Imperial College London

Top Control Region

P. Dunne

Updates on progress since last week

- Chayanit is producing 2D trigger weights binned in met and jet 2 pt to cross check
- munu region with met not metnomu cut studied
  - worse statistics mask some disagreement but hard to tell if actually better
- Top control region studied

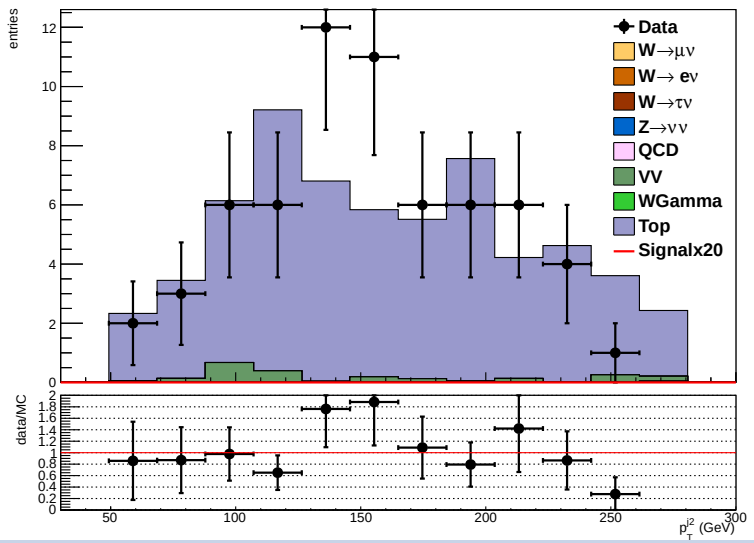
Top control region study

- Top contribution in presel region is small: 3%
- However top background is up to 20% in W control regions
- Have looked into using $e\mu$ region to normalise this contribution:
  - Require 1 tight electron and 1 tight muon
- Low statistics with current presel:
  - Try relaxing cuts whilst checking weight doesn't vary dramatically

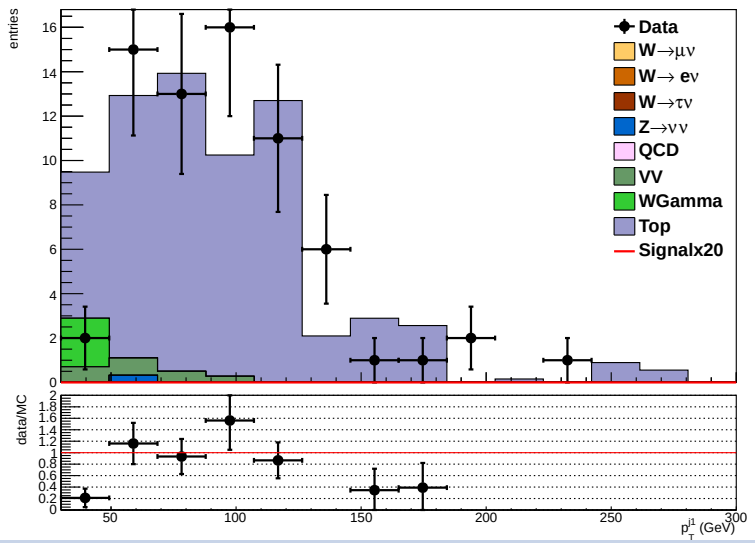
Cut on min$\Delta\phi$(alljets-metnomu)	1.0	0.5	0.0
NData in $e\mu$ region	30	47	68
NOther Backgrounds (not QCD)	4	5	5
NTop from MC	39	63	92
Top weight$\pm$data stat.$\pm$MC stat.	0.66$\pm$0.14$\pm$0.10	0.68$\pm$0.11$\pm$0.08	0.69$\pm$0.09$\pm$0.06

