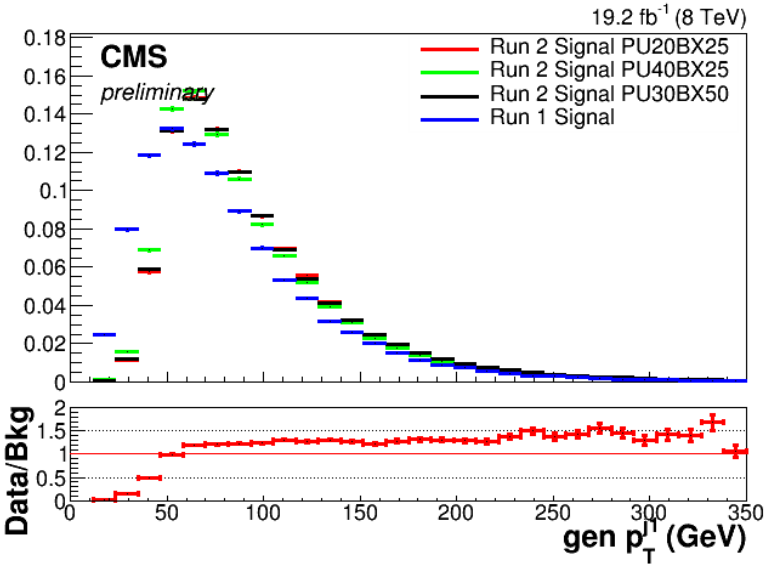
Imperial College London

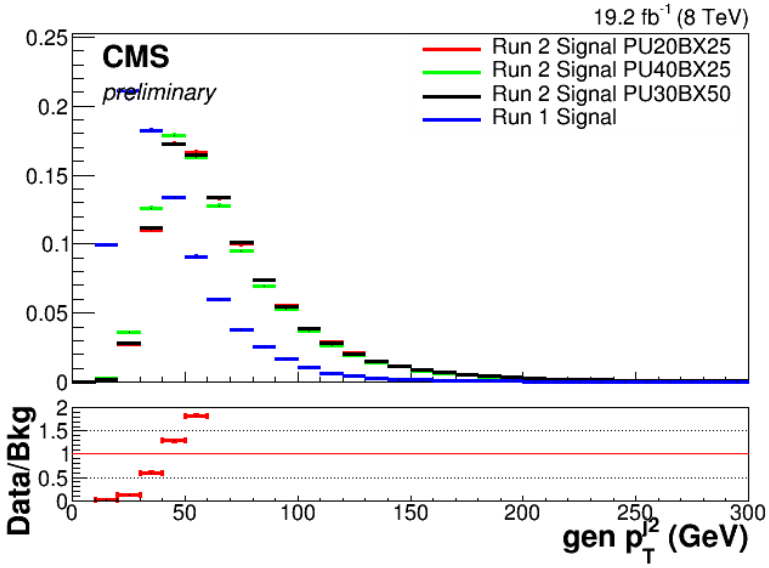
VBF Higgs to Invisible

Reminder

- Signal samples shown previously had some reco selection applied
- Light trees now made with no skimming applied
- Gen level information will be shown

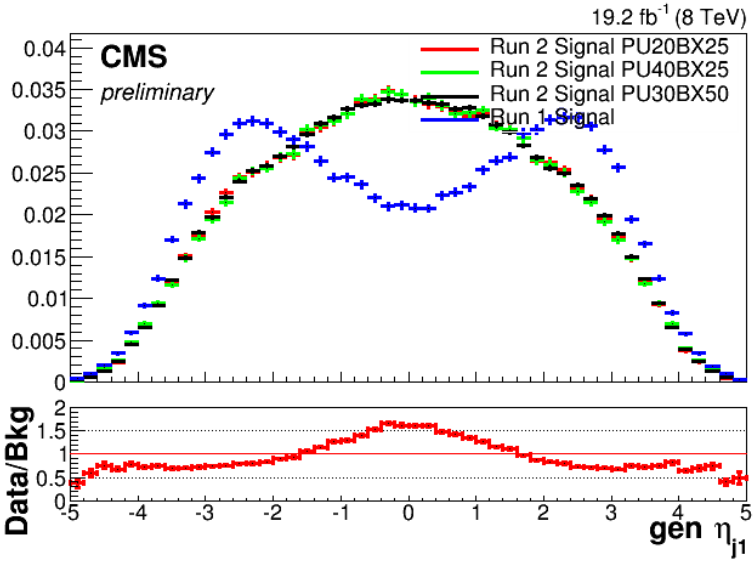
Signal Comparison: run 1 vs run 2: Gen Jet p_T

