Cascade developer meeting

PB-jet publication

- published to arXiv: http://arxiv.org/abs/2112.10465 on Dec 20, 2021
- accepted for publication at EPJC on jan 4, 2022:
  - Comments to the Author

    The paper presents predictions for the aximuthal correlations of two jets in hadron collisions using the TMD formalism as implemented in CASCADE3. The comparison with data is better than that obtained with traditional parton-shower event generators. Another important finding is the effect of the argument of the coupling, which needs to be set to the transverse momentum of emissions to get a good agreement with data. The paper is well written and organised, with very few misprints. Its results are interesting, so I am happy to recommend its publication in the present form.

- this is the fastest acceptance of an article I have seen do far !
- Thanks a lot to all for the contributions and comments !

Azimuthal correlations in dijets – talk at Moriond

- Abstract (from the paper):

  The azimuthal correlation, $\Delta\phi_{12}$, of high transverse momentum jets in pp collisions at $\sqrt{s}$=13 TeV is studied by applying PB-TMD distributions to NLO calculations via MCatNLO together with the PB-TMD parton shower. A very good description of the cross section as a function of $\Delta\phi_{12}$ is observed. In the back-to-back region of $\Delta\phi_{12} \to \pi$, a very good agreement is observed with the PB-TMD Set 2 distributions while significant deviations are obtained with the PB-TMD Set 1 distributions. Set 1 uses the evolution scale while Set 2 uses transverse momentum as an argument in α_s , and the above observation therefore confirms the importance of an appropriate soft-gluon coupling in angular ordered parton evolution. The total uncertainties of the predictions are dominated by the scale uncertainties of the matrix element, while the uncertainties coming from the PB-TMDs and the corresponding PB-TMD shower are very small. The $\Delta\phi_{12}$ measurements are also compared with predictions using MCatNLO together PYTHIA8, illustrating the importance of details of the parton shower evolution.

Nominations for the Moriond talk

Proposal to present a talk at Moriond QCD conference:
https://moriond.in2p3.fr/2022/QCD/

Conference is still planned to be in-persona (!!!)

Nominations came from many different people, including the participant of the MC school.

All nominees are highly qualified to give the talk.

- Armando
- Mees
- Sara
- Stefan
- Qun

Nominations for the Moriond talk

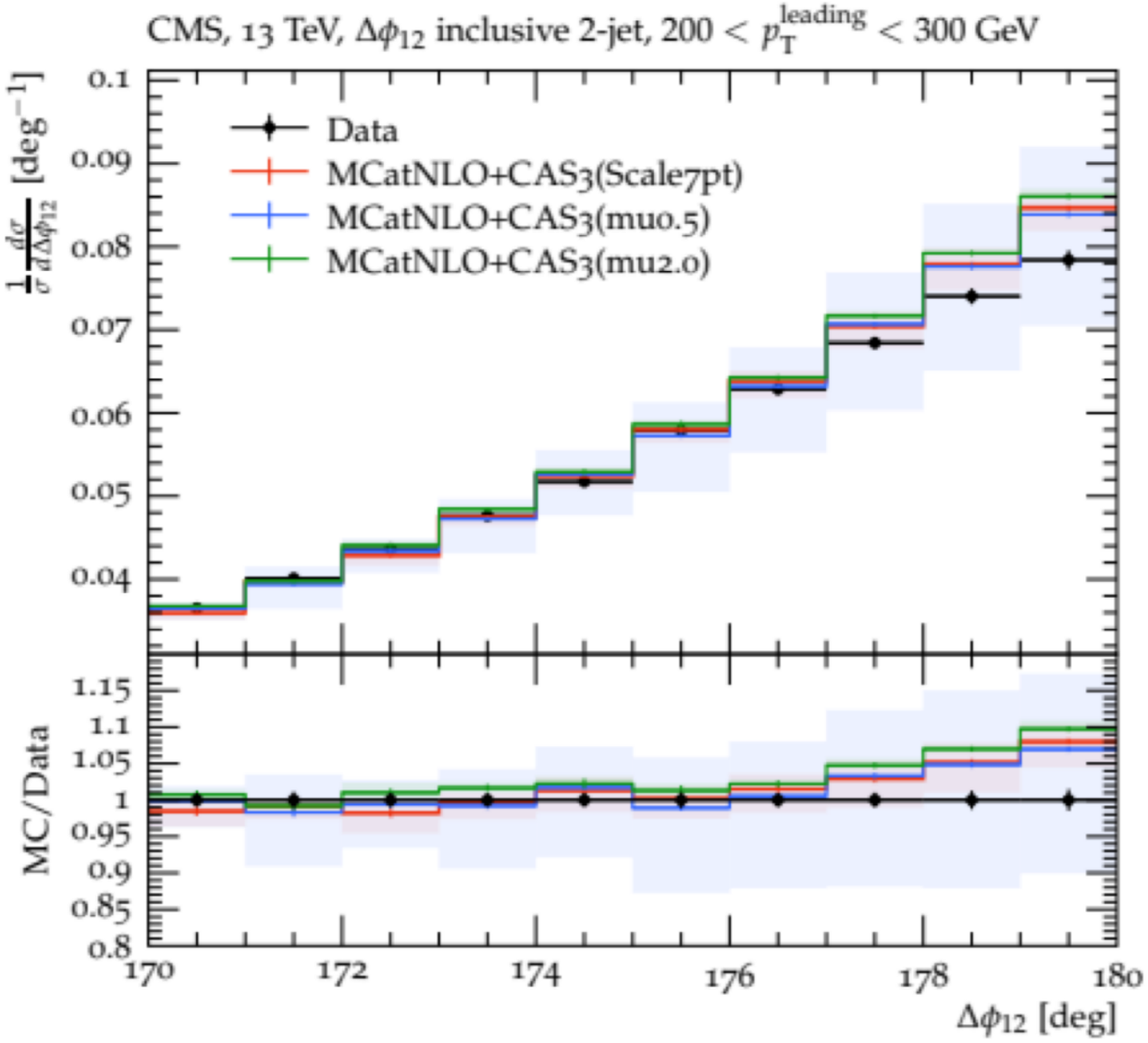
Not everybody can attend the meeting in person, many people have restrictions (personal, child care etc).