Check Shape Agreement

Jet 1 pt

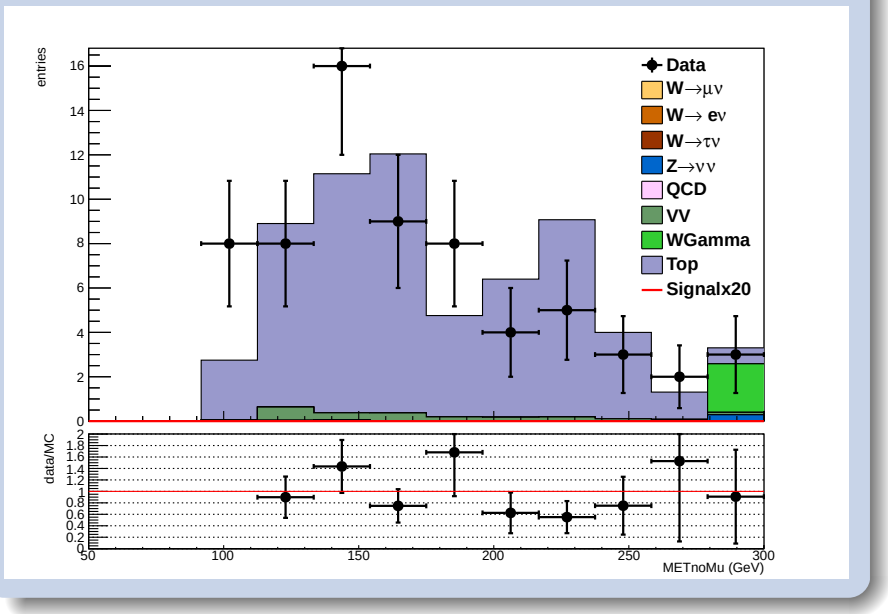


Jet 2 pt

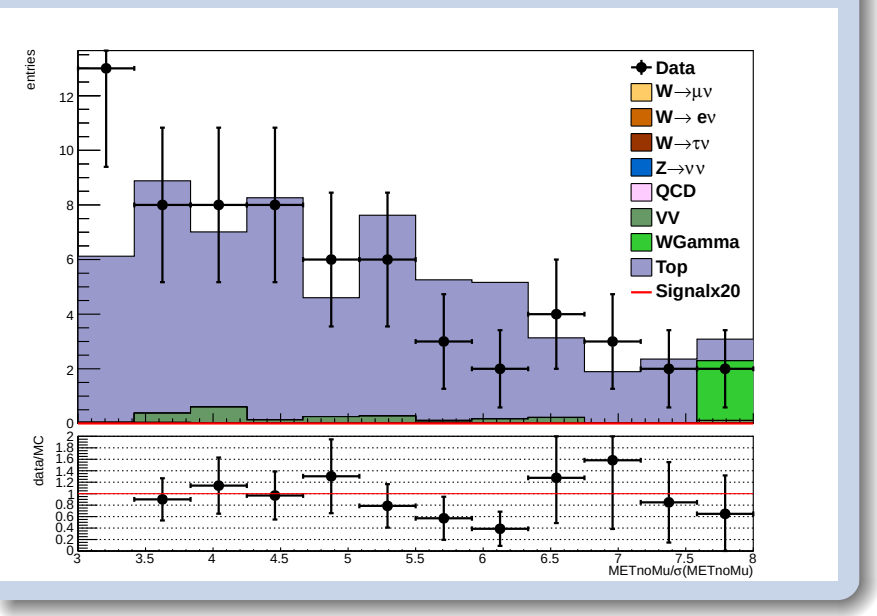


New control plots - top

METnomu

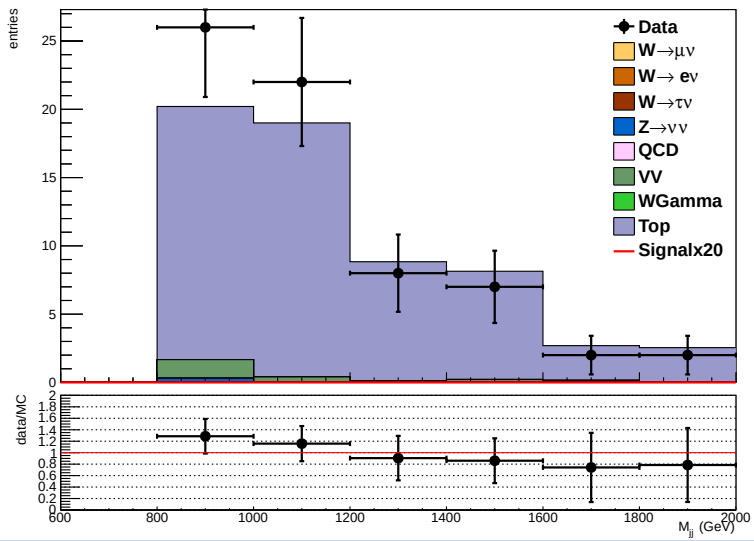


METnomusig

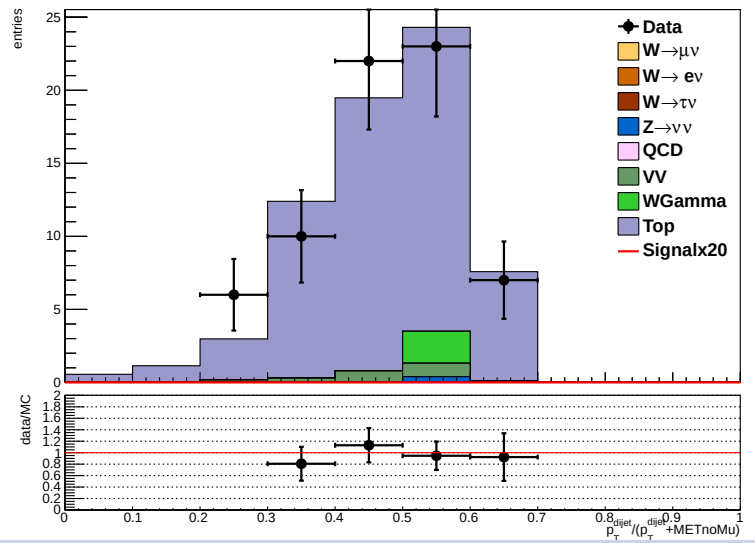


New control plots - top

Mjj

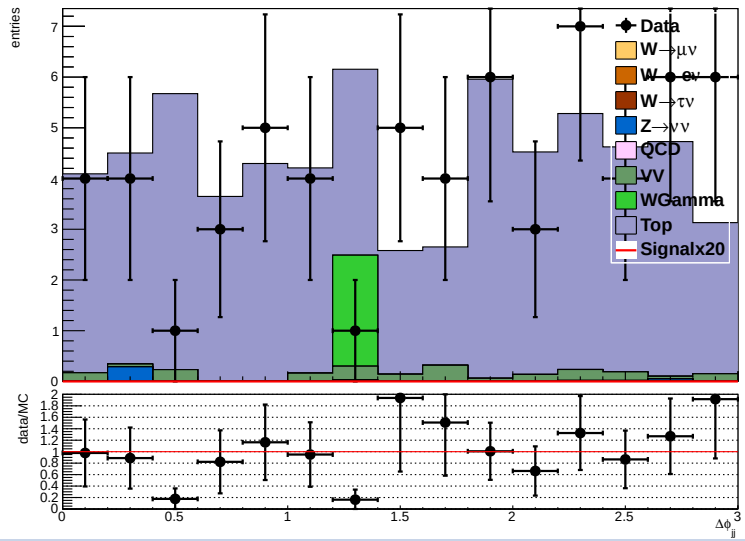


dijet-metnomu pt fraction

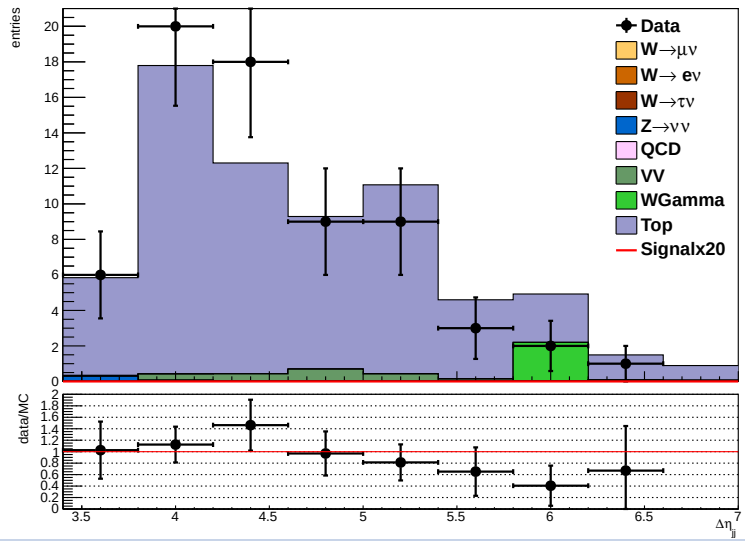


New control plots - top

Dijet Dphi

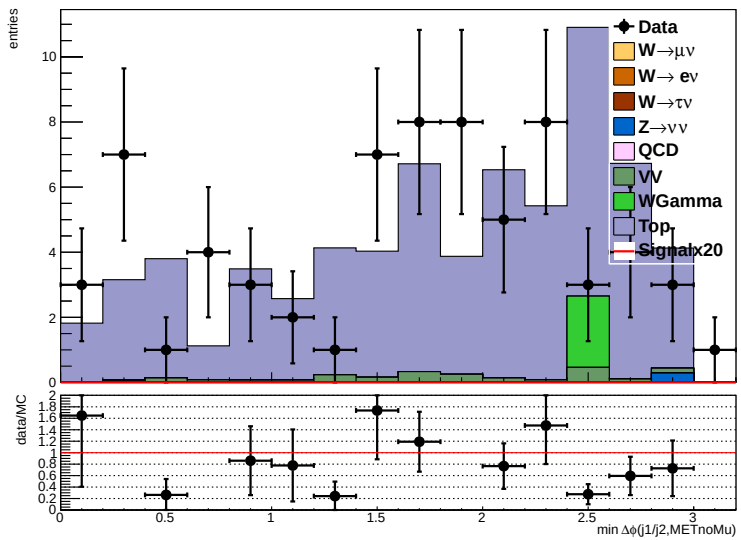


