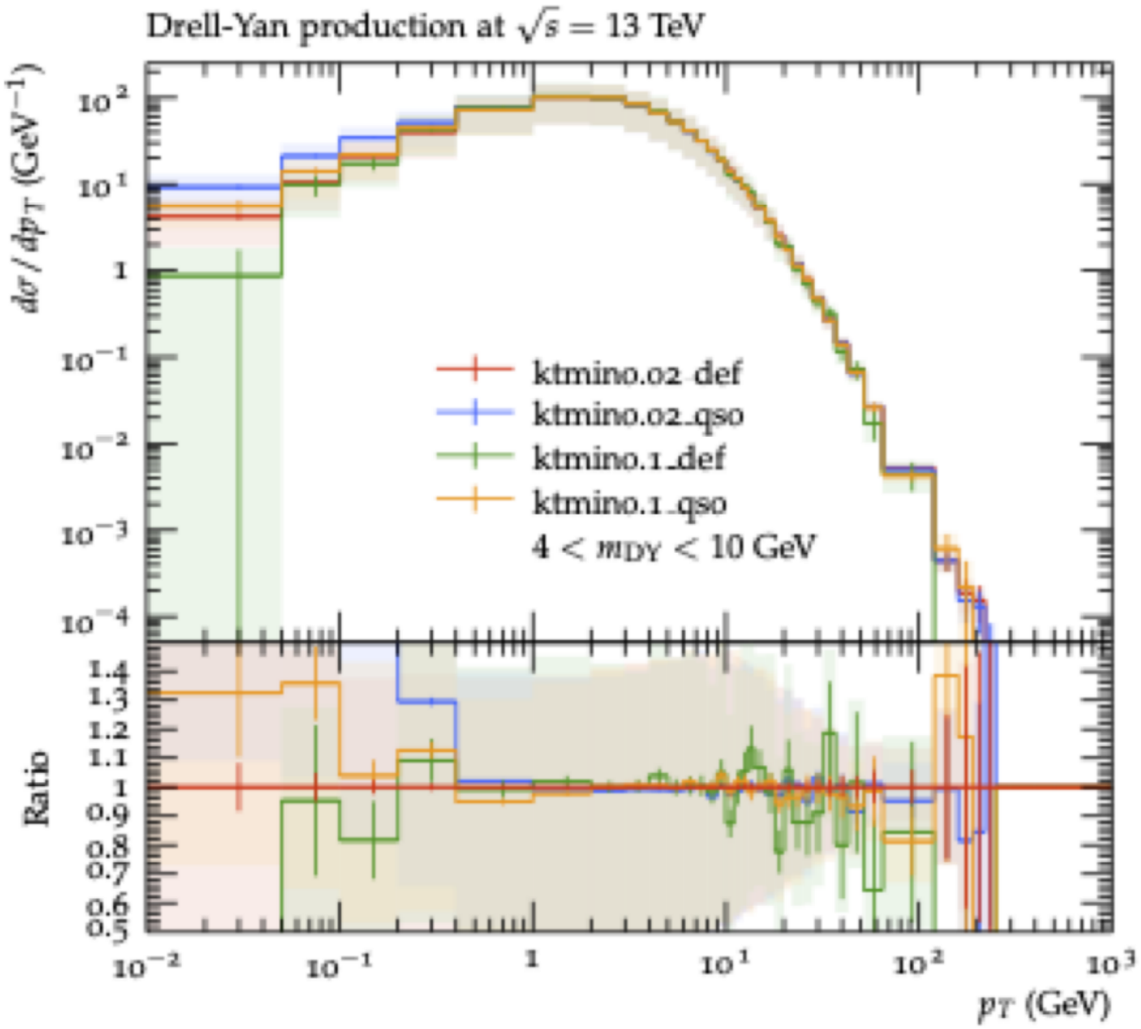
Cascade developer meeting

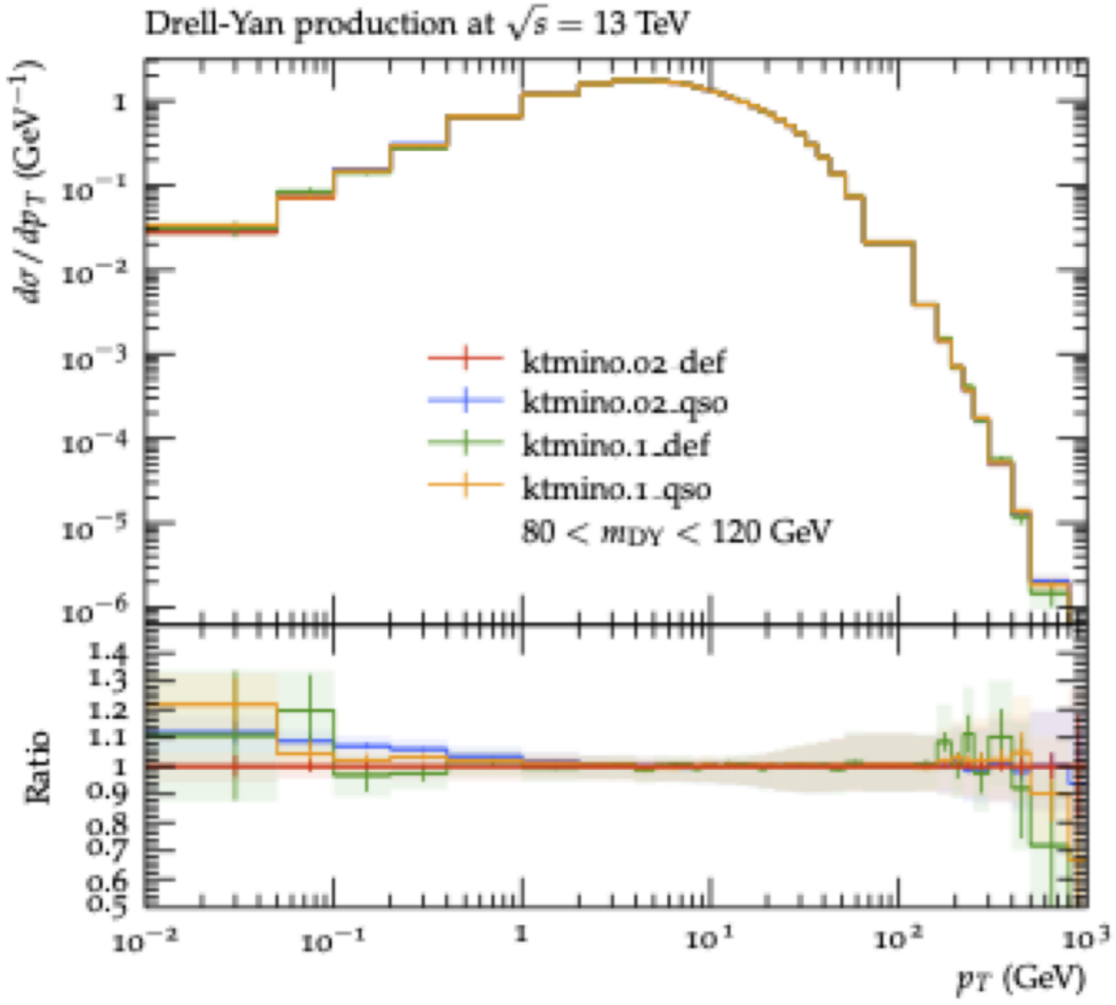
CASCADE news

- New version ready: 3.3.0
  - bug in version 3.3.0
    - reading steering file overwrote parameters → corrected now
  - timing and Maxfactor
    - new feature in test – beta release (optimized max-weight calculation, no need to apply external MaxFactor)

The ktmin in CASCADE

- Cutoff, ktmin, used for generation of kt inside CASCADE3
  - kt2min > 0.1 by default
    - is ok for most applications, was introduced for efficiency reasons

