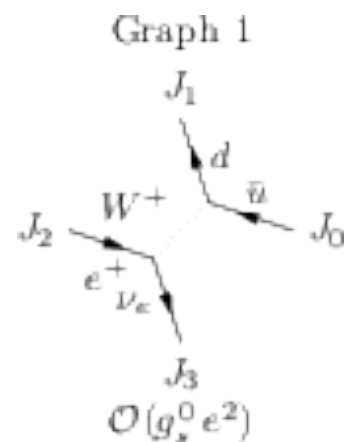# W-mass with Sherpa
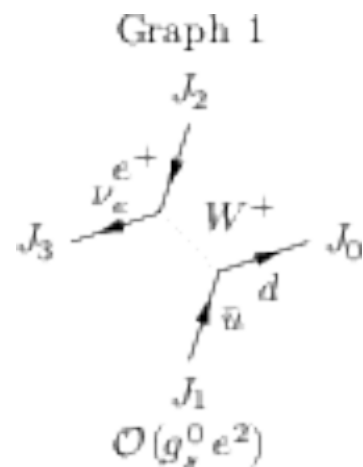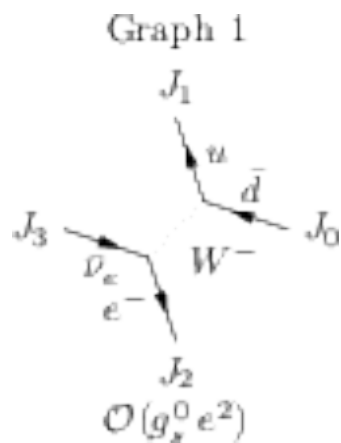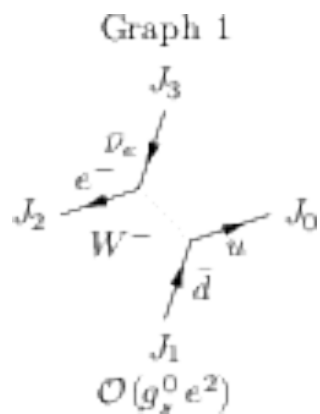
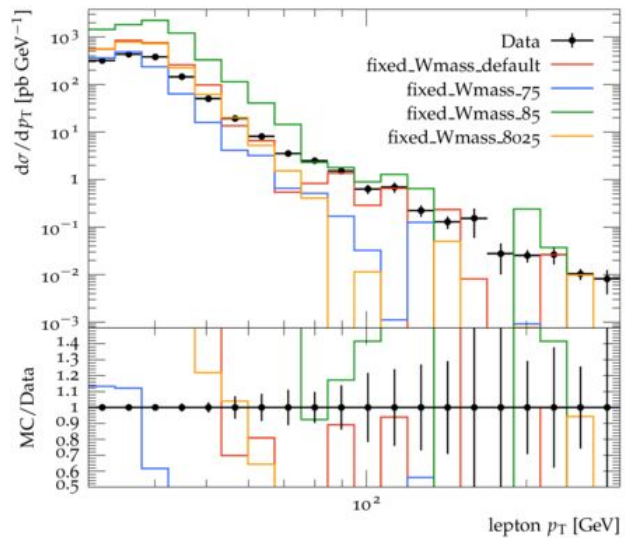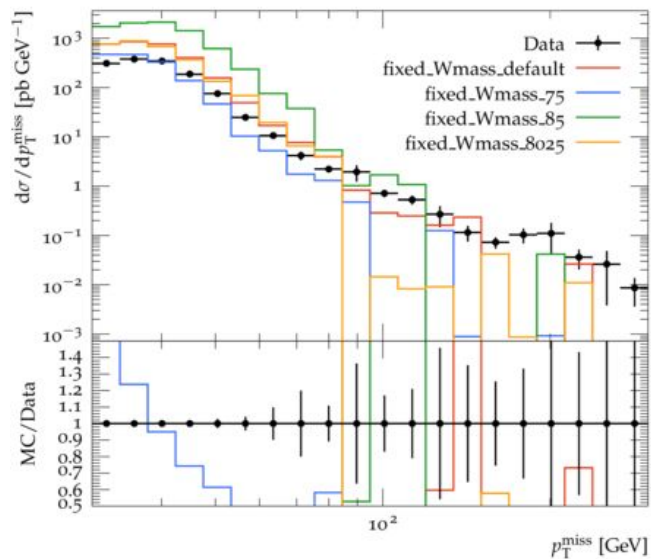MCNet Zakopane 2022 tutorial report