Detajj

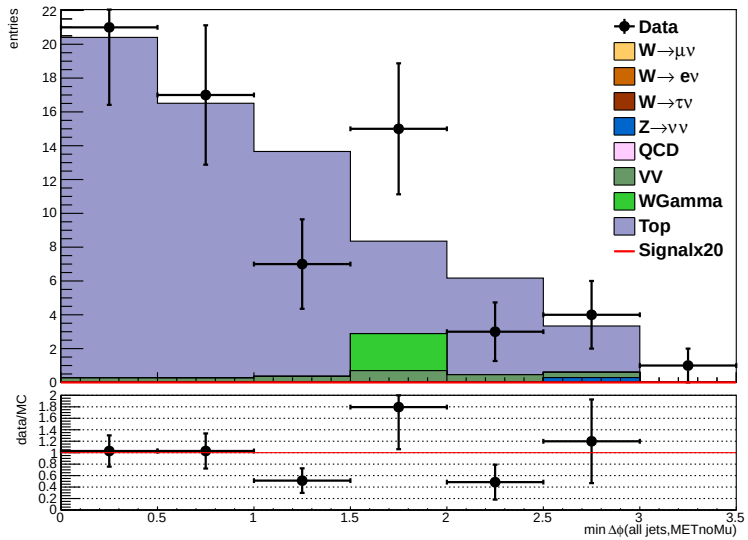


New control plots - top

Leading jets-met mindphi



All jets-met mindphi



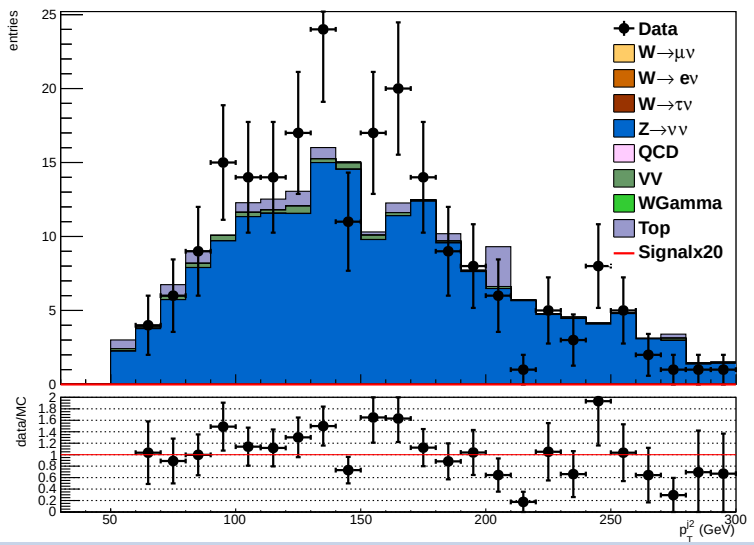
Conclusions

- Shape agreement seems reasonably good
- Weight stays fairly constant as cut is removed
- As top contribution is slightly decreased W weights increase slightly
  - enu: 0.43→0.46
  - munu: 0.49→0.52
  - taunu: 0.89→0.94
- Propose we use this control region to normalise top from now on