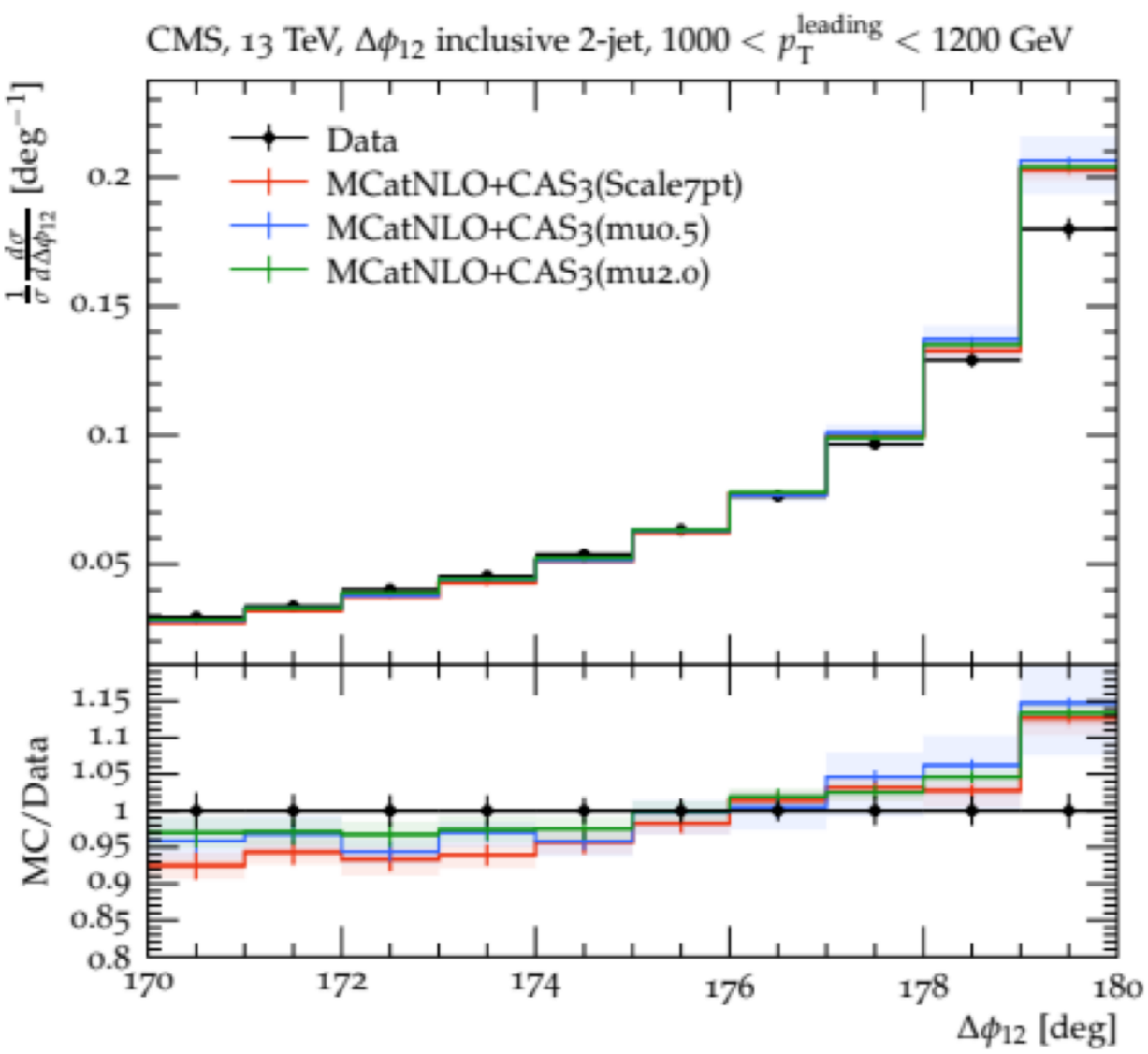
- Armando
- Mees agreed to go there in person
- Sara
- Stefan
- Qun

- So, please Mees submit the abstract in the name of the whole crew.
  We should all help to prepare the talk, and have a rehearsal before.

