Study of central exclusive dijets production using the PPS spectrometer

Update

https://twiki.cern.ch/twiki/bin/view/Main/PPSBrazil

Remarks

Samples

- ExHuMe (pp → gg → dijets) + Pythia 8 (minBias, PU - Run II scenario)
  - σ = ~1700.0 fb
  - 8000 events NoOOT with PU
  - 2000 events NoOOT without PU
  - Generator cuts:
    - $0 < |t| < 4$
    - $0.01 < \xi < 0.2$
    - $300 < M < 2000$ GeV

Code

Working in CMSSW_6_2_X release.

Kinematic Selection for CEP

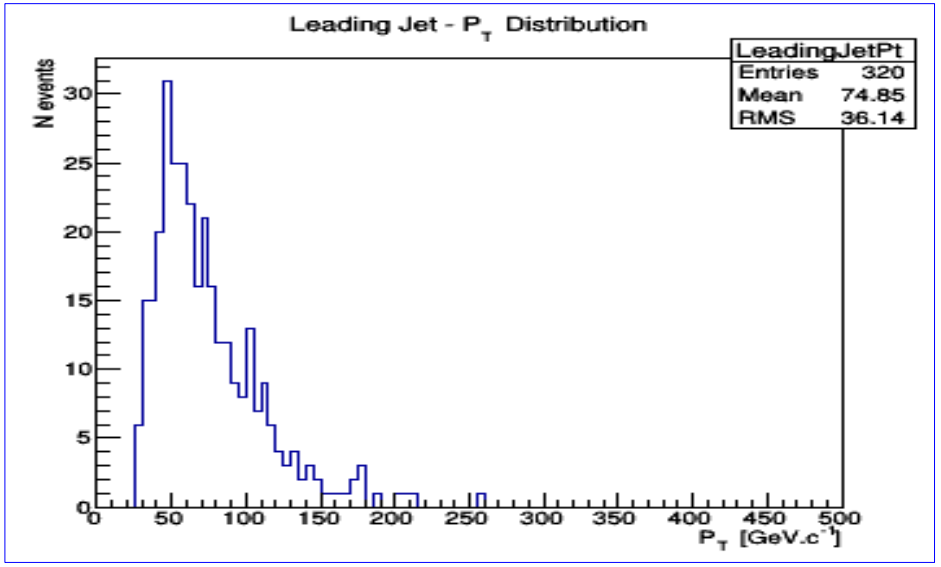
- Select the leading jet and choose it as the central vertex reference
- Associate the central vertex with PPS vertex
- Tagging reconstructed protons that arrived to both PPS arms and are in the region:
  - Tracking station 1: -9.0 < y < 9.0 mm -23.15 < x < -3.15 mm
  - Tracking station 2: -9.0 < y < 9.0 mm -22.03 < x < -2.03 mm

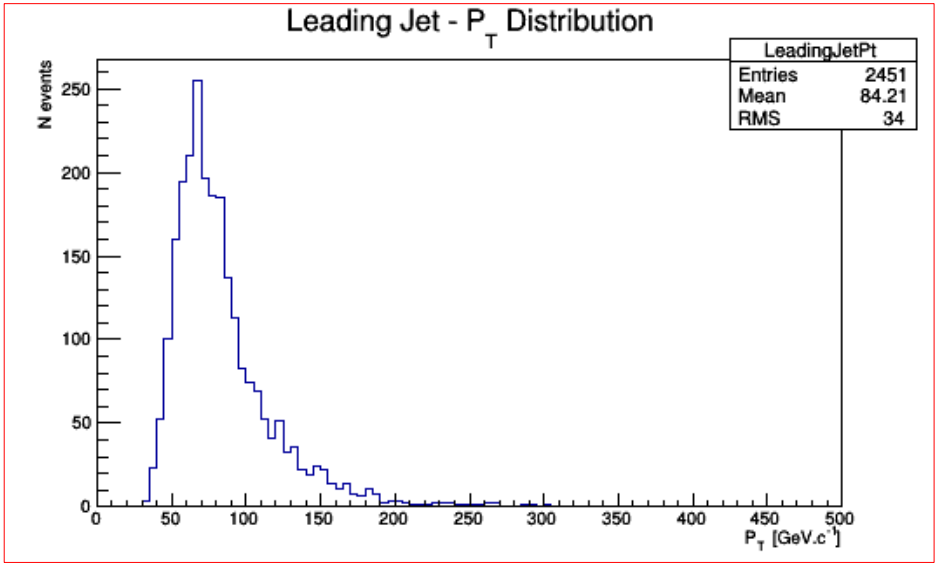
- Select jets from the same vertex as the leading jet (CEP algorithm)
  - pT (j1,j2) > 50 GeV/c
  - $|\eta|$ (j1,j2) < 2.0