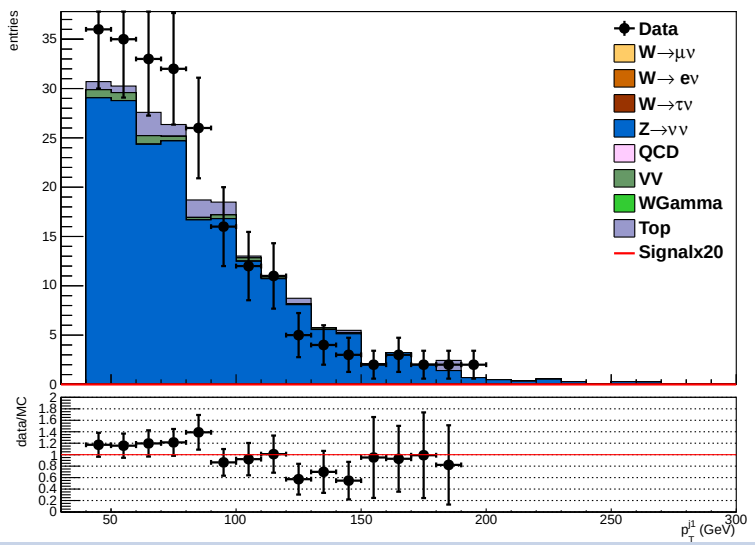
Backup

New control plots - mumu

Jet 1 pt

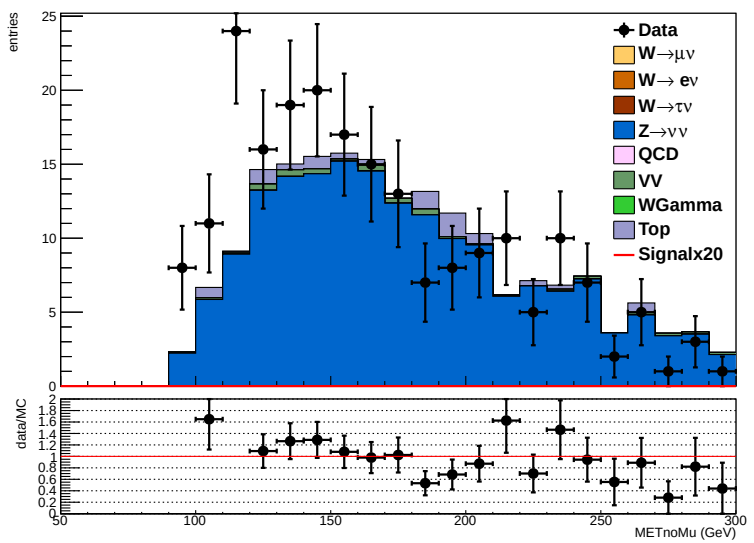


Jet 2 pt

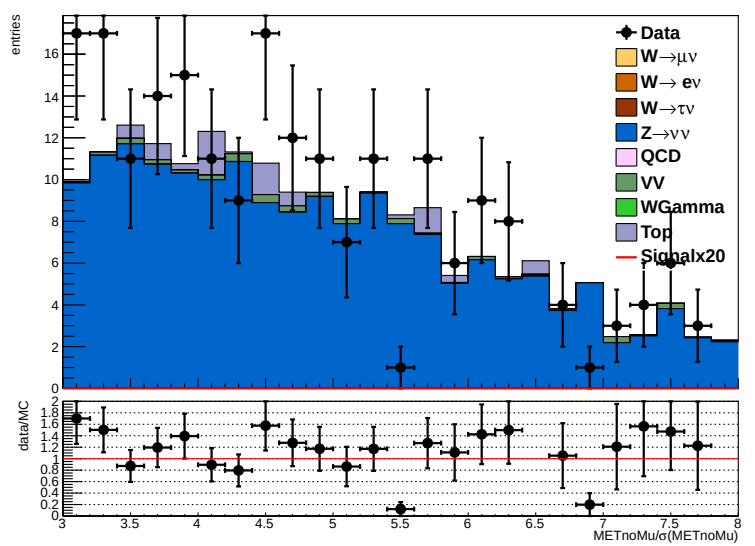


New control plots - mumu

METnomu

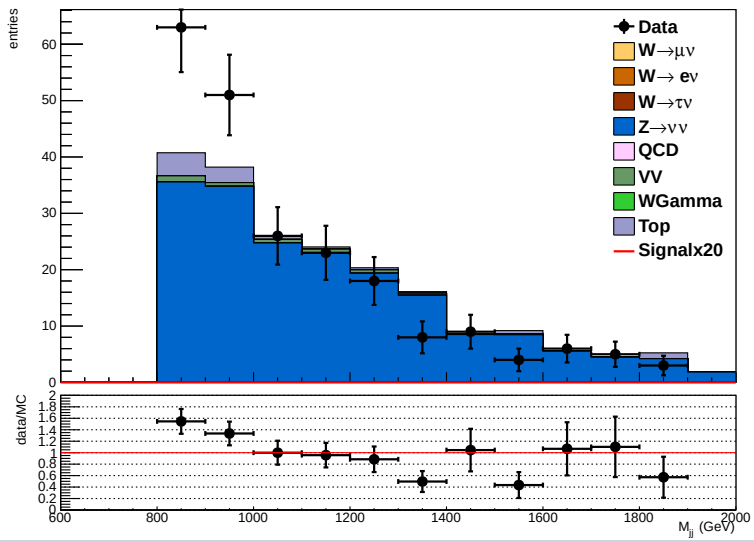


METnomusig

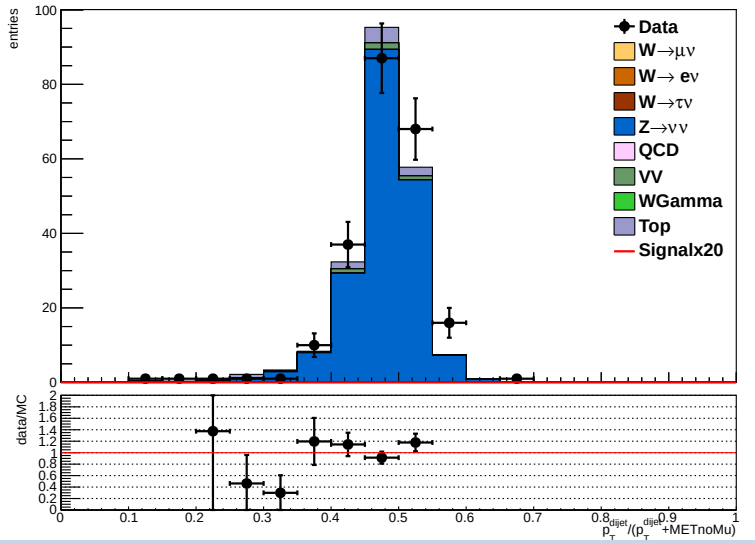