June 24, 2022

What we did

- 13TeV pp collisions
- 7-point Scale Variations; PDF variations (NNPDF30_NNLO_alphaS0118)
- Tried both LO(+Parton shower) and MC@NLO (both with hadronisation).
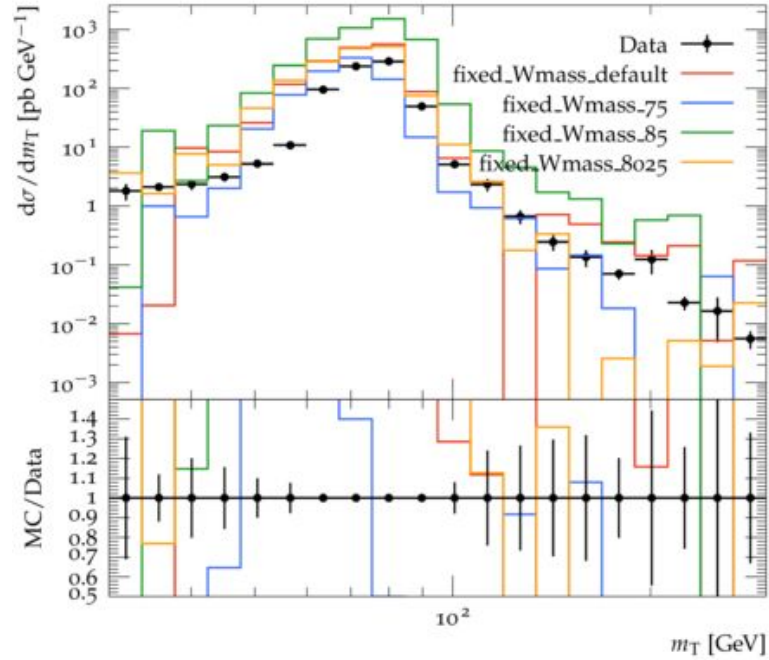- Started with a coarse scan and then zoomed in
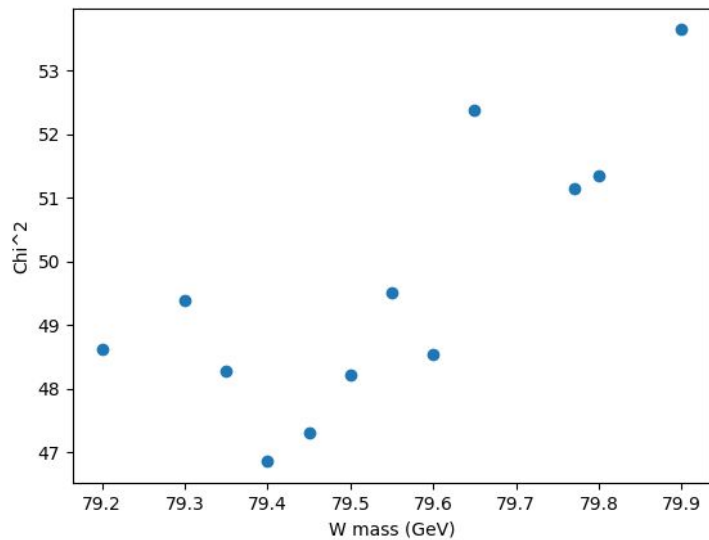
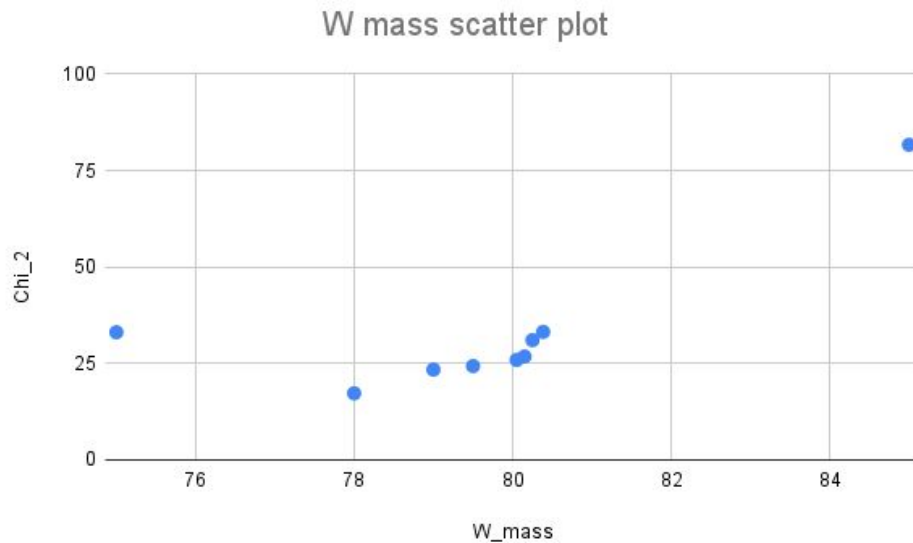# Process

