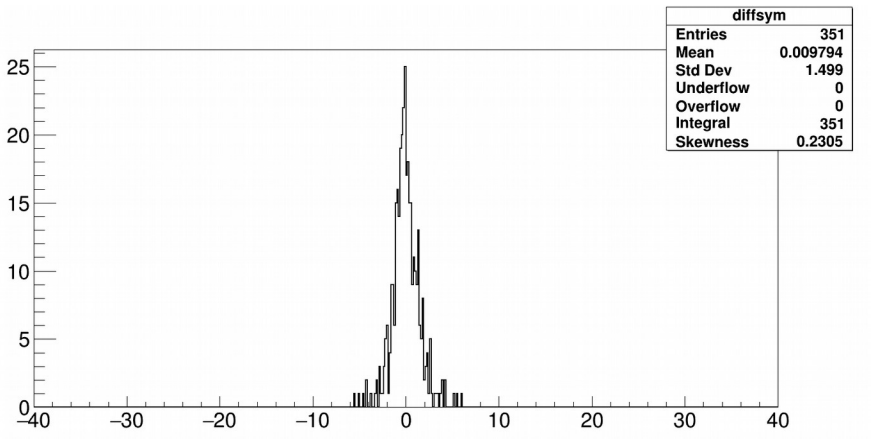
Symmetrized

pTl

Emulated - published



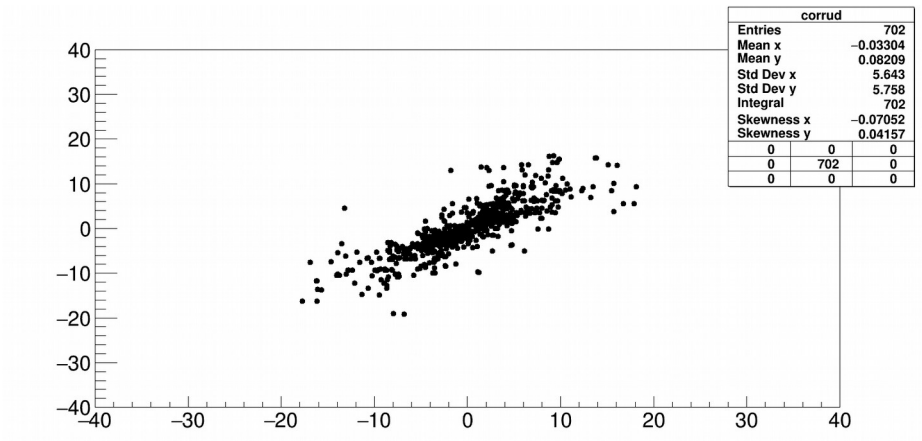
Up, down separately



Symmetrized

mTW

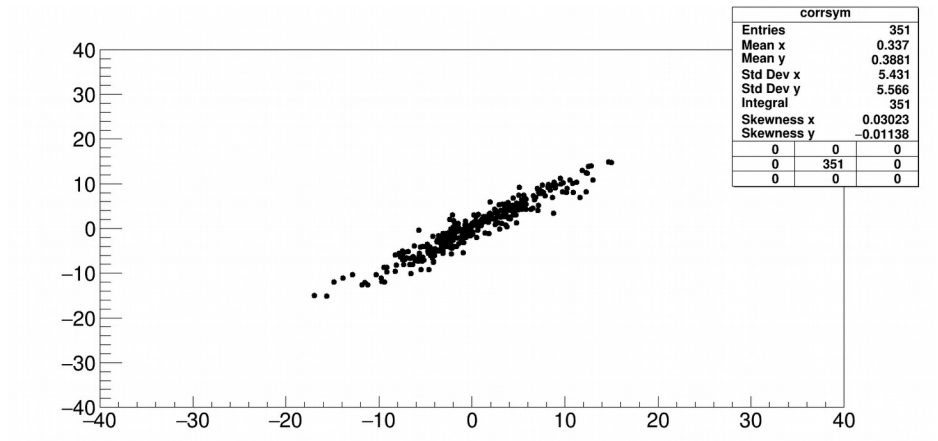
emulated



published

Up, down separately

emulated

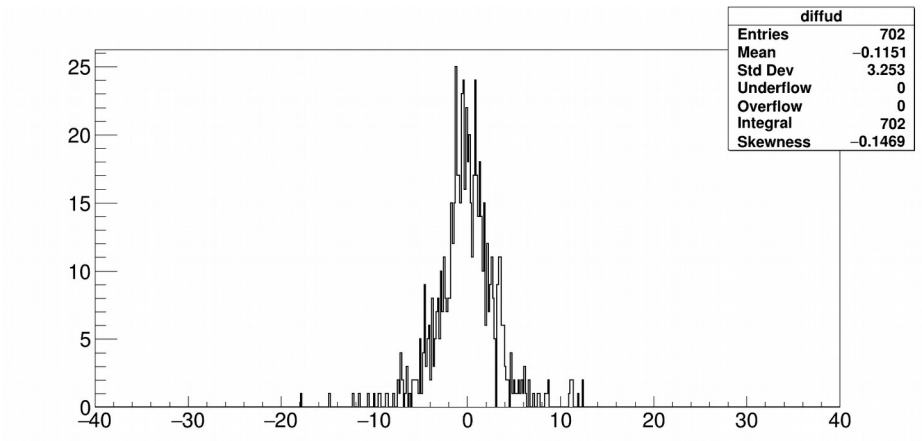


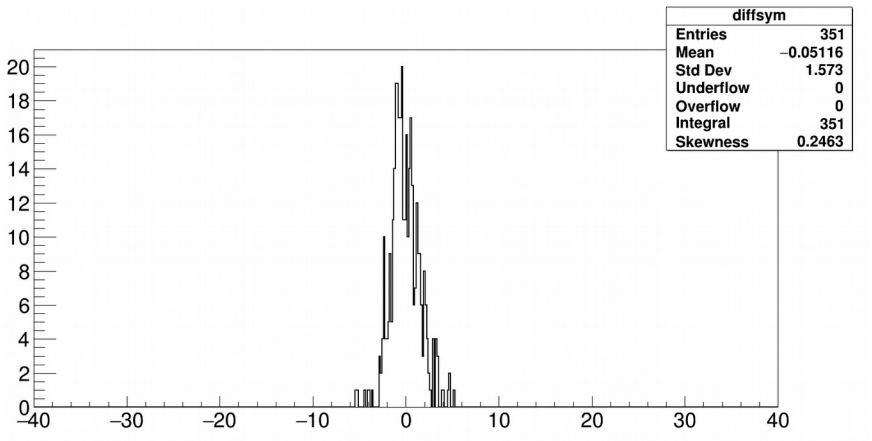