New control plots - mumu

Mjj

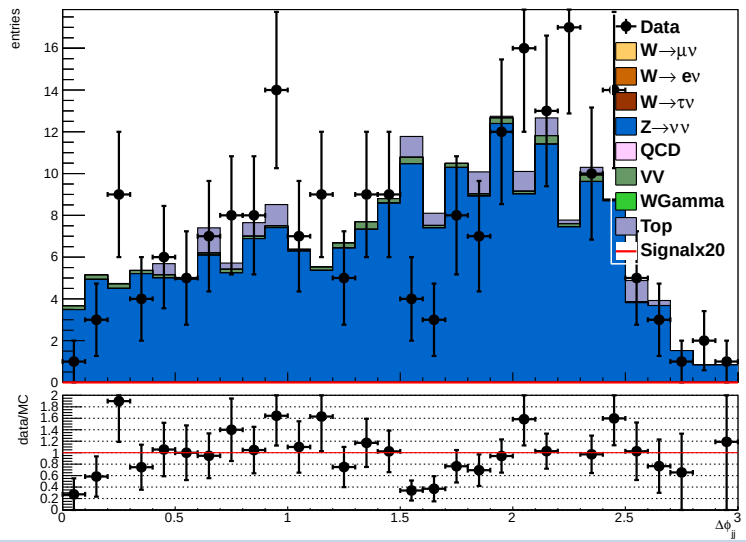


dijet-metnomu pt fraction

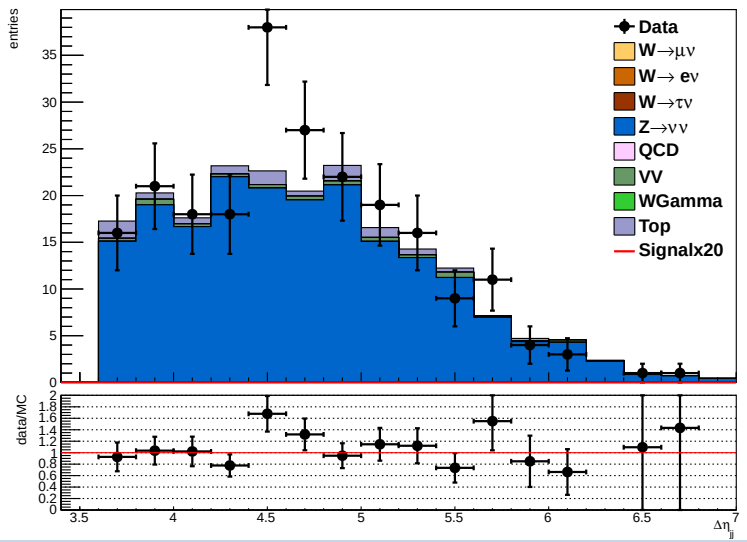


New control plots -mumu

Dphijj

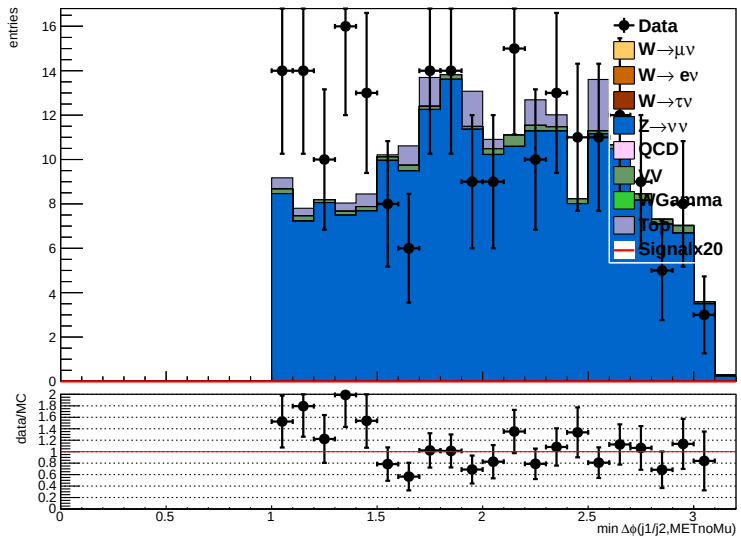


Detajj

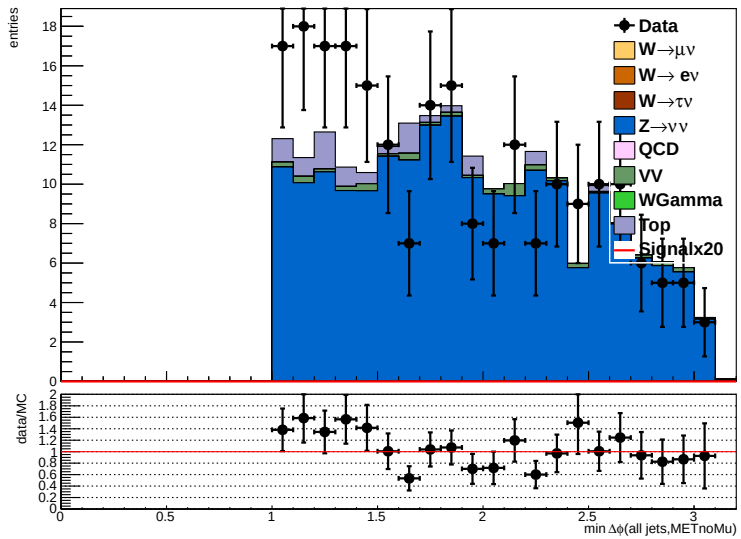