Lepton pT distribution

Missing Energy distribution

Transverse mass distribution
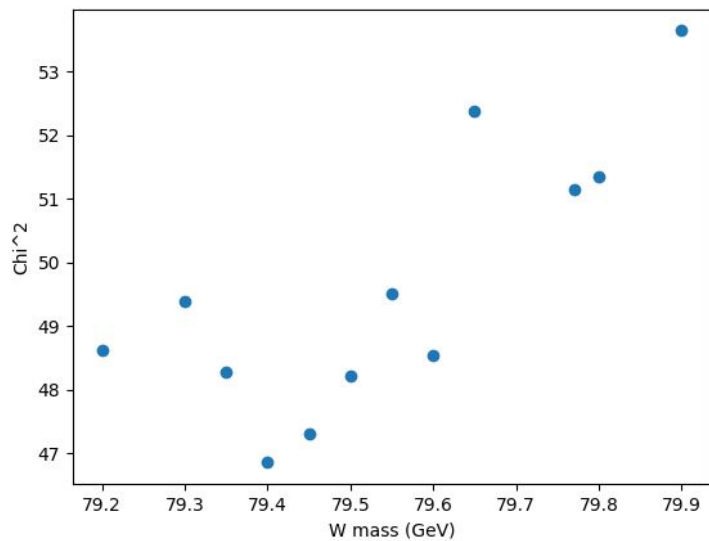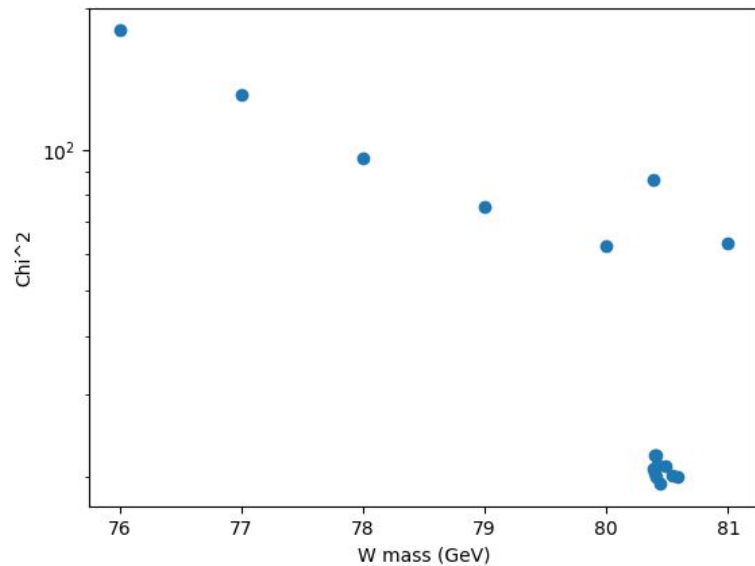
Results (LO)

79.4(5) GeV

78(5) GeV

Results (LO & NLO)

79.4(5) GeV

80.435(5) GeV

Looking back

- **Always** check the run card
- Always check the rivet analysis
- NLO made an important difference.
- Given another go, would try to make process faster - e.g. using cluster, better/smarter/more automated steering scripts for scanning the space.
- Would also be interesting to explore more of the tuning parameters to make sure are results are robust.