ttbb with MG5_aMC

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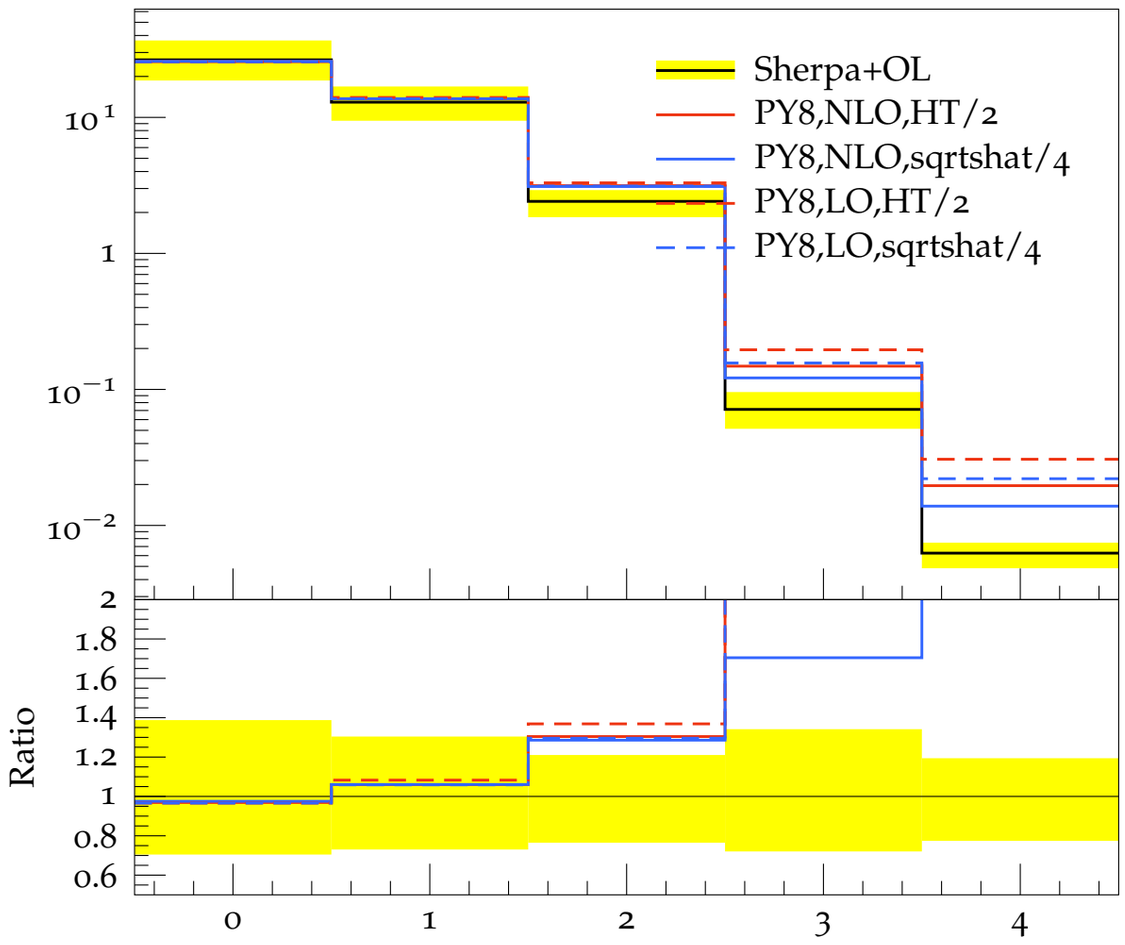
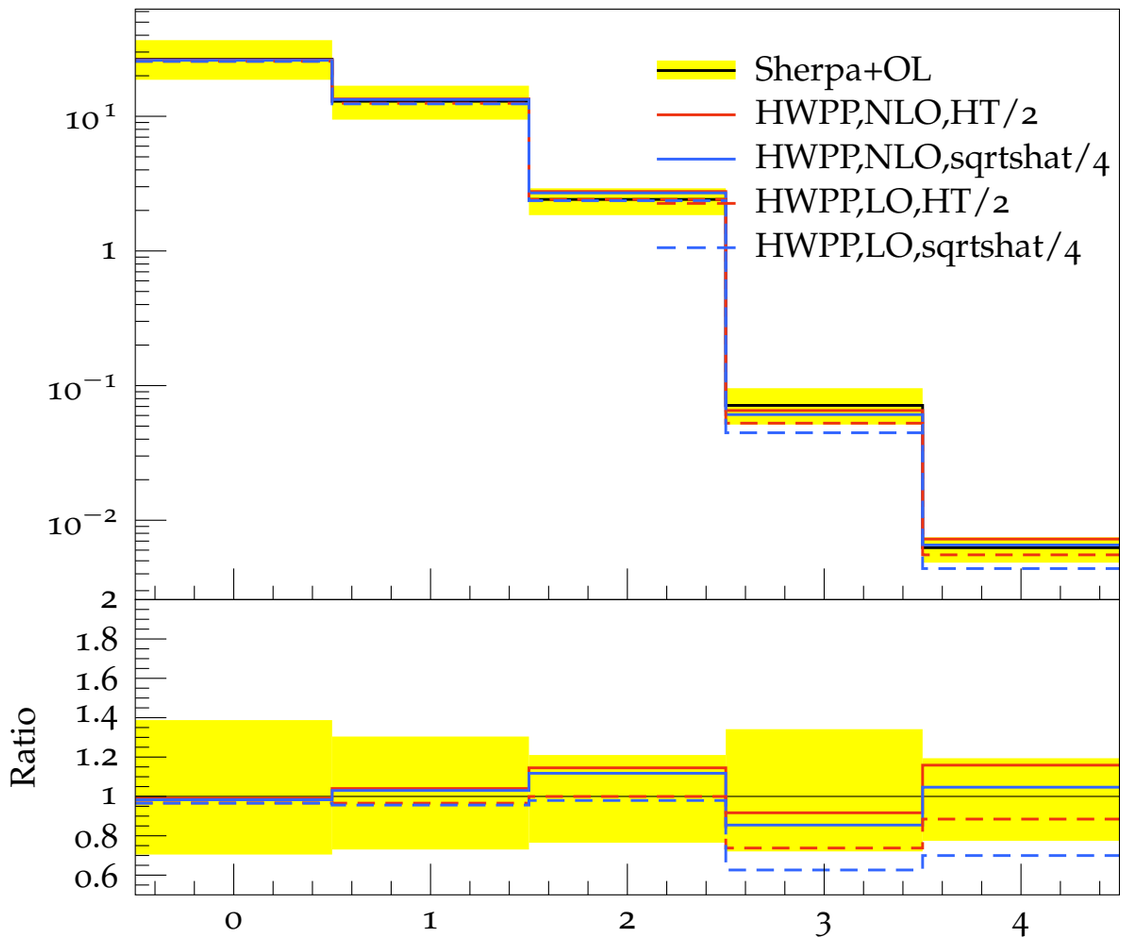
Setup