New control plots -mumu

Leading jets-met mindphi

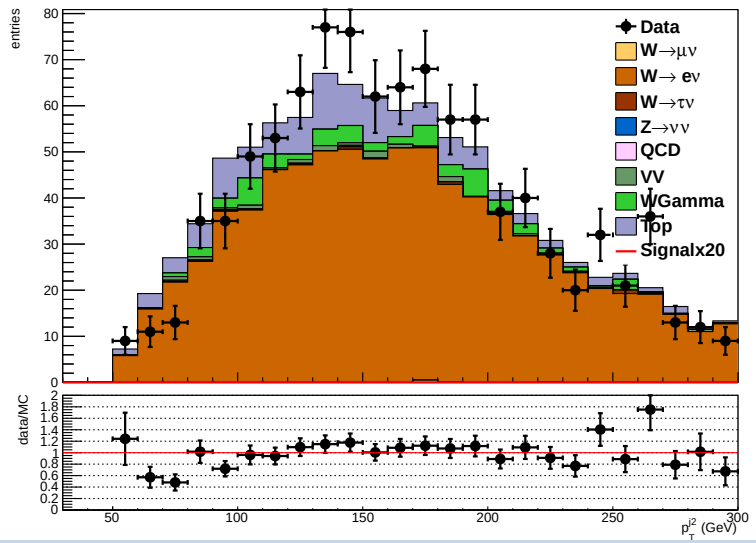


All jet-met mindphi

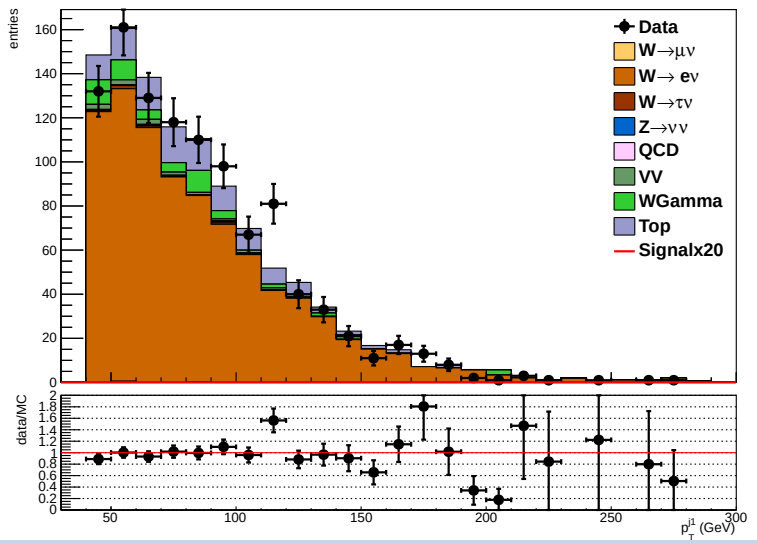


New control plots -enu

Jet 1 pt

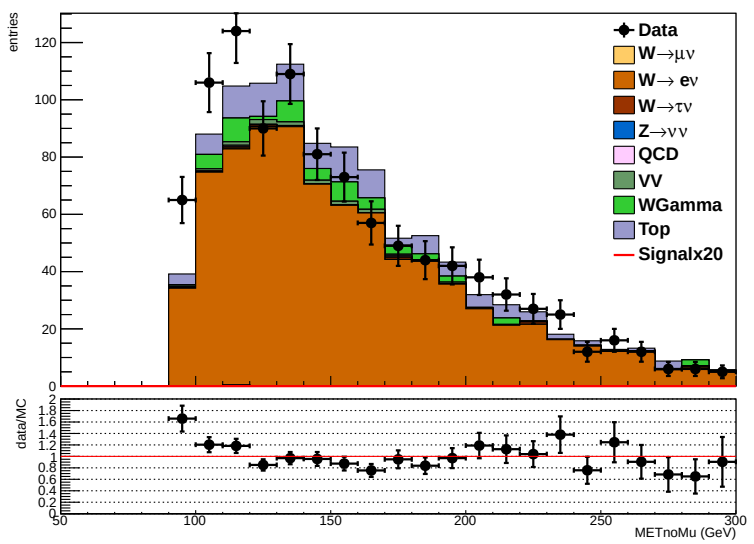


Jet 2 pt

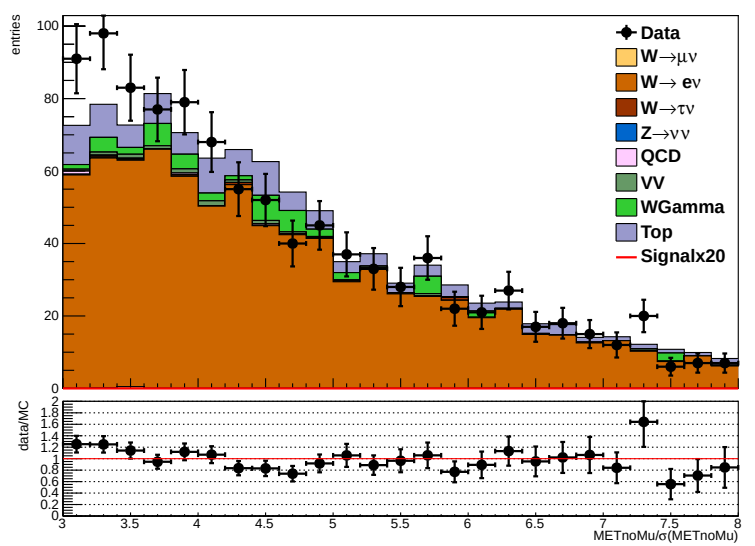