Some further studies: shower scale with TMDs

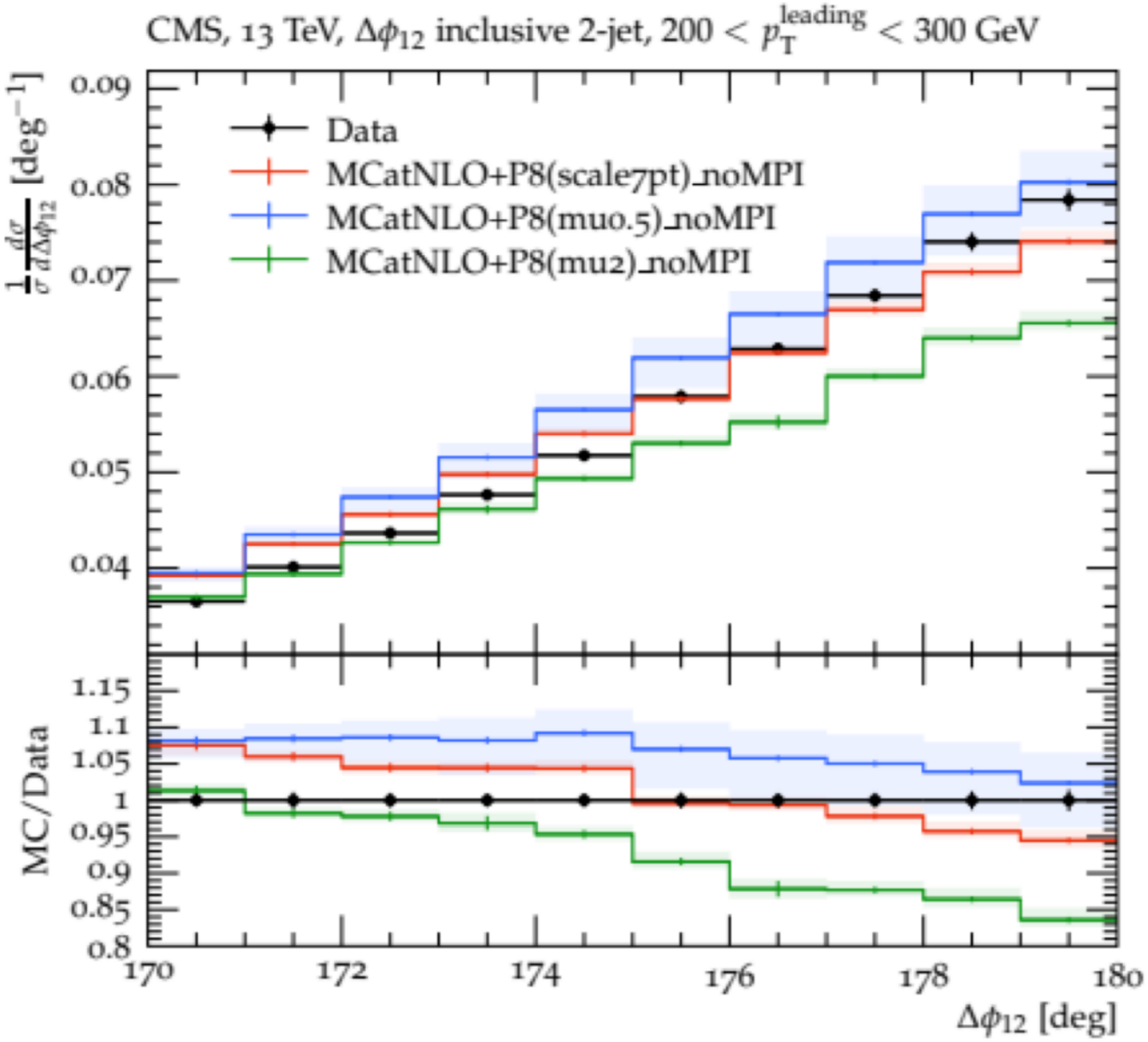
- Shower scale varied in MCatNLO: set shower_scale_factor = 2.0 (0.5)