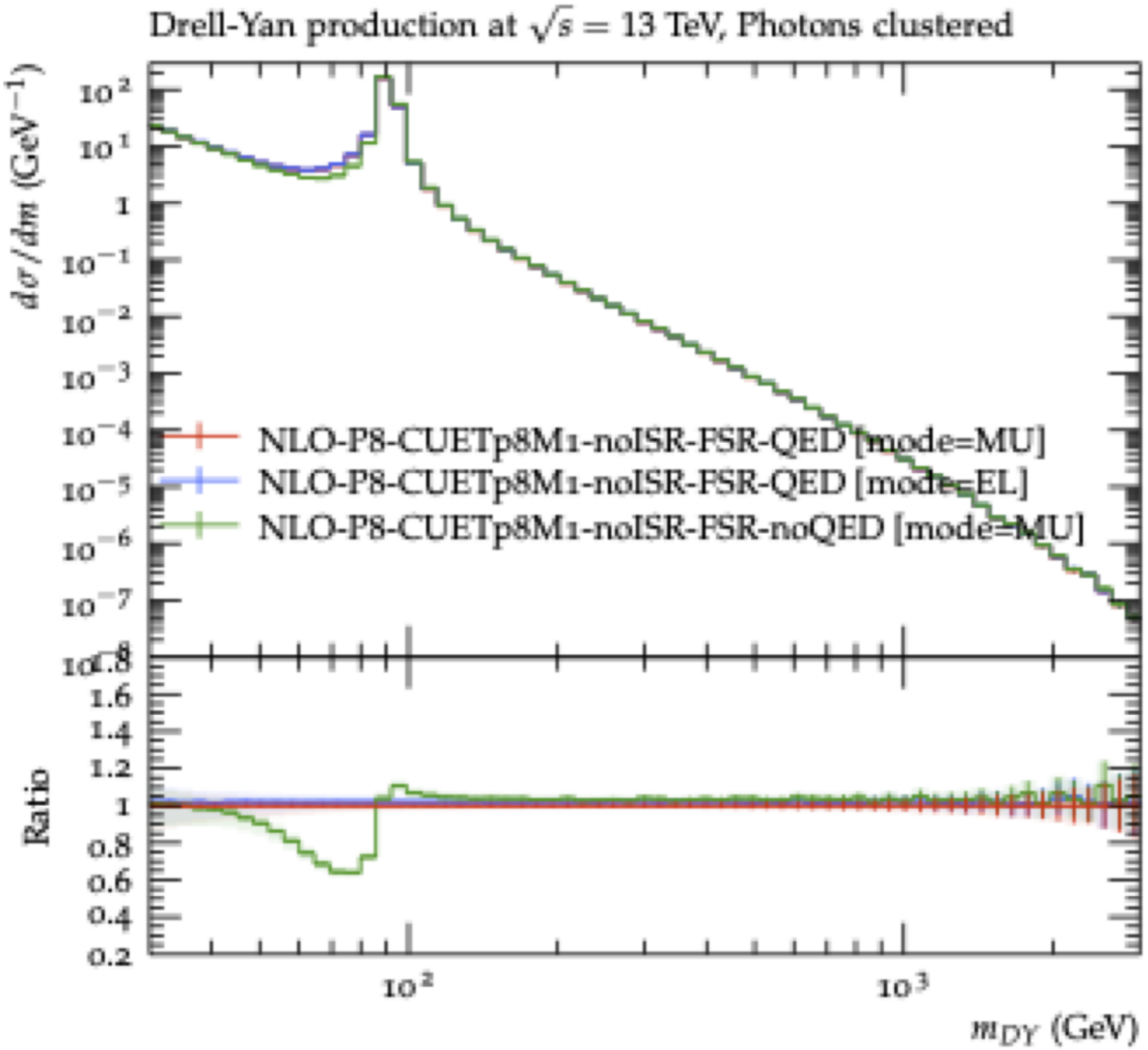




- affects essentially very low mass region !