Numbers

Selections (Number of events)	MC_noOOT_noPU	MC_noOOT_PU
Total Number of events	2000	8000
Associate vertex	320	2451
# PPS Tagging	58	245
# Jet1Pt > 50 GeV&&Jet2Pt > 50 GeV	29	150
# |Jet1Eta| < 2.0 && |Jet2Eta| < 2.0	28	142
Number of expect events for 100 fb^{-1}	~2370	~2990

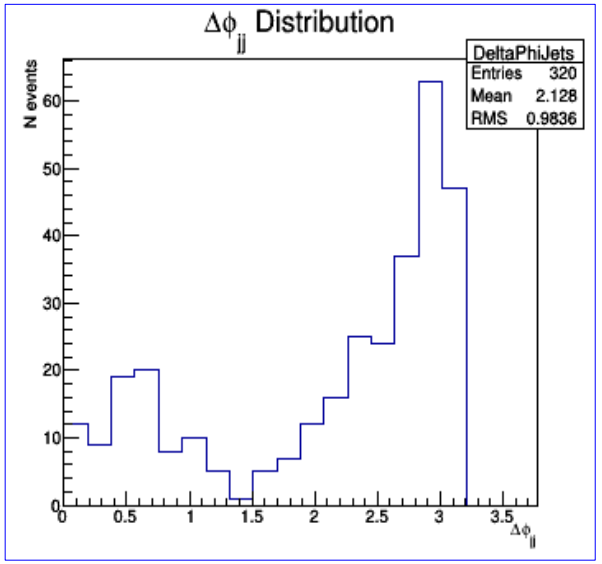
Up (noOOT_noPU) Down (noOOT_PU)