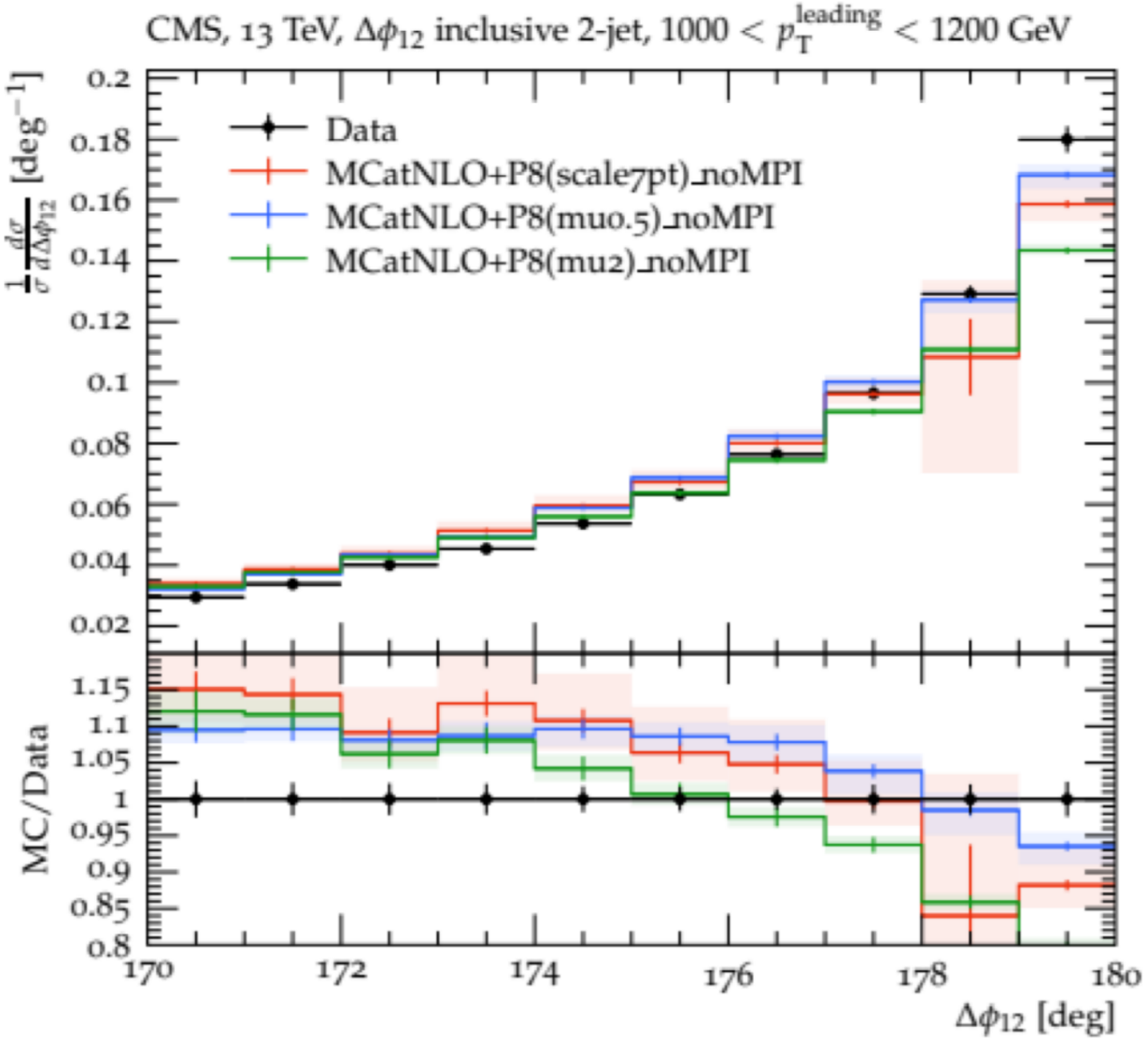




Some further studies: shower-scale with P8

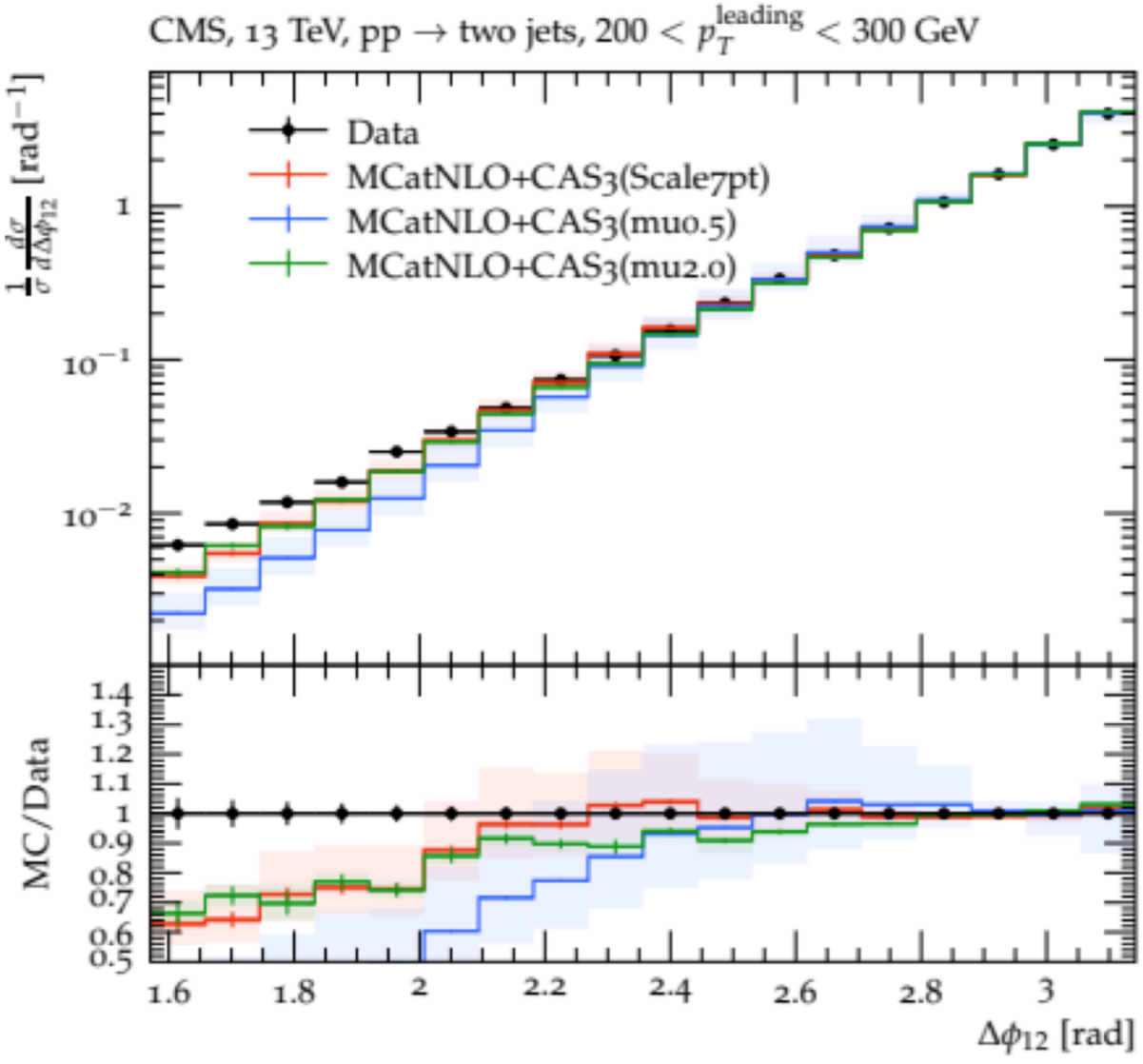
- Shower scale varied in MCatNLO: set shower_scale_factor = 2.0 (0.5)