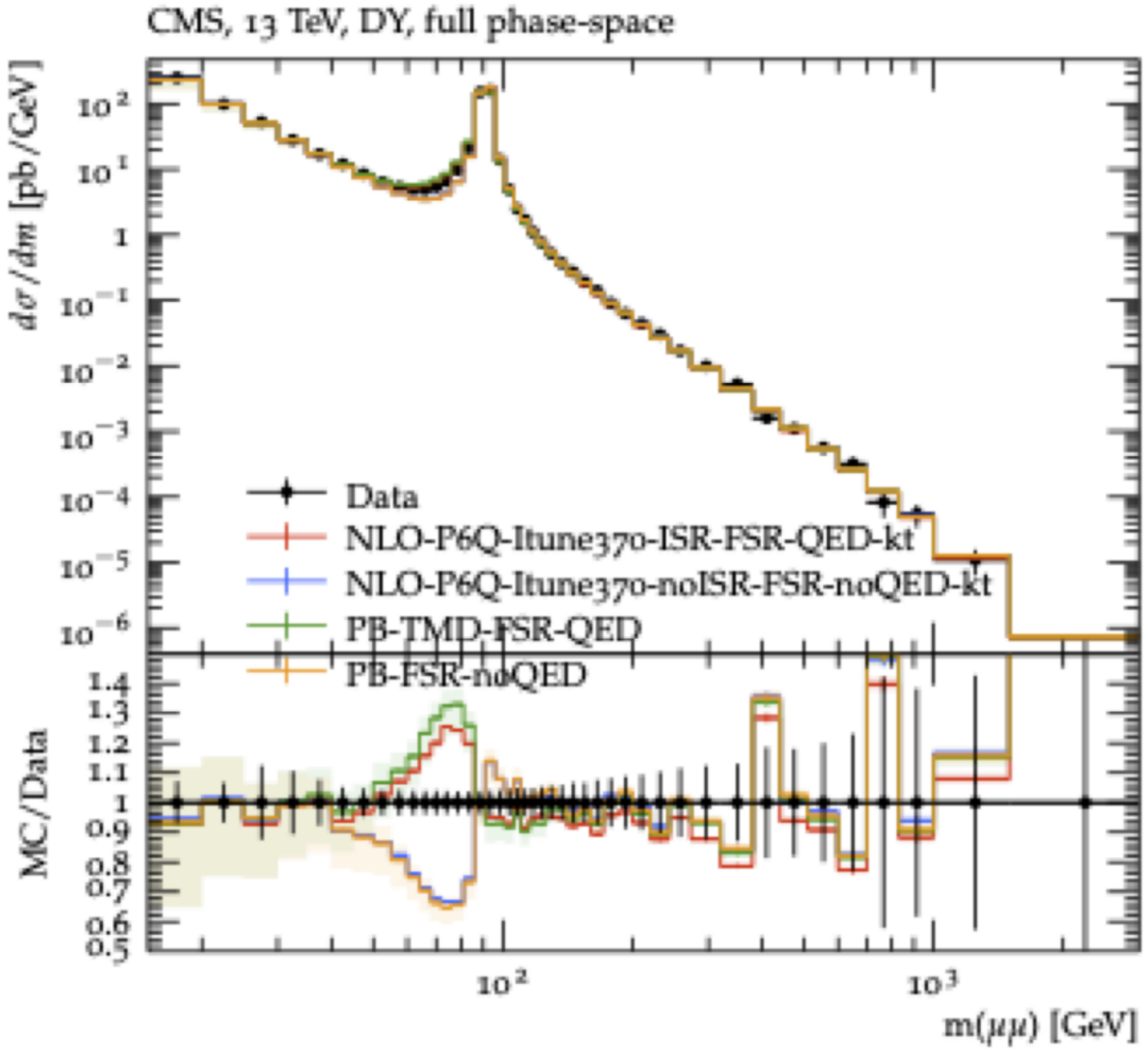
Some further studies: QED radiation

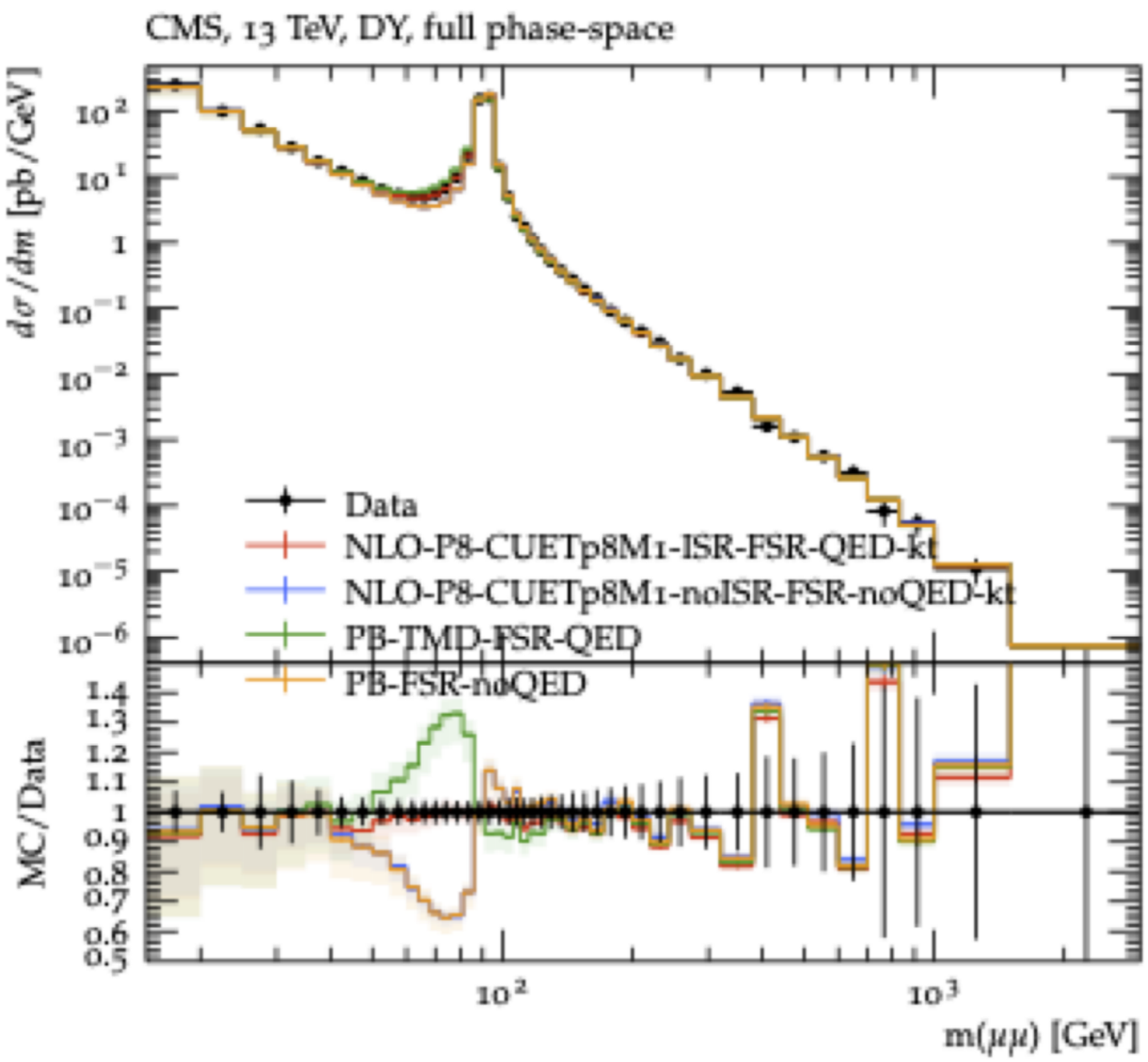
- look at mass distribution, independent of TMD and QCD parton shower
- check difference between electron and muon channel



QCD radiation: PB, Pythia6, Pythia8

- generate appropriate LHE files for PB, Pythia6, Pythia8





- Similar difference between P6-P8, and PB-P8
  - is it correction to data ?

MC event generators and sustainability

- New document on HEP and sustainability available: “Striving towards Environmental Sustainability in High Energy Physics, Cosmology and Astroparticle Physics (HECAP)”
  - document available on indico
    - avoid time consuming calculations
    - use optimized code
    - work on optimized calculations
      - fast code: PYTHIA8
      - rather slow: CASCADE3, SHERPA, HERWIG etc

Parton shower including saturation

- Article on PB evolution with GLR equation (arXiv 2211.07174)
  - connected authors, they are interested to contribute to CASCADE

$$\frac{\partial G(\eta,k_\perp)}{\partial \eta} = \frac{\bar{\alpha}_s}{\pi}\left[\int \frac{\mathrm{d}^2 l_\perp}{l_\perp^2} G(\eta, k_\perp + l_\perp) - \int_0^{k_\perp} \frac{\mathrm{d}^2 l_\perp}{l_\perp^2} G(\eta,k_\perp)\right] - g_{\mathrm{TPV}} \frac{\alpha_s^2}{S_\perp (8\pi)^2} G^2(\eta,k_\perp),$$

  - important is to provide formulation in terms of Sudakov factors → achieved by authors
  - will join CASCADE developer meeting next year

AOB

- Further news ?