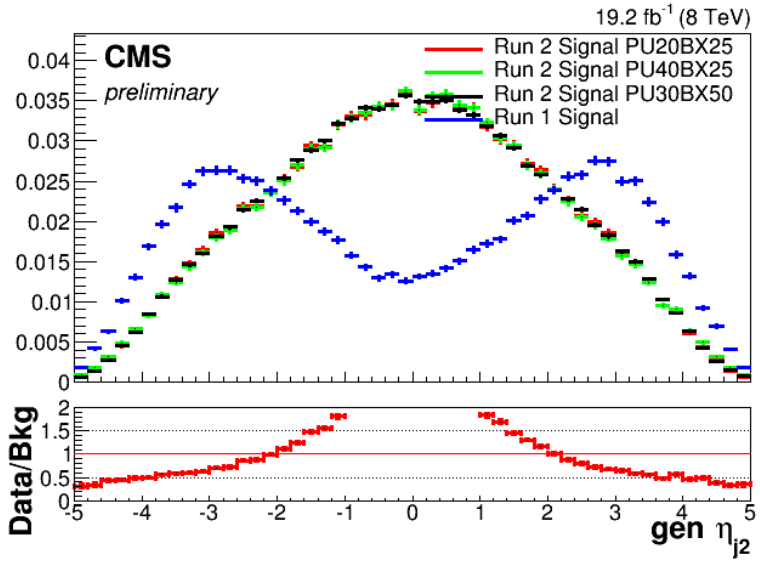




- More as expected, higher pt in run 2

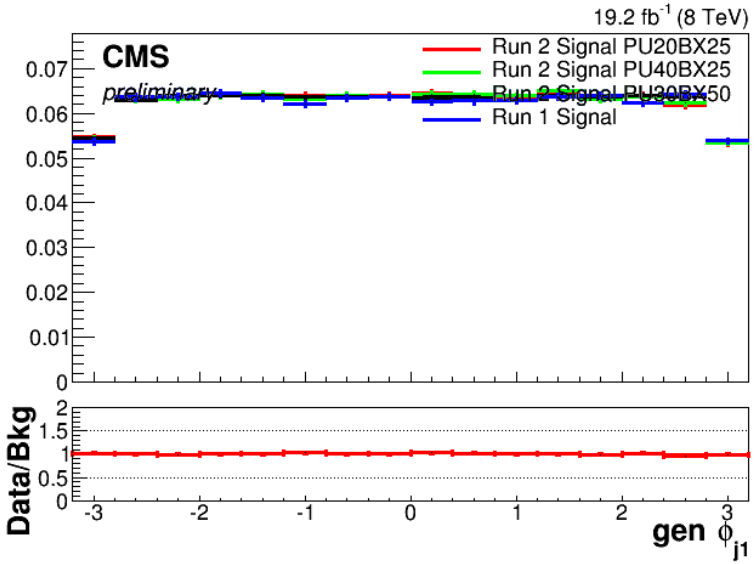
Signal Comparison: run 1 vs run 2: Gen Jet η