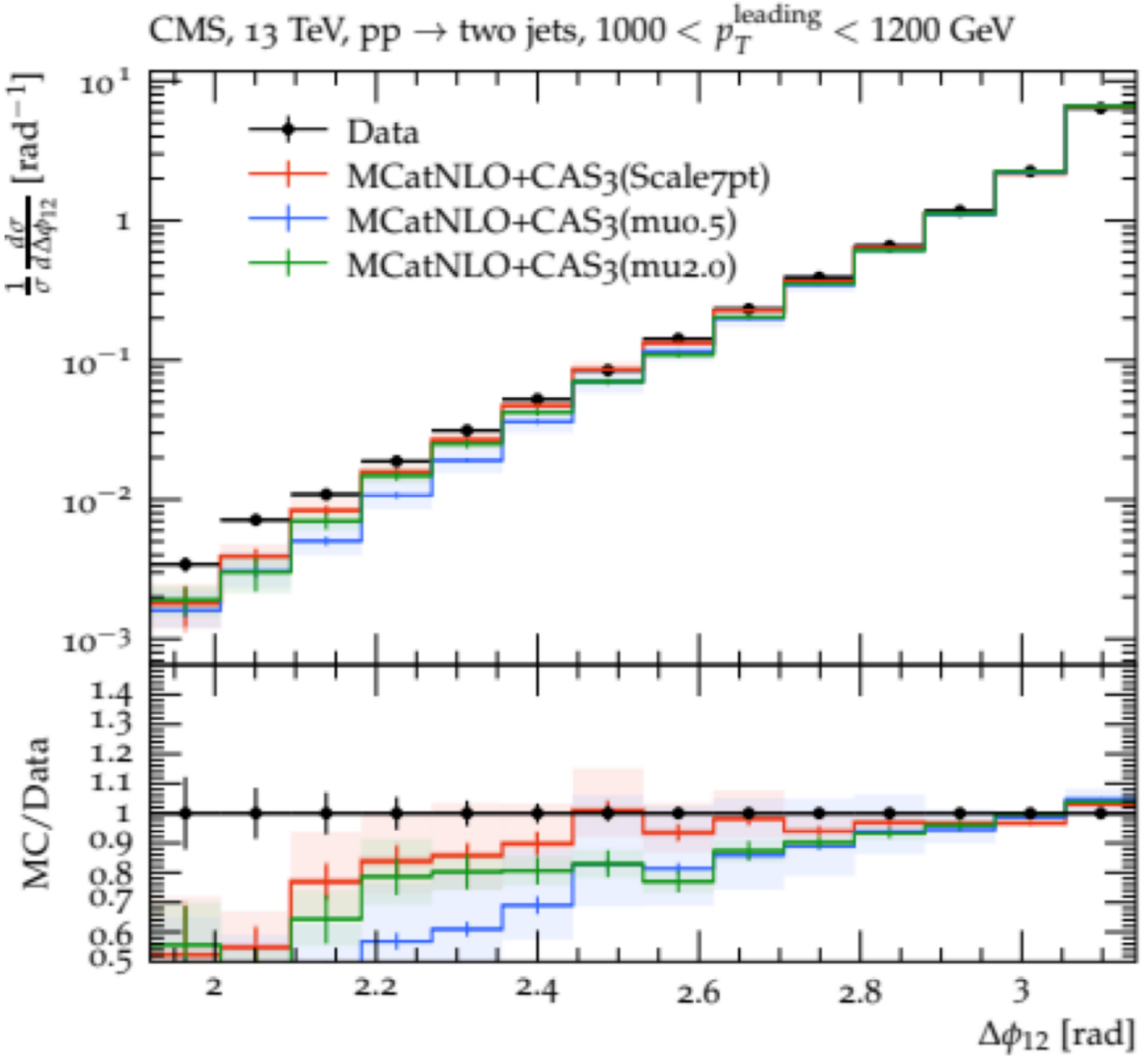




Some further studies: shower-scale with CAS

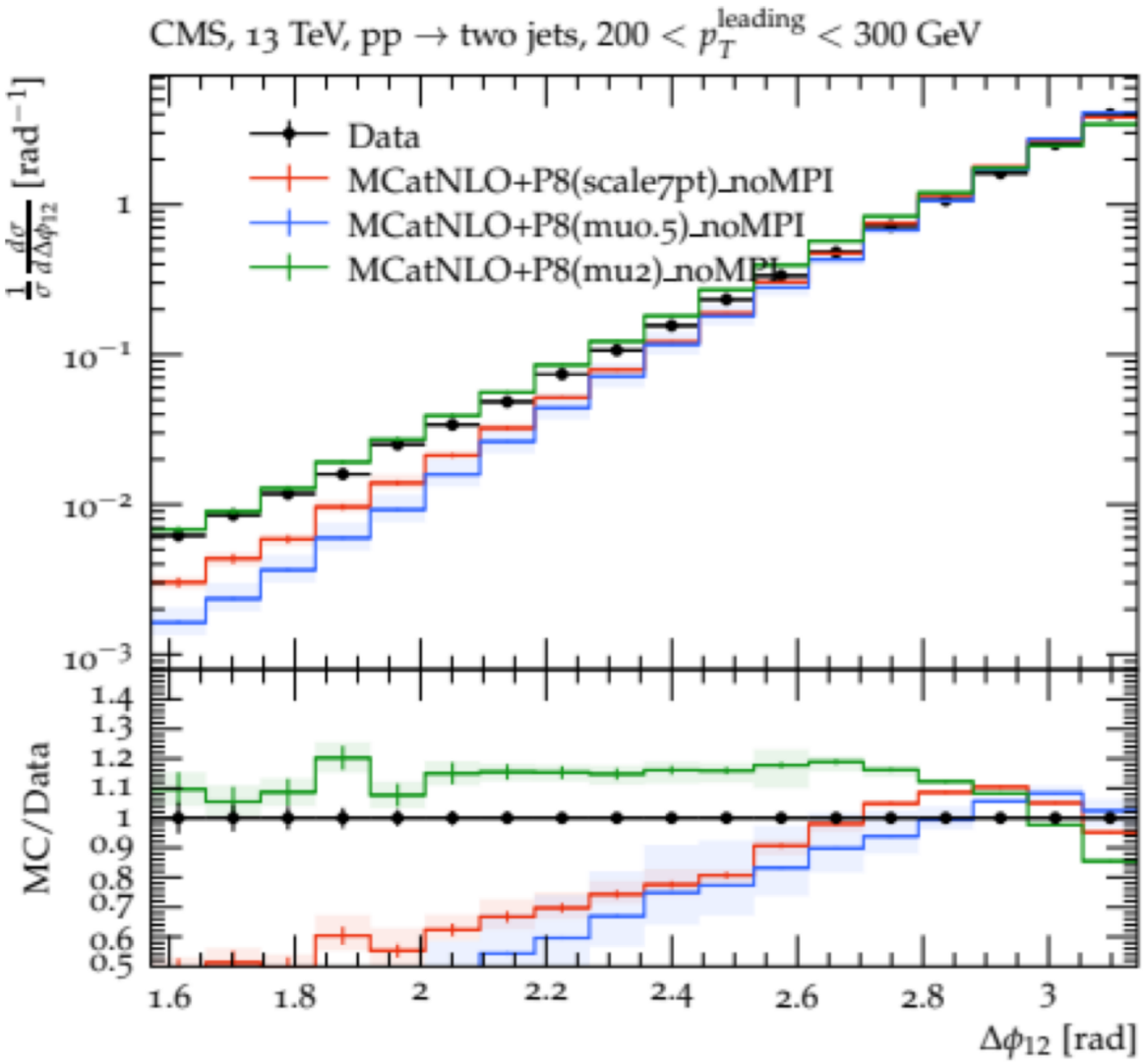
- Shower scale varied in MCatNLO: set shower_scale_factor = 2.0 (0.5)