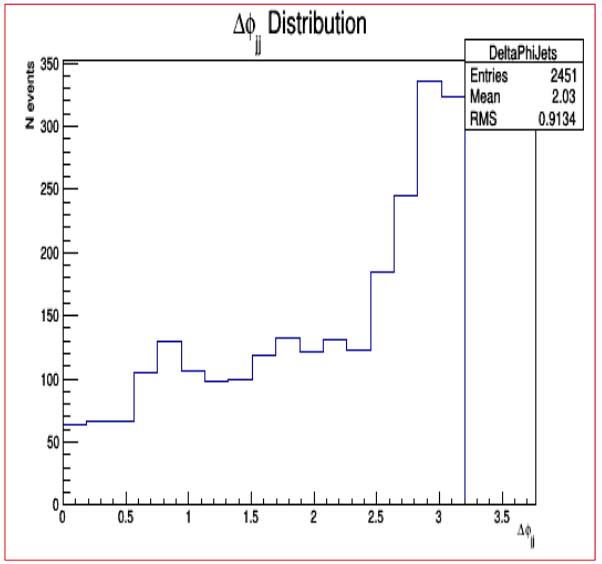


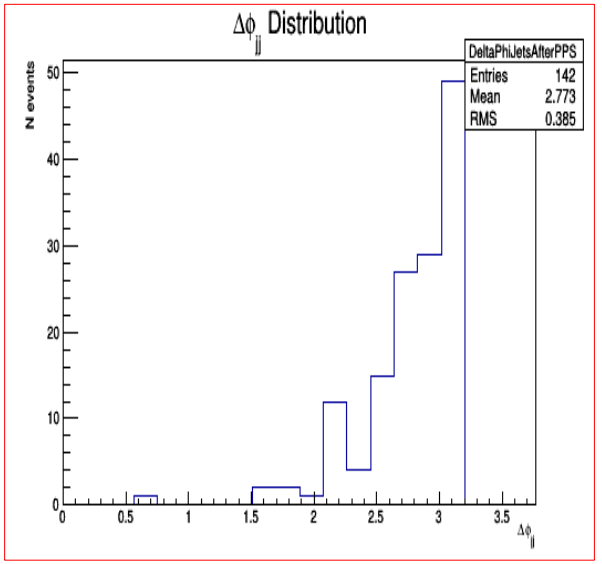


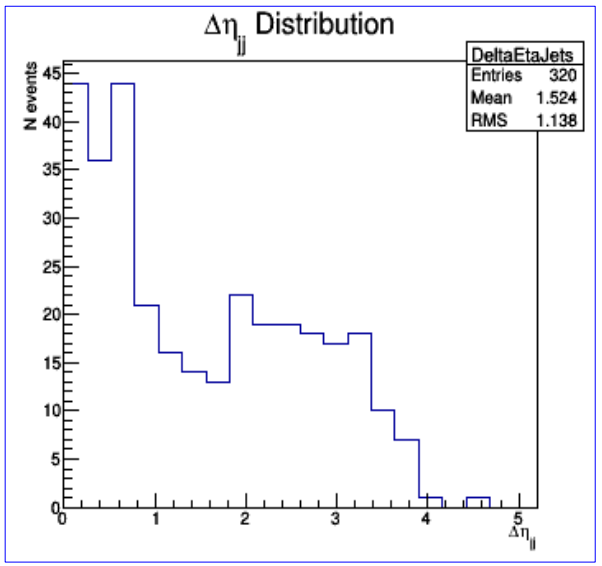
Up (noOOT_noPU) Down (noOOT_PU)