New control plots -enu

METnomu

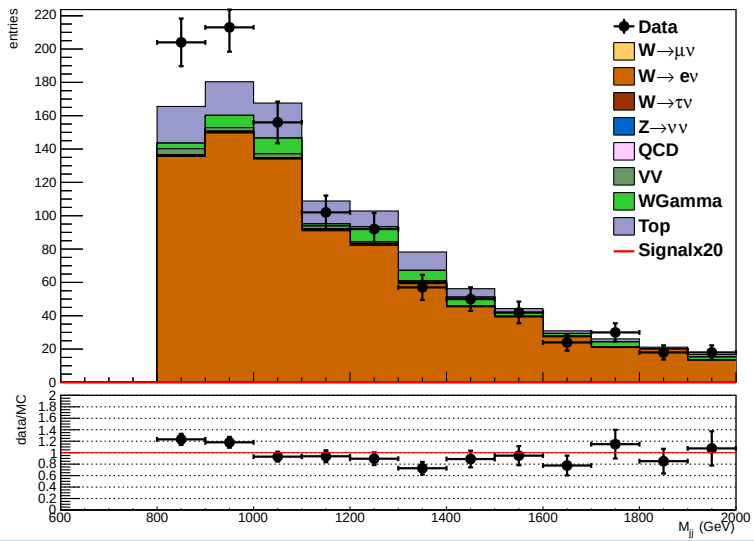


METnomusig



New control plots - enu

Mjj



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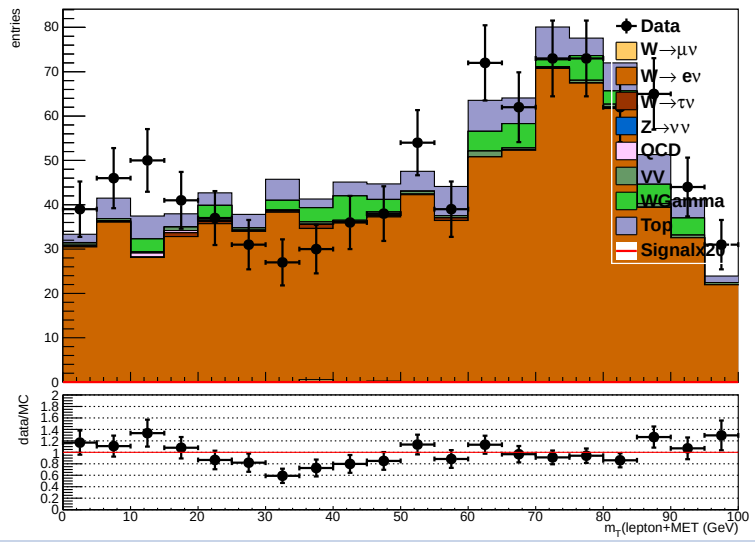
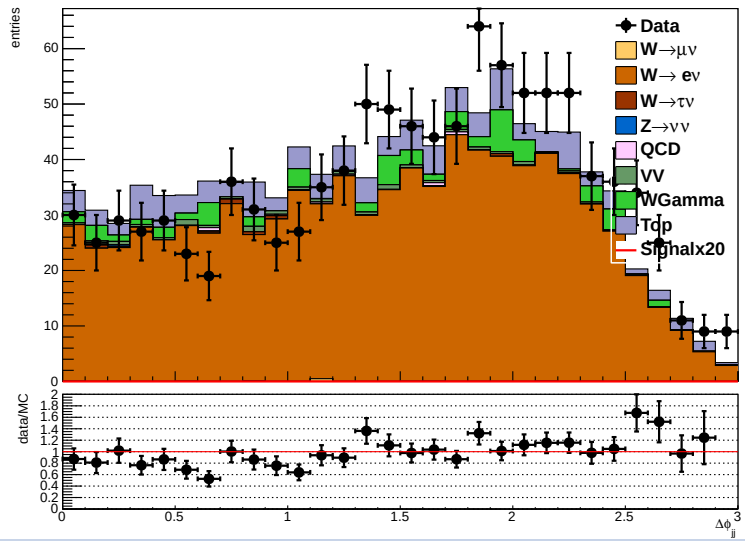
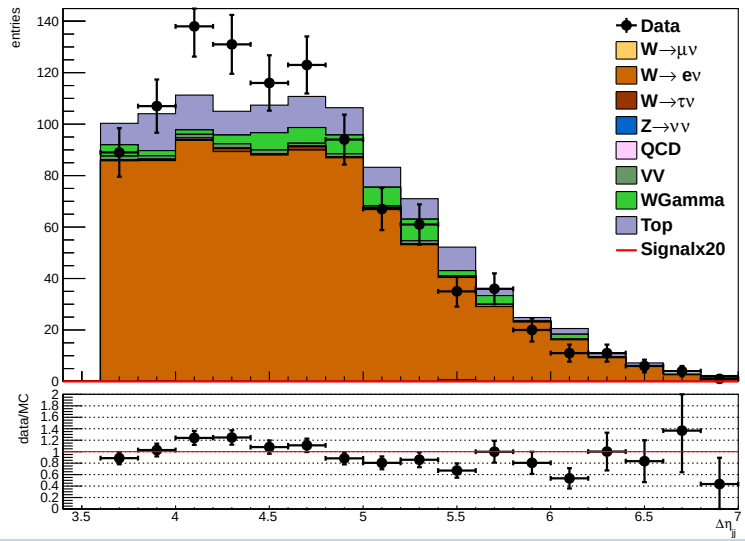