published

Symmetrized

mTW

Emulated - published



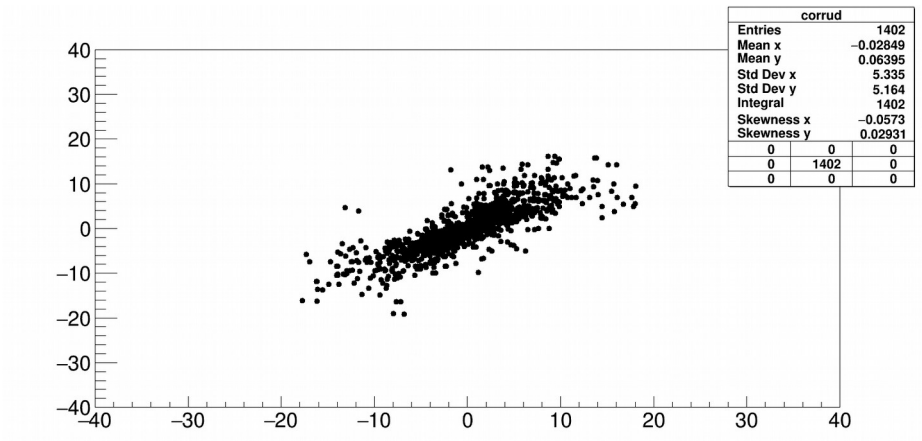


Up, down separately

Symmetrized

all

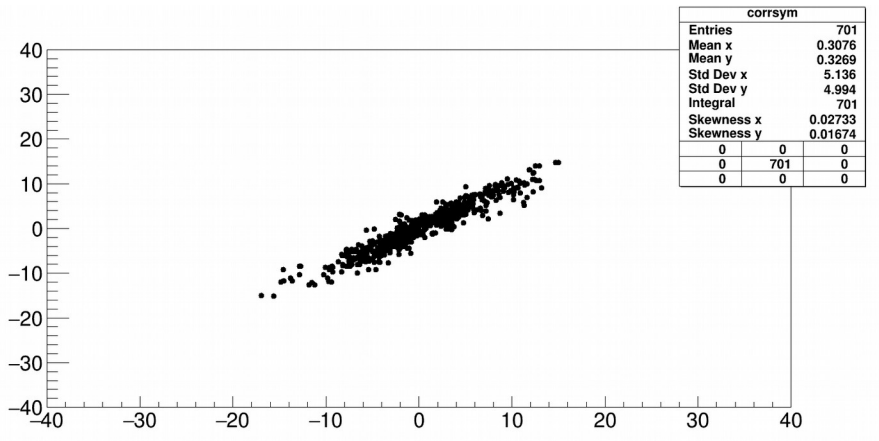
emulated



published

Up, down separately

emulated

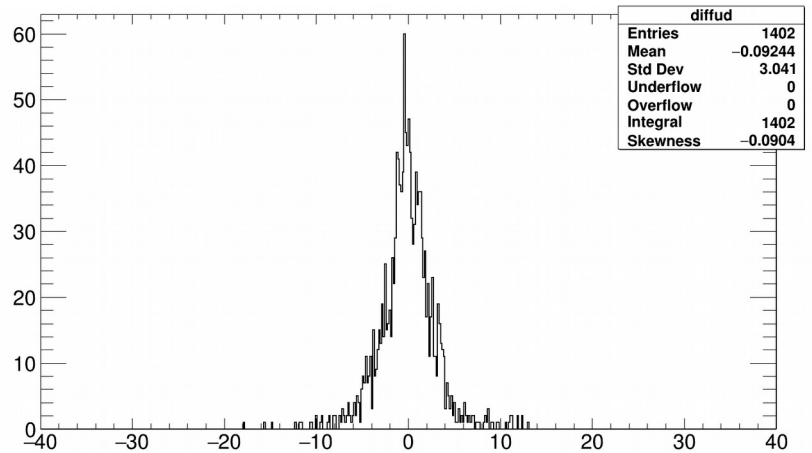


published

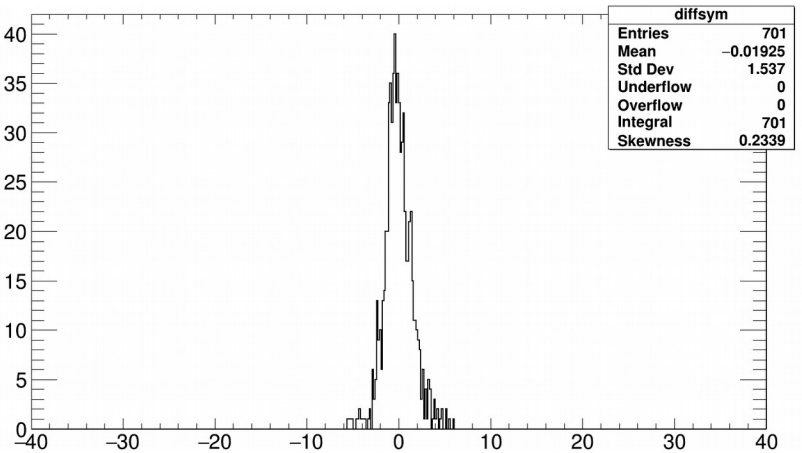
Symmetrized

all

Emulated - published



Up, down separately



Symmetrized

Conclusions

- Propose to use 1.5 MeV systematic from symmetrized comparison, as the combination symmetrizes the uncertainties.

- Represents the sum of
  - Finite MC statistics on both sides
  - Differences in PDF reweighting : (pT,y,Ai) vs Powheg internal
  - Impact of PTZ constraint