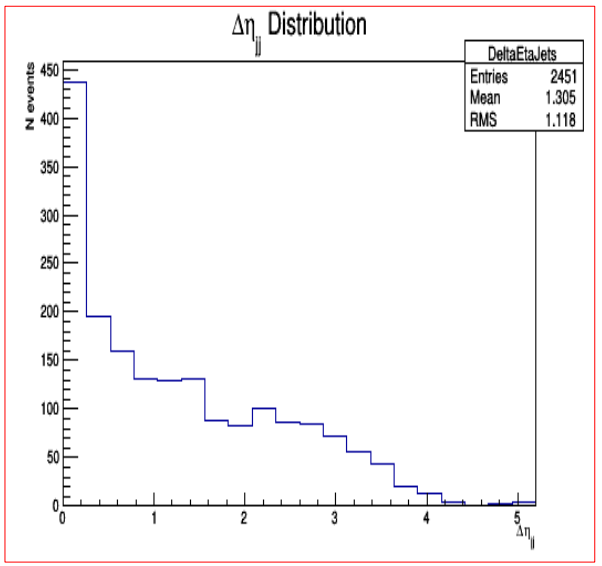
After cuts

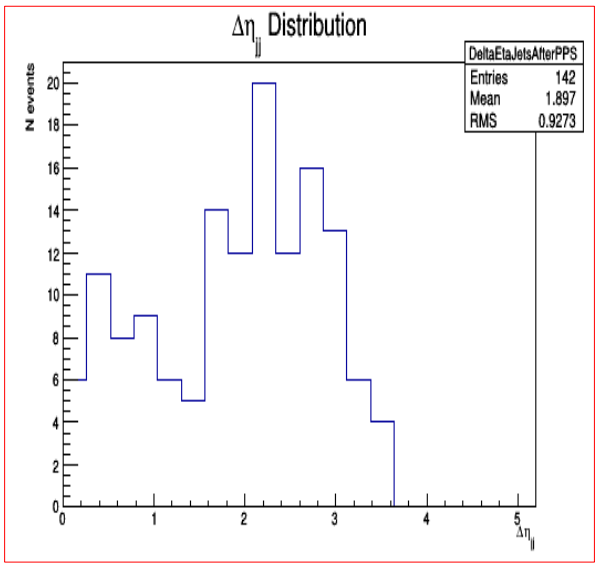












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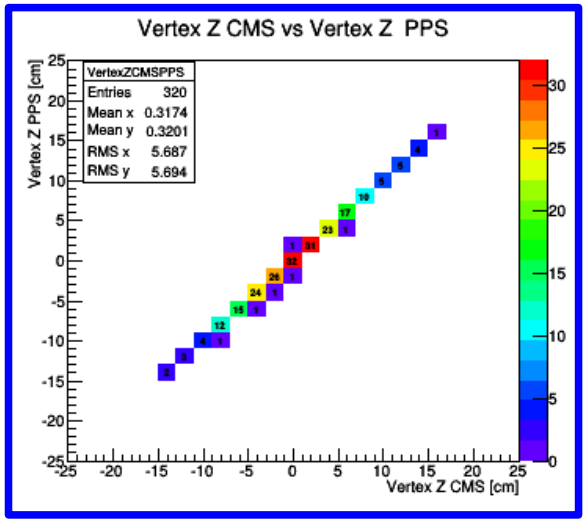