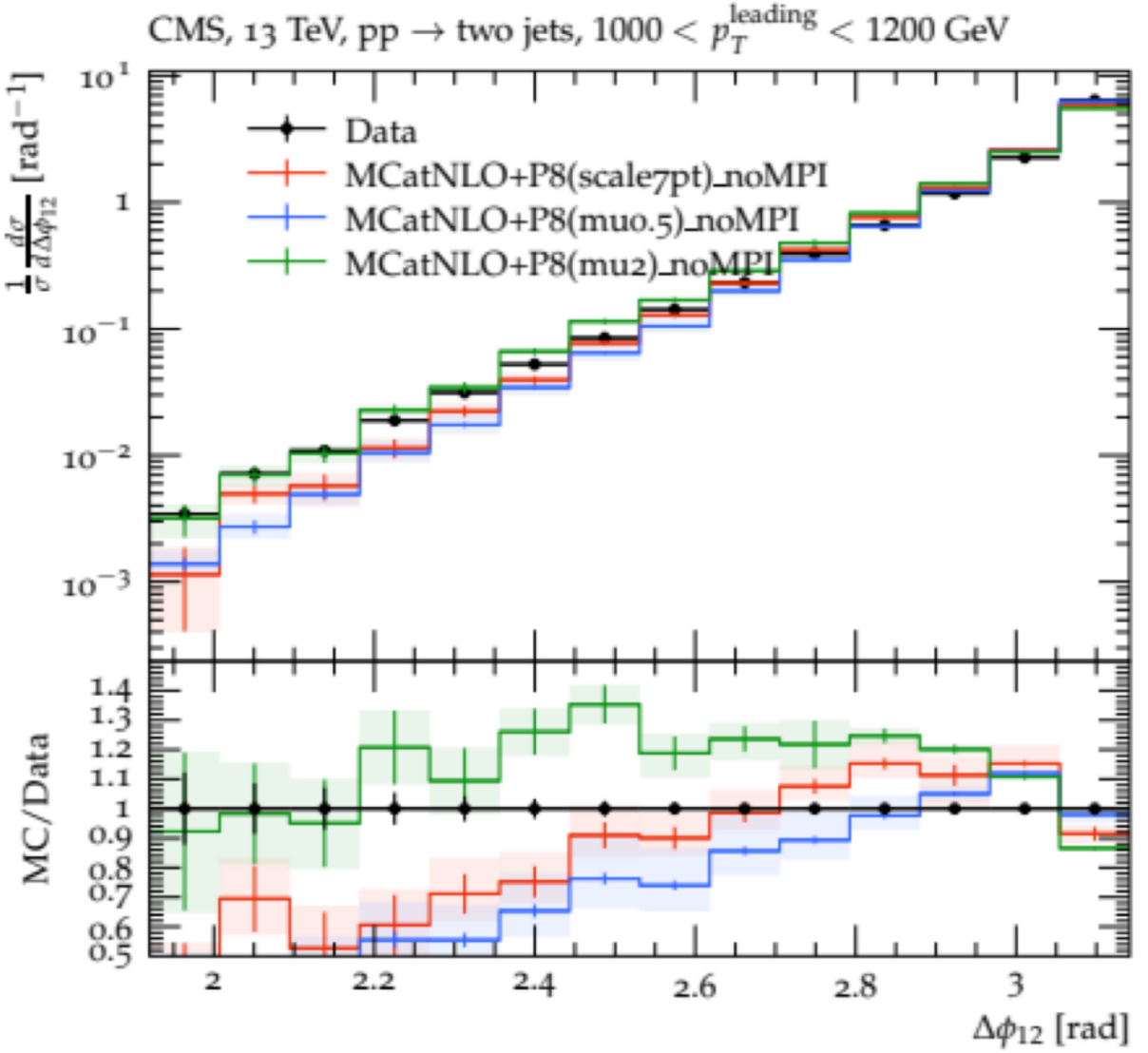




Some further studies: shower-scale with P8

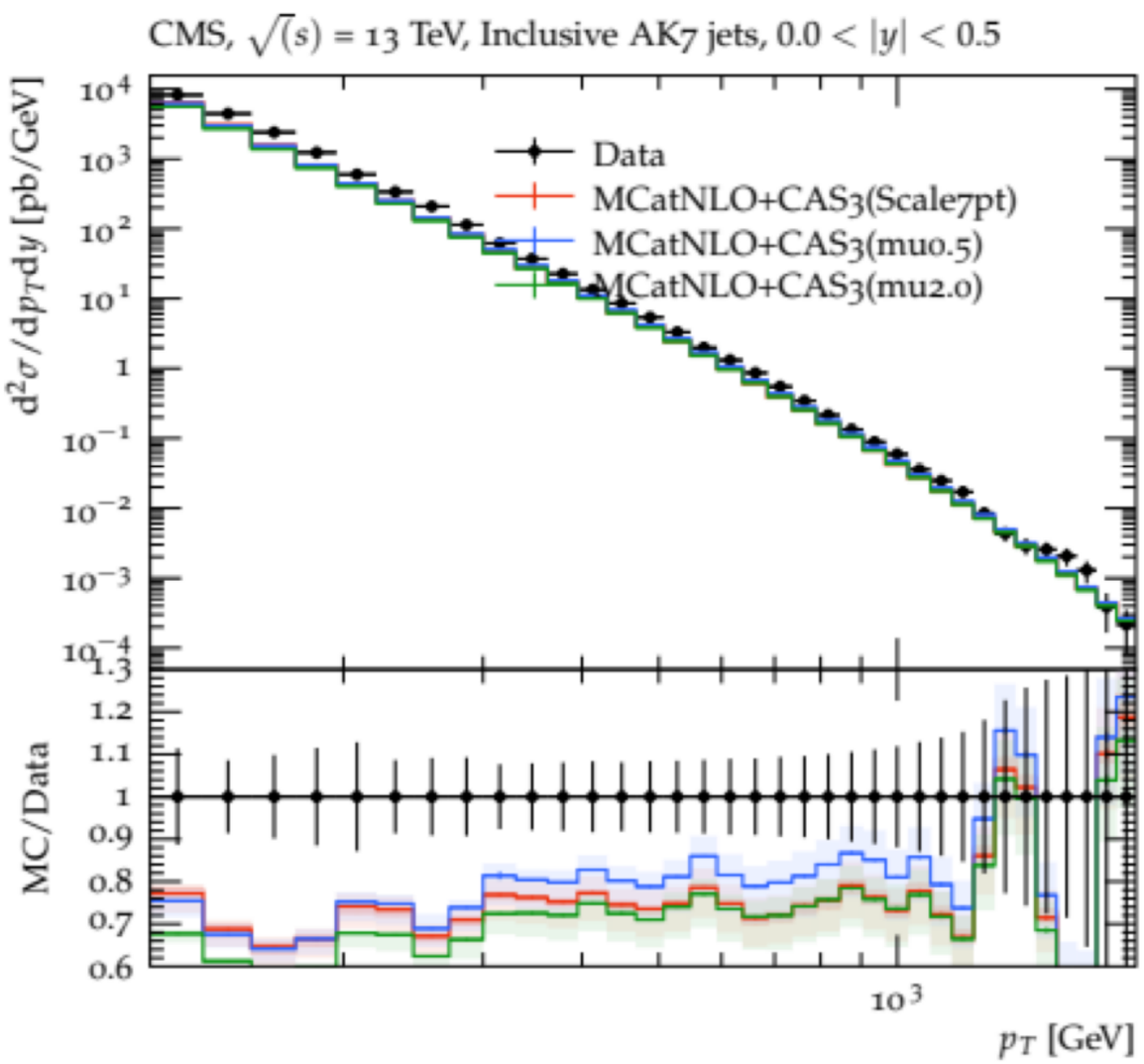
- Shower scale varied in MCatNLO: set shower_scale_factor = 2.0 (0.5)

