discussion

Effects of electroweak corrections

- We welcome the compilation of the results of these codes, and the ongoing estimate on the Wmass fits
- Interest for the experimental community
  - Codes and programs setups,
    - for the reproducibility of benchmarks
    - The experiments need to remake with cuts
    - Need flag to enable evaluation of systematics
  - Important benchmarks:
    - POWHEG (QCD + EW) + Pythia QED
    - POWHEG (QCD) + Photos
  - These are the starting points on top of which we would need to evaluate residual systematics
 - Important for the Z and W (since we need for the lepton calibration and final W mass results)

pT(W/Z): Z tuning & Z → W extrapolation

- Parton shower tuning
  - ptZ vs UE strategy: How many steps ?
  - Current approaches: Powheg + Pythia
    - RESBOS; DYRES, Enough ? Other important attempts
  - Ensure a common PDF at this level
  - A first exercise would consist in comparing the predicted W distributions in all approaches (not only the Wpt)
- Z→W
  - Accuracy of the tools (NLO vs NLL)
  - What is universal and what is not ?
  - Compare transfer functions from POWHEG / DYRES
  - Which plot best illustrated the universality between W and Z (removing effects from different incoming flavours, mass, x1 &x2) ?

PDF

- Various theory predictions can be used to evaluate PDF uncertainties: MCFM, RESBOS, DYRES, POWHEG, aMC@NLO.
  Should we expect such tools to provide the same estimation of PDF uncertainties? Should we agree on which prediction(s) can be safely used?

- Various PDF set are available on the market, at least CT10, MSTW, NNPDF, but also ABM, JR, HERAPDF, and recently also ATLAS and CMS PDF sets. Do we want to agree on a common PDF set? We should at least be sure that ATLAS and CMS results can be combined accounting for the correlation of PDF uncertainties

- Prescription for evaluating PDF uncertainties: single set? envelope as in PDF4LHC prescription? META-PDF?

- Is the measurement of m_W at different collider energies, 7, 8, 13 TeV, beneficial for the reduction of PDF uncertainties?

- Which LHC measurements can further constrain the PDF uncertainties for m_W?
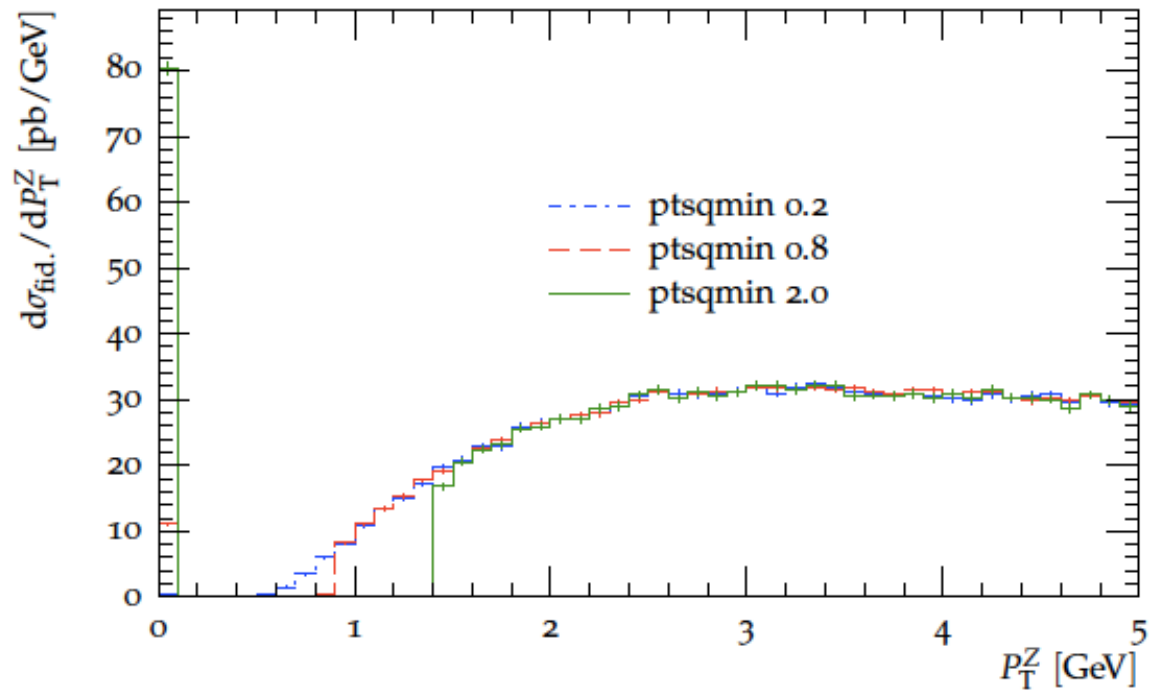
Polarization coefficients

- What can explain the observe differences
  - Deviation from the fixed order calculation for each bin in pt and Y
- Can we define a theoretical prediction (and it's uncertainty) for these quantities ?

Experimental Workflow

- Comparison of measurements
  - Format:
    - Generator-level kinematic distributions for a given mass ?
    - Unfolded distributions? Including Uncertainties ?
  - Relevant distributions :
    - Z rapidity, W lepton rapidity
    - W-Z transverse momentum distributions
    - W,Z resonance lineshapes

- Update of existing measurements :

  … upon newer PDF, MC tuning following new measurements of theoretical refinements

  How/When to update the MW or check it remains compatible