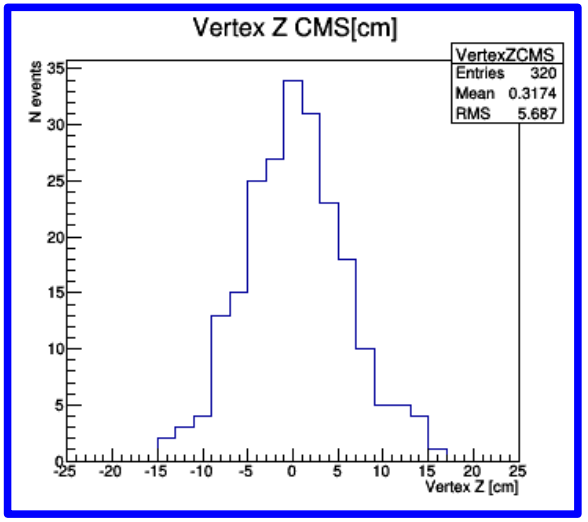

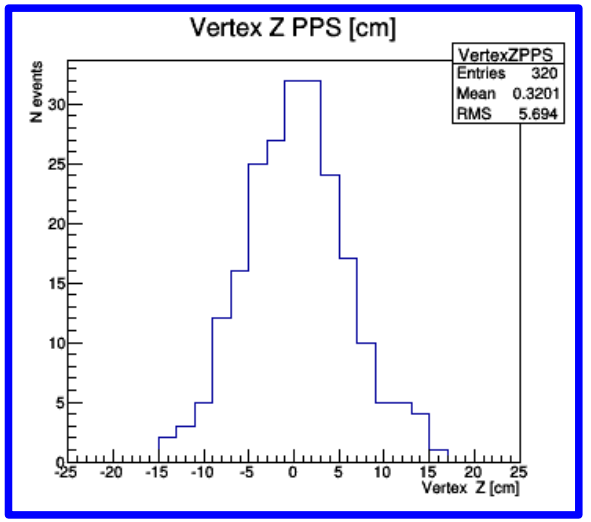

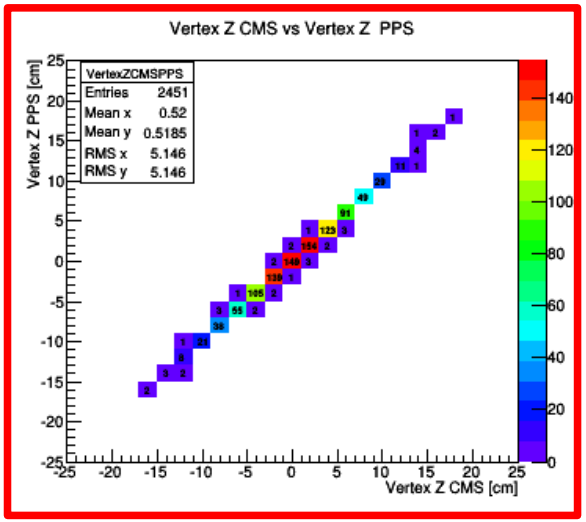

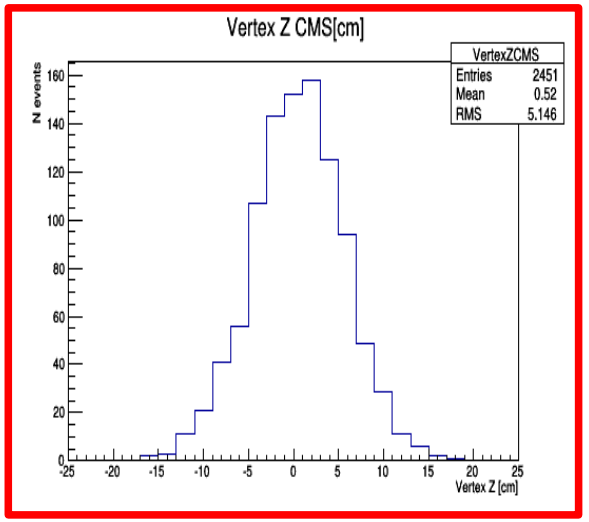

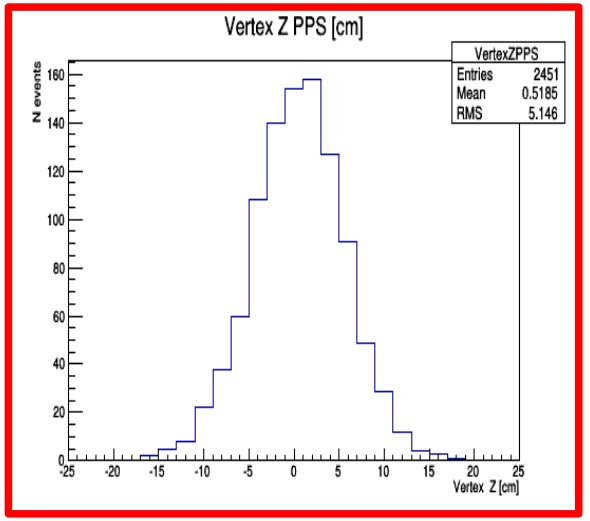

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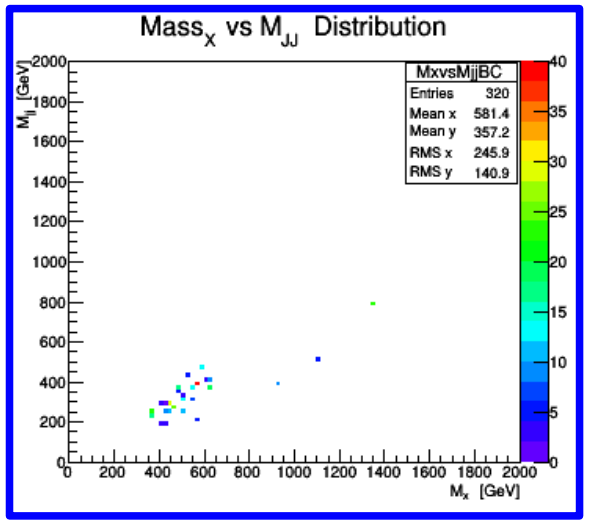