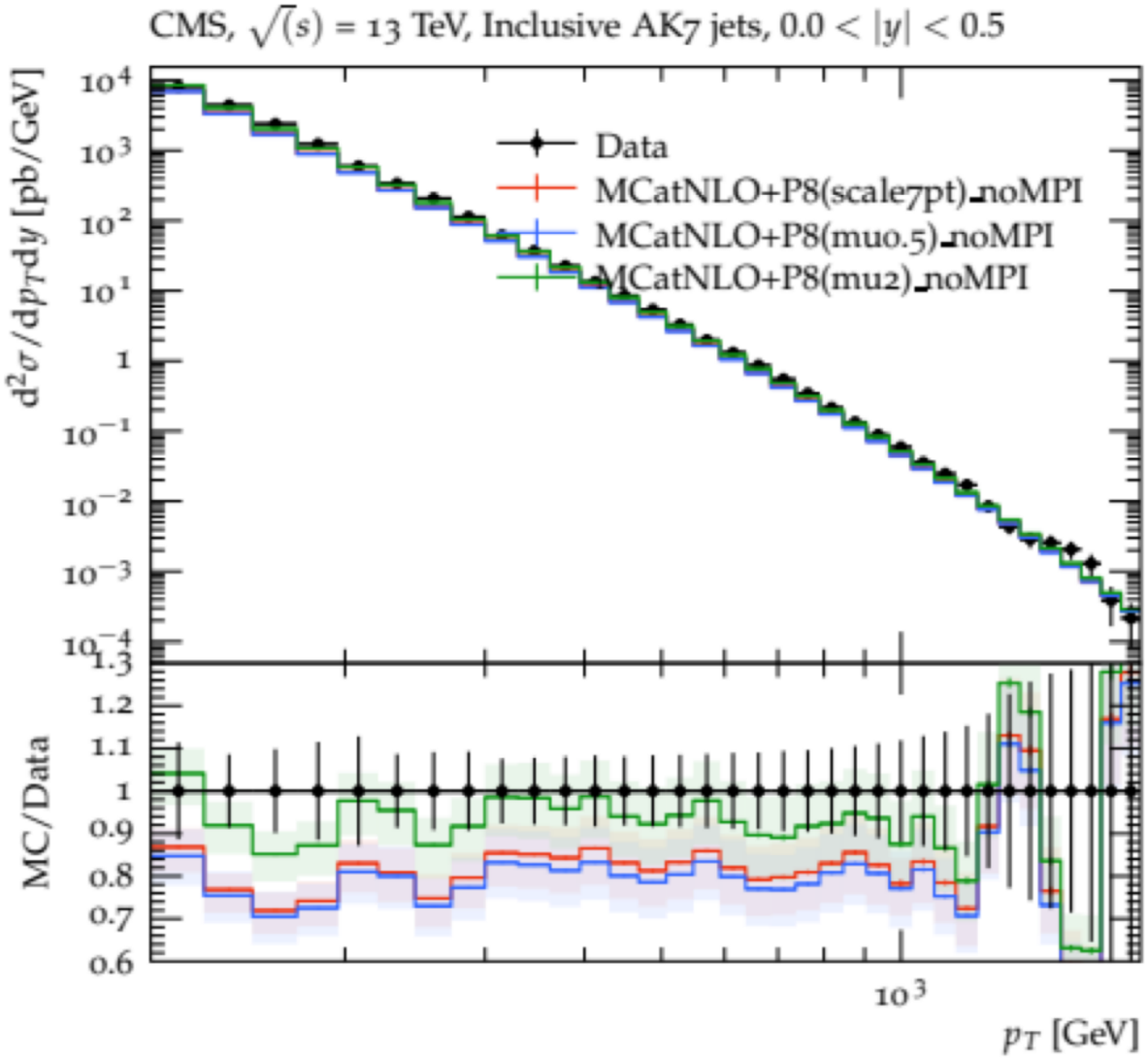




Some further studies: shower-scale with TMD/P8

- Shower scale varied in MCatNLO: set shower_scale_factor = 2.0 (0.5)