- Comparisons of VERY PRELIMINARY (3 days of running) results obtained with:
  - Two reference shower scales (sqrt(s)/4, H_T/2)
  - Two MCs (PY8, HW++)
  - NLO+PS and LO+PS
  - Settings follow https://twiki.cern.ch/twiki/bin/view/LHCPhysics/ProposalTtbb (PY8 + sqrt(s)/4 is the same as in YR4)
  - We use the prediction from Sherpa+OpenLoops (provided by S. Pozzorini) as reference for comparisons

B-jet multiplicities

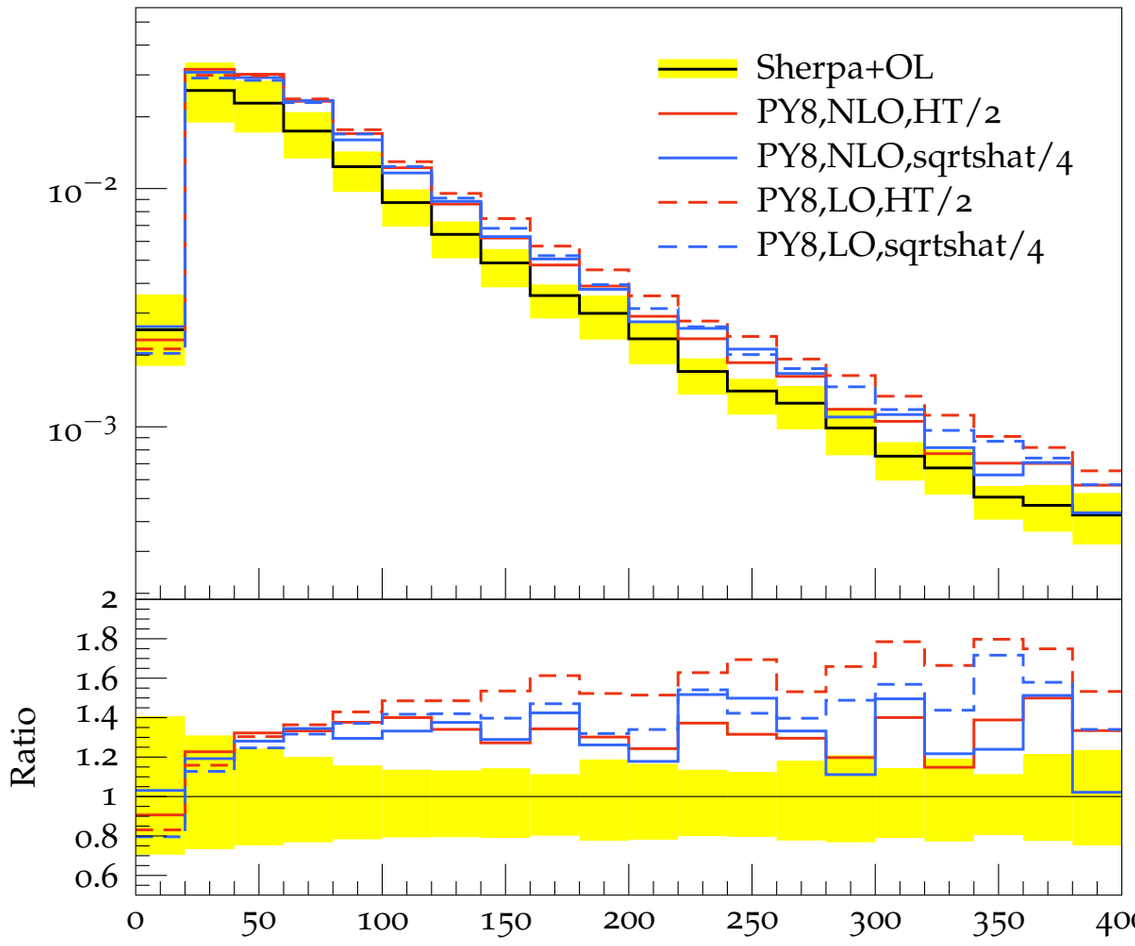


PY8

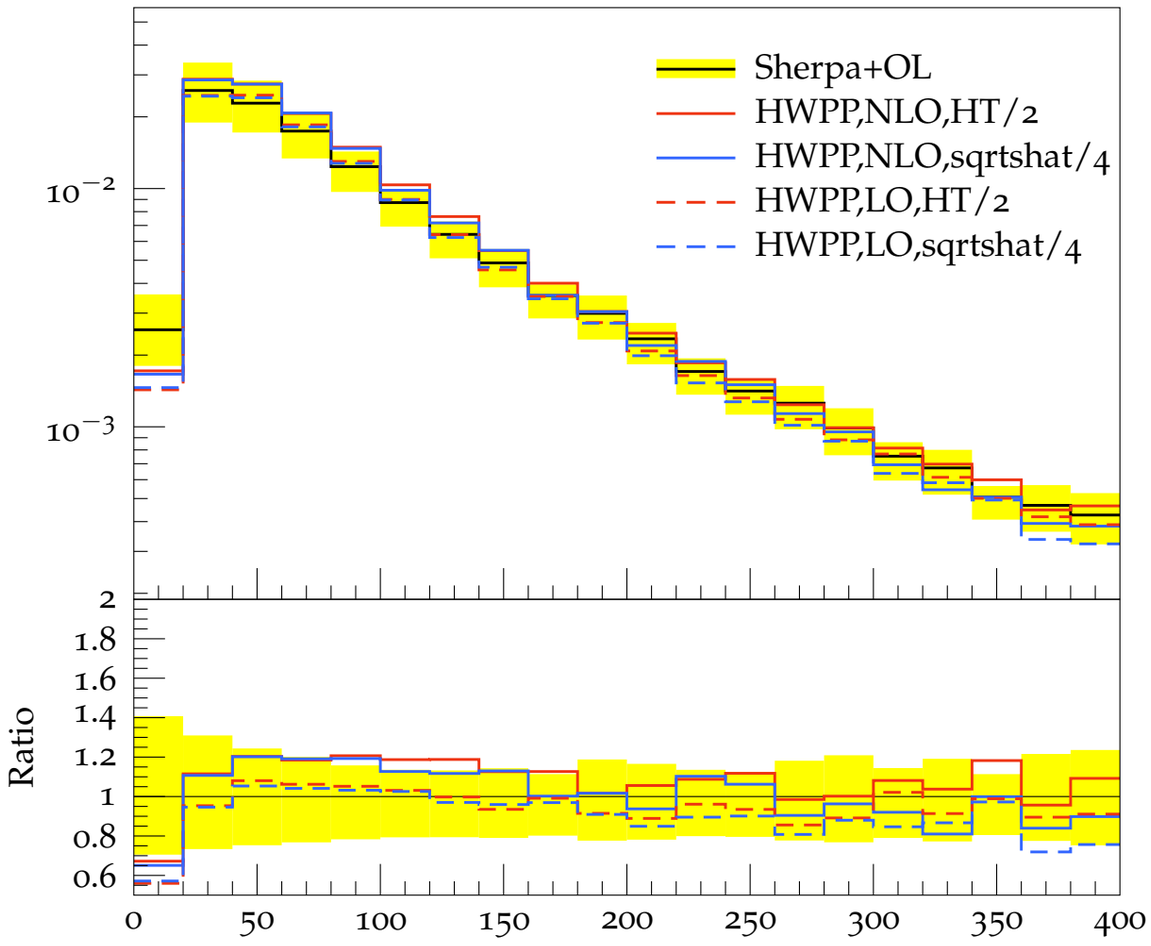


HW++

Invariant mass of the two hardest b-jets



PY8



HW++

Comments and conclusions

General comments:

- Large scale dependence of LO+PS/PY8; that is significantly reduced at NLO+PS, which also appears to interpolate between LO+PS and fNLO (as expected)
- Much less radiation in HW++, hence smaller differences between NLO+PS and fNLO wrt PY8 matching

(Obvious) conclusions:

- This process is known to receive significant MC corrections. Thus, MC-driven dependences are potentially large if not carefully controlled
  ⇒Over- or under-estimation of systematics is an issue

We plan to present a more complete analysis in the next ttH subgroup meeting