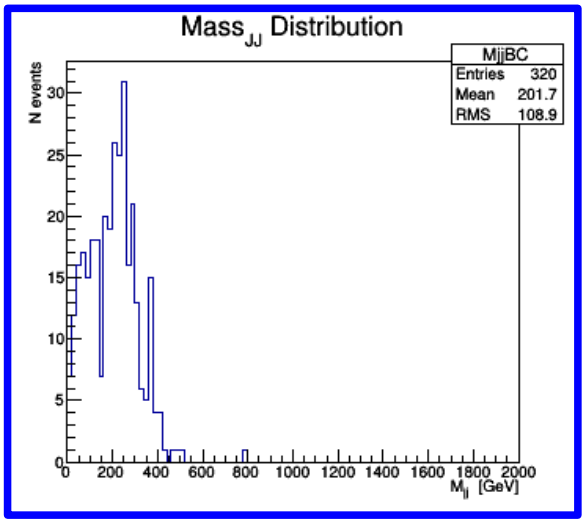

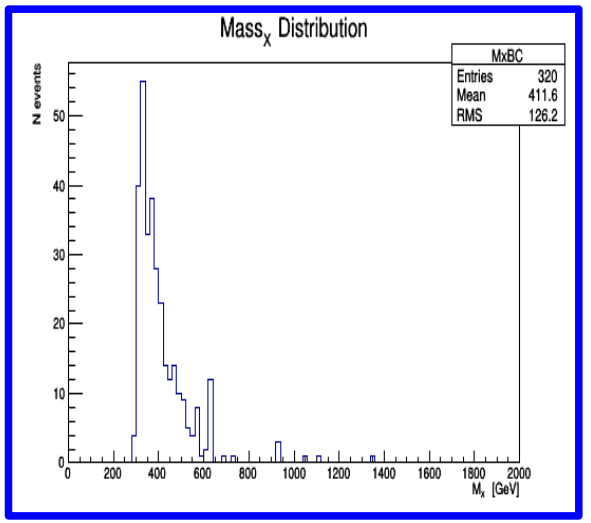

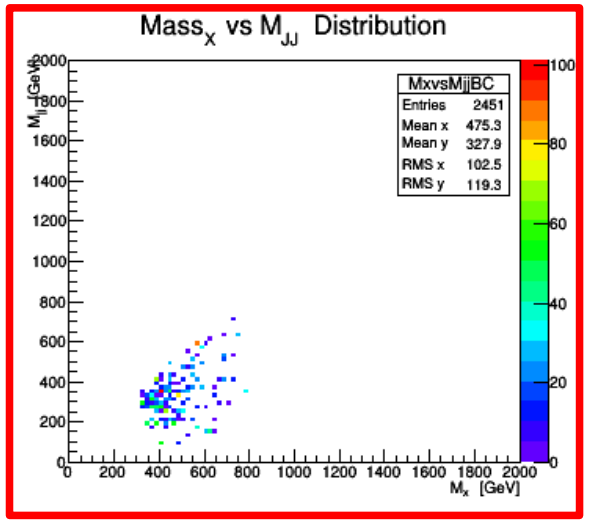

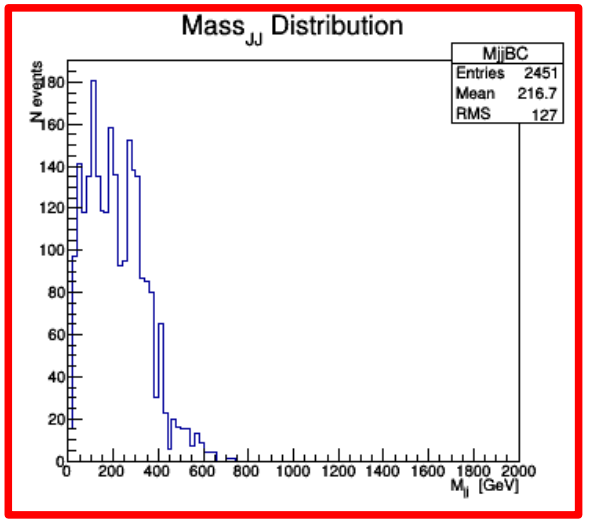

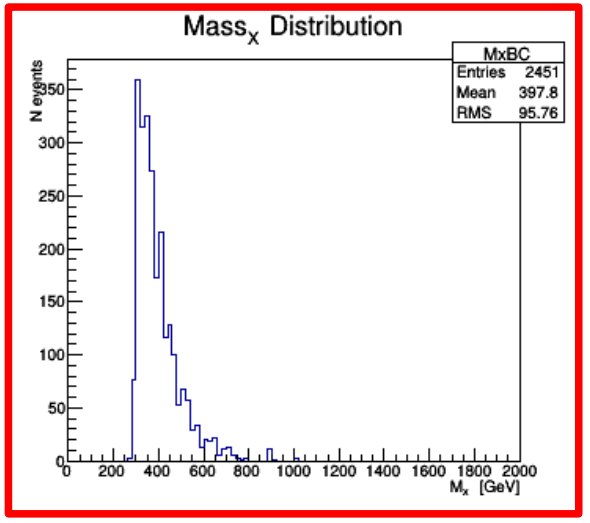