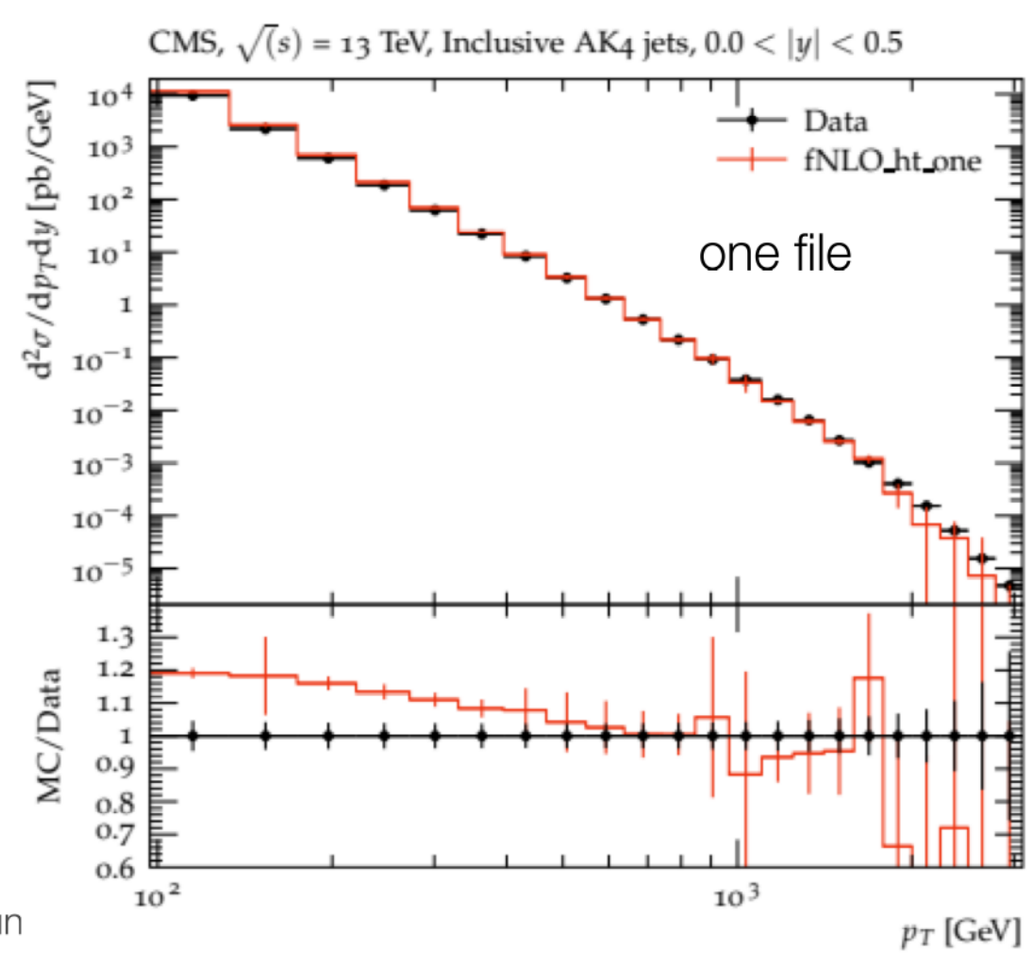


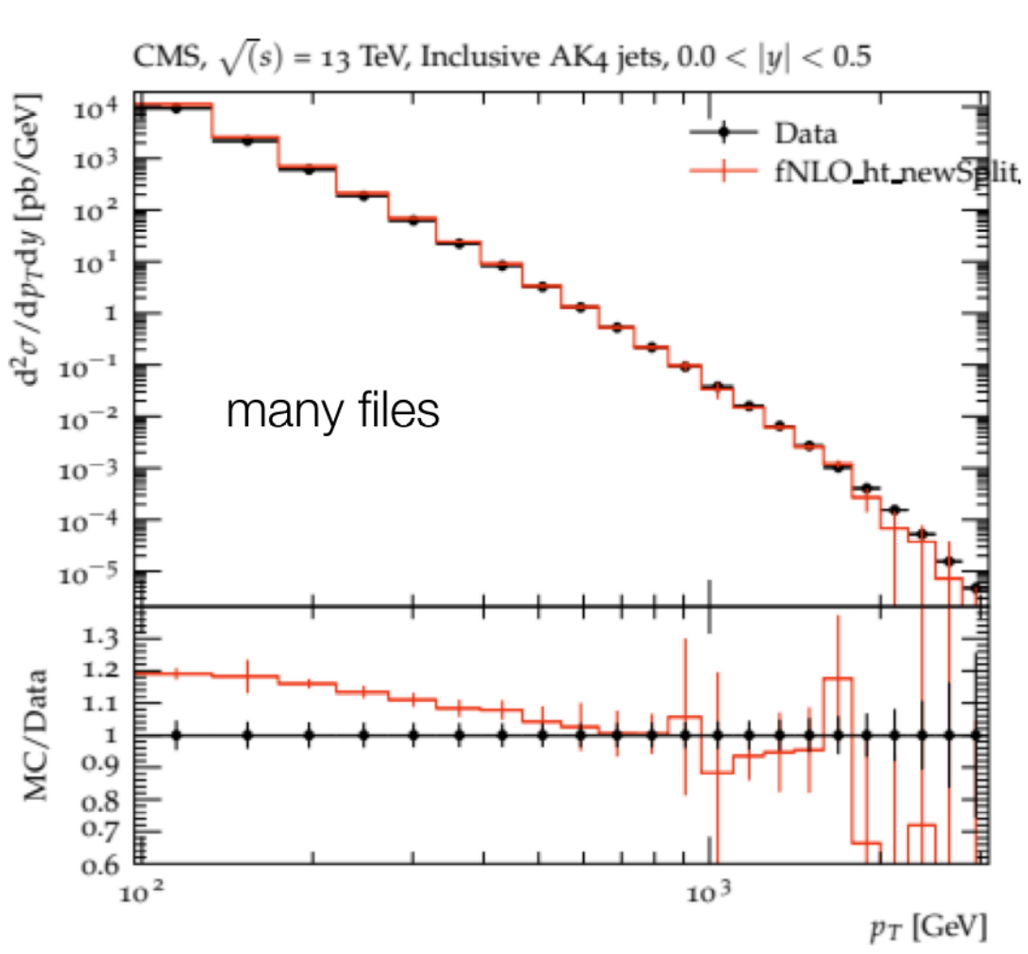
Splitting of large LHE files

- in fixed NLO calculations, LHE files are huge:

```
41G Dec  1 19:54 events.lhe.gz
97M Jan  3 15:56 jj-13TeV-lhe-req_acc_FO=0.01_1.lhe.gz
 …
97M Jan  3 15:56 jj-13TeV-lhe-req_acc_FO=0.01_500.lhe.gz
```

- issue was with proper splitting <eventgoup>, now solved thanks to Stefan
  - important for proper calculation of uncertainty
  - use: `rivet-merge $YODA_FILES -o ${name}_merged.yoda` (without -e option)





AOB

- New CASCADE with hepmc2 and hepmc3 is ready
  - watch out, that rivet is also compiled with hepmc3 if running hepmc3 files !

- Further news ?