New control plots - enu

Dijet Dphi

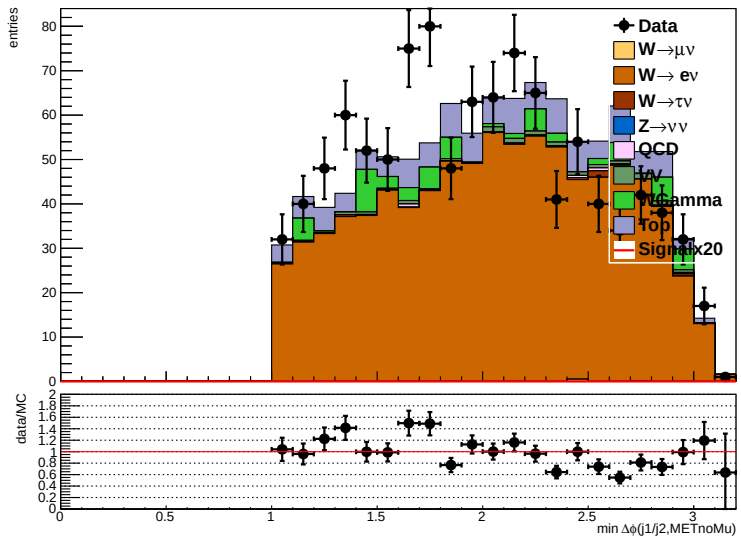


Detajj



New control plots - enu

Leading jets-met mindphi



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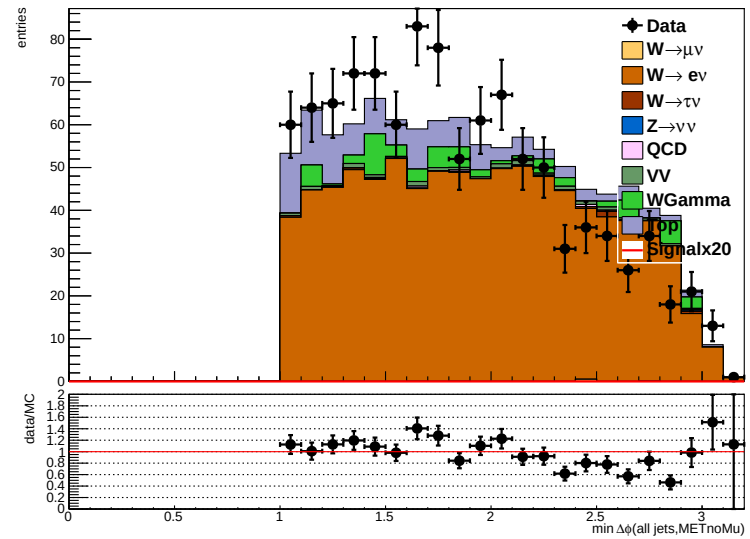
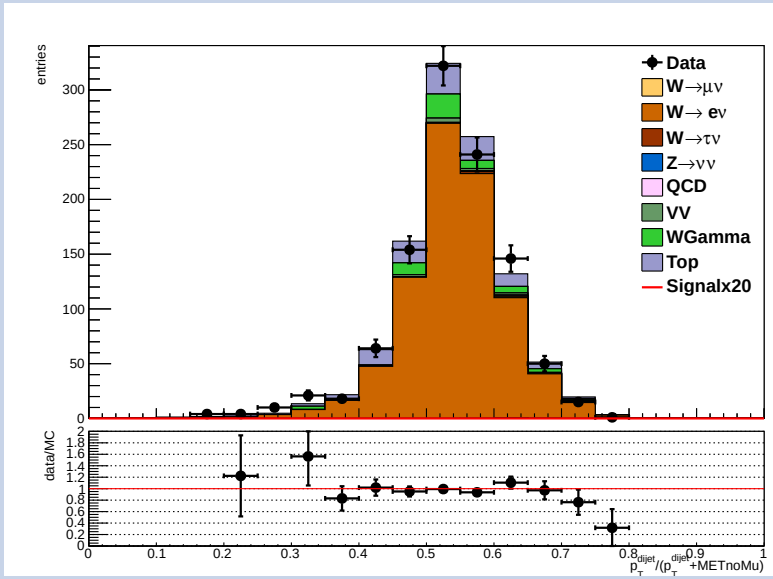


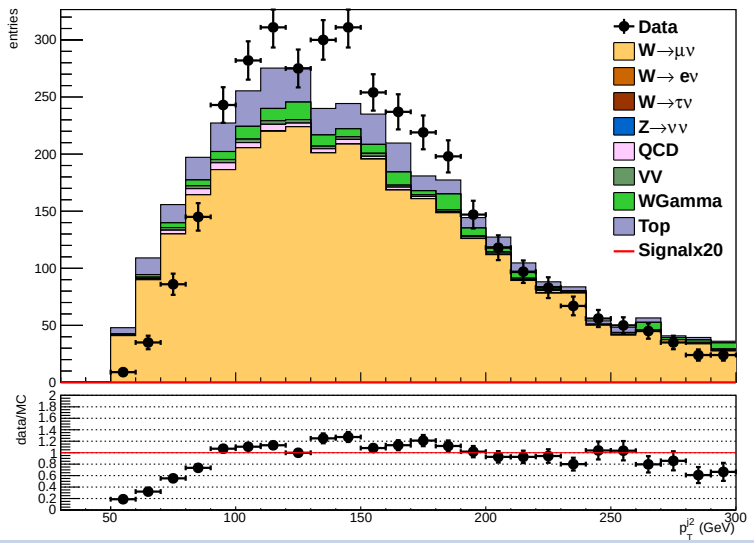
New control plots - enu

dijet-metnomu pt fraction

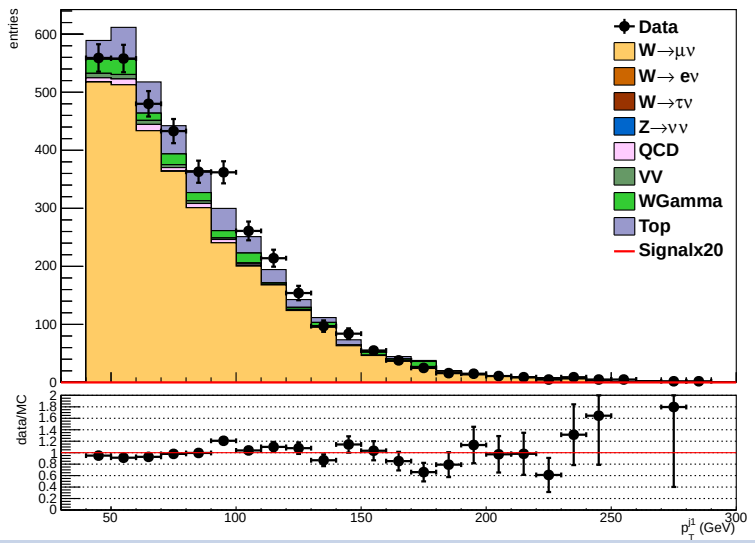


New control plots - munu

Jet 1 pt



Jet 2 pt



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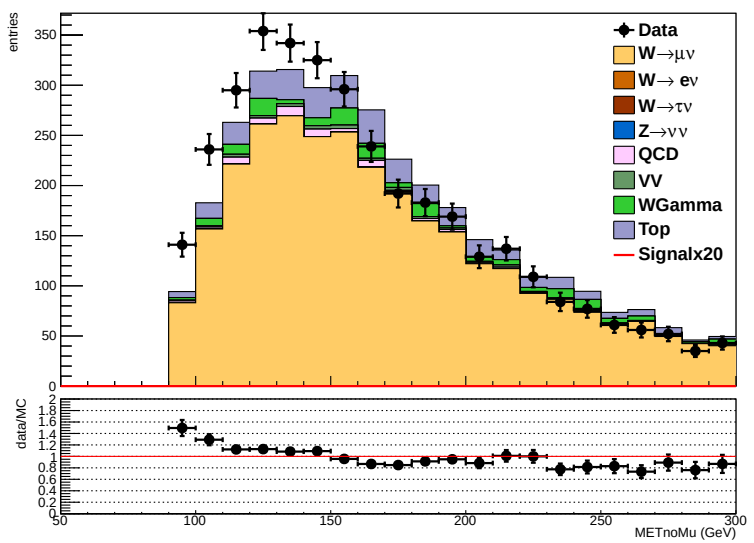