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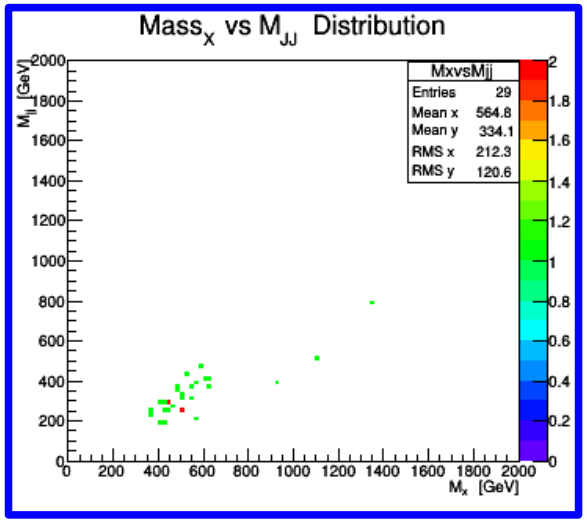
After cuts



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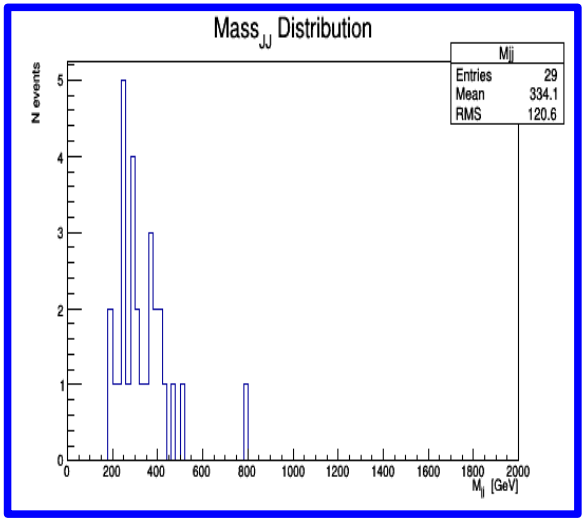