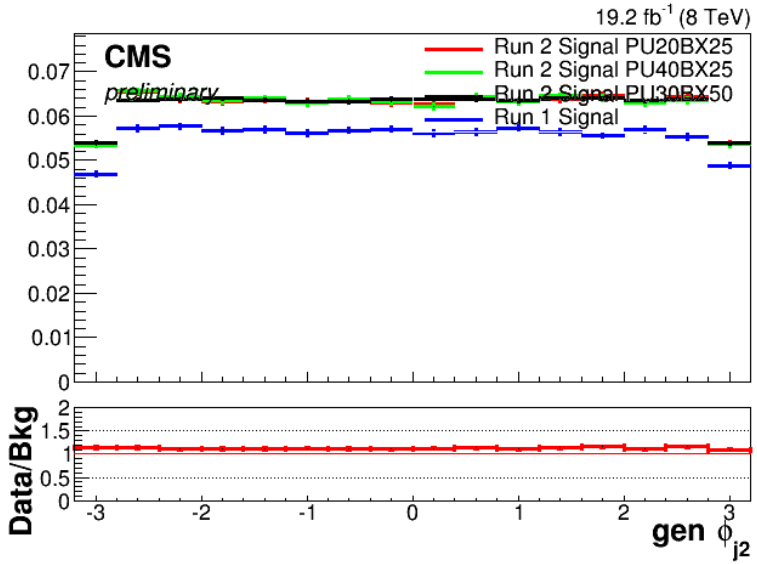




- Run 2 jets seem to have much lower η

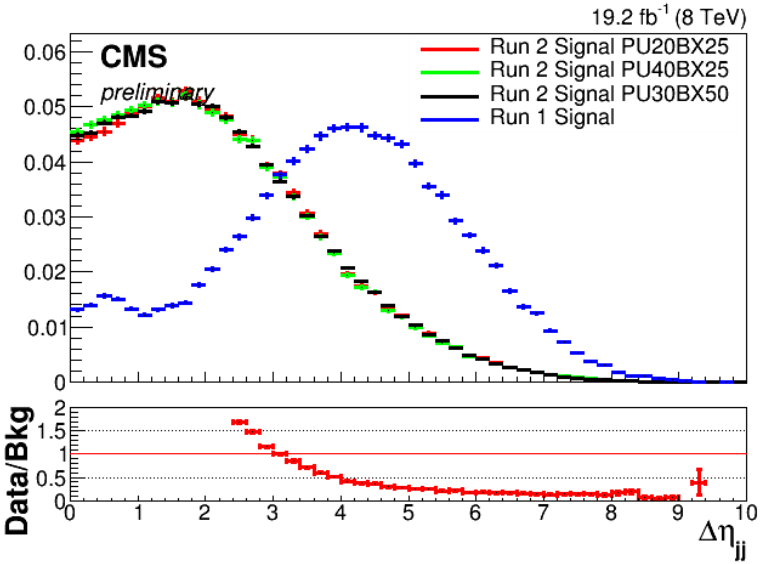
Signal Comparison: run 1 vs run 2: Gen Jet ϕ

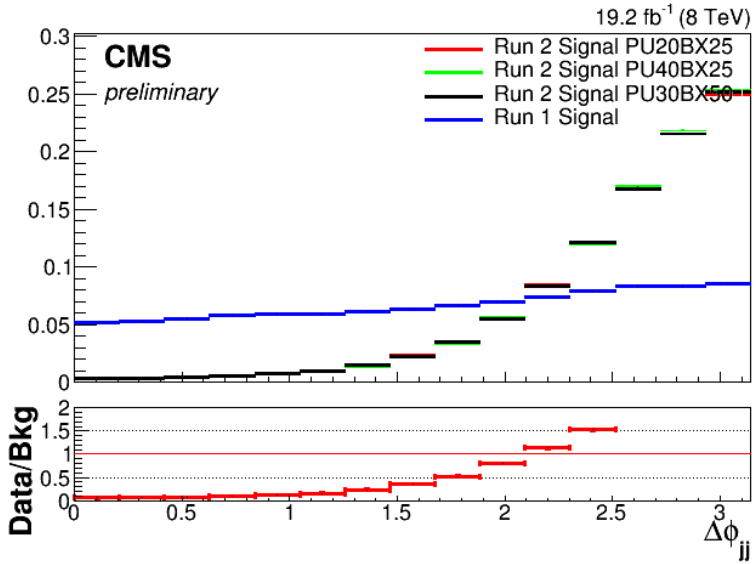




- ϕ is flat as expected

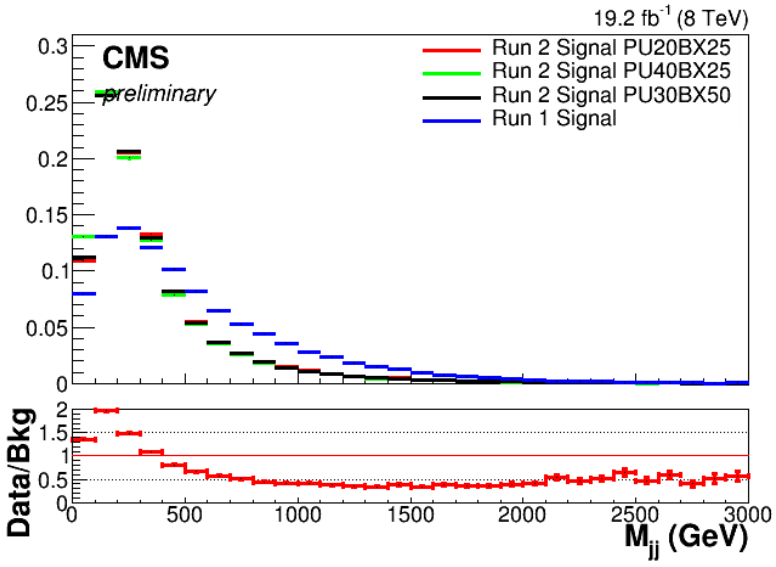
Signal Comparison: run 1 vs run 2: Gen Jet angle differences