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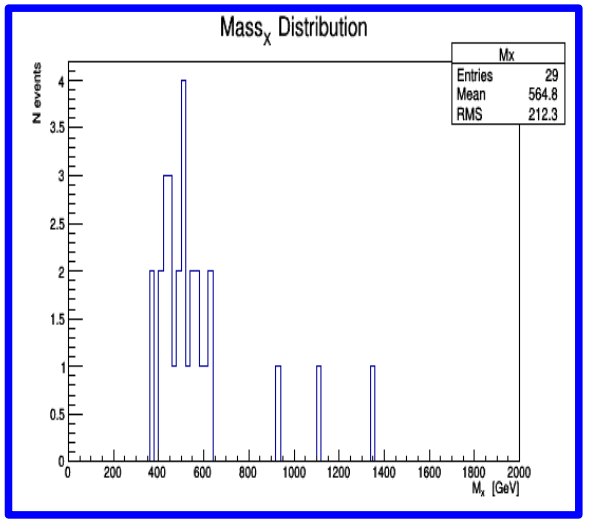

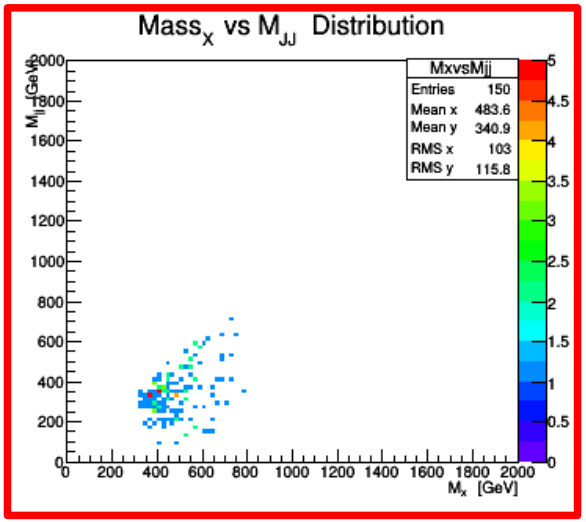

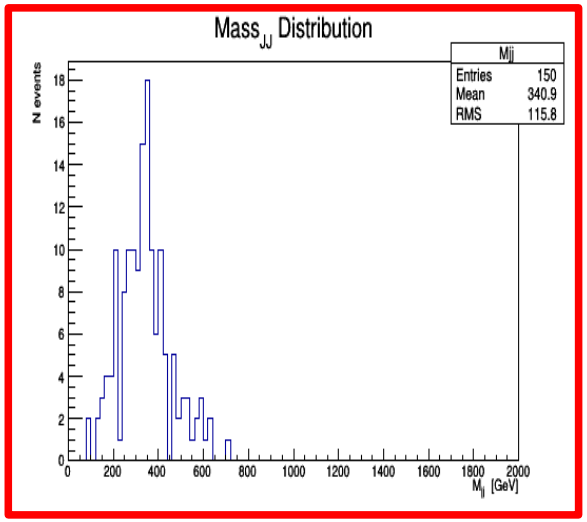

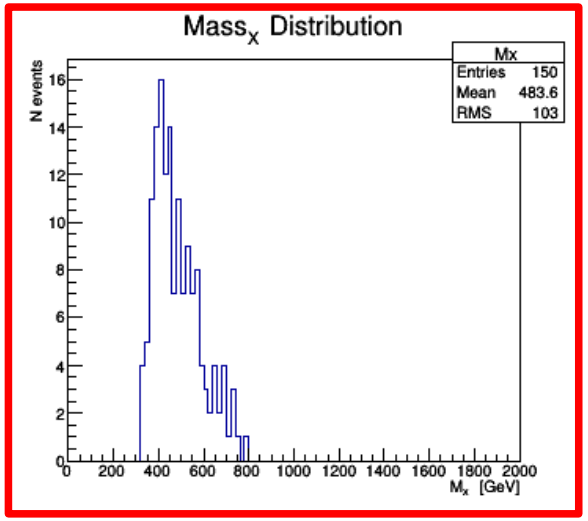

Final Remarks

- Beam background needs to be included (from Totem data) in this analysis (keeping in touch with Jonathan) as well as Pomwig DPE
- The current results seems to be consistent as they are similar for the samples with and without pileup
- We are studying how to improve the M_{jj} resolution