- Run 2 jet angle differences are completely different

Signal Comparison: run 1 vs run 2: Gen Jet Mass



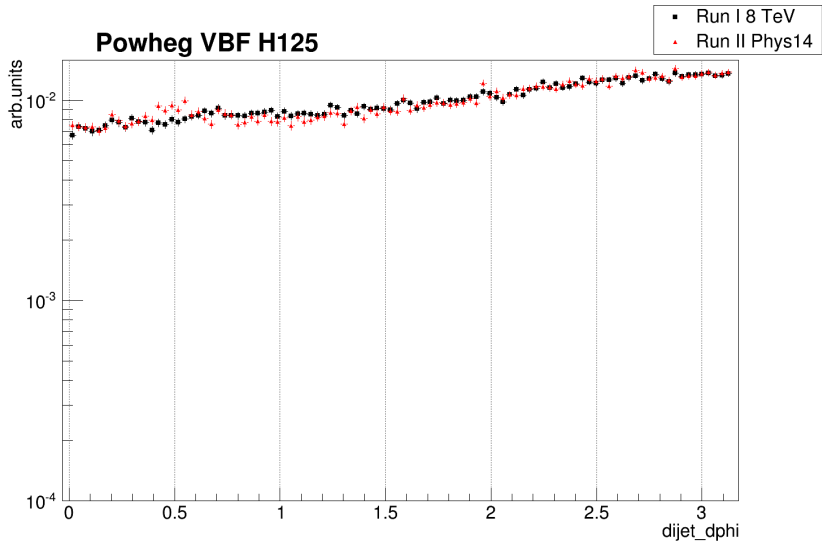
- M_{jj} also very different, probably due to different angle distributions

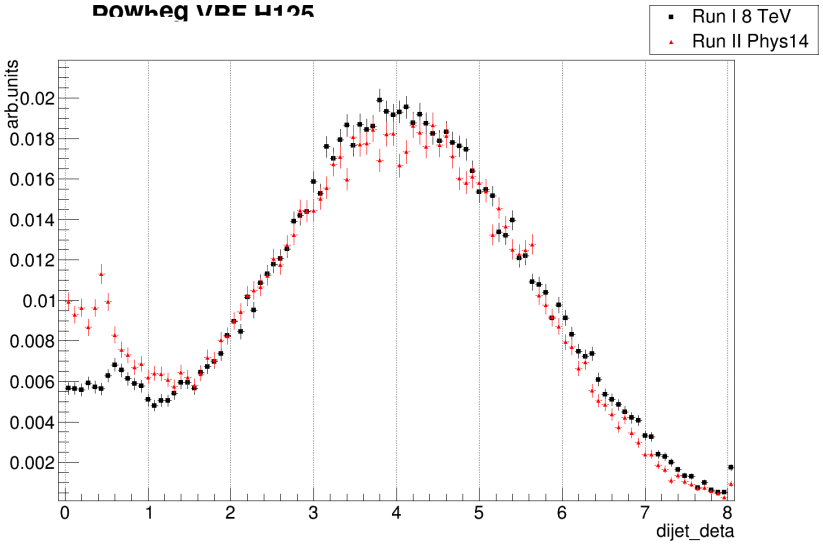
Gen jet differences

- Looked through all gen jets and reco jets in the event
  - Most events have several hard gen jets with no reco match
- Neutrinos are included in genparticles for genjet clustering
  - All signal events have 4 hard neutrinos

Gen jet differences

- Anne Marie looked at the leading two reco jets with a gen match
- This should remove the effect of neutrino jets
- Distributions are much more similar to VBF expectation





Spring 15 samples

- MiniAOD now available for $m_H = 110,300$ GeV
- PU Jet ID can now be rerun if we want AK4PF jets
  - Decided yesterday to attempt to keep both AK4PF and AK4PFCHS and also possibly add PUPPI
- Also decided to add mvaMET to ntuples
  - Chayanit suggested this may become a MET POG recommendation

Summary

- Neutrinos included in gen jets for Phys14 samples
  - Usefulness of samples for gen studies is therefore limited
- Spring 15 samples are becoming available
  - We should move to these as soon as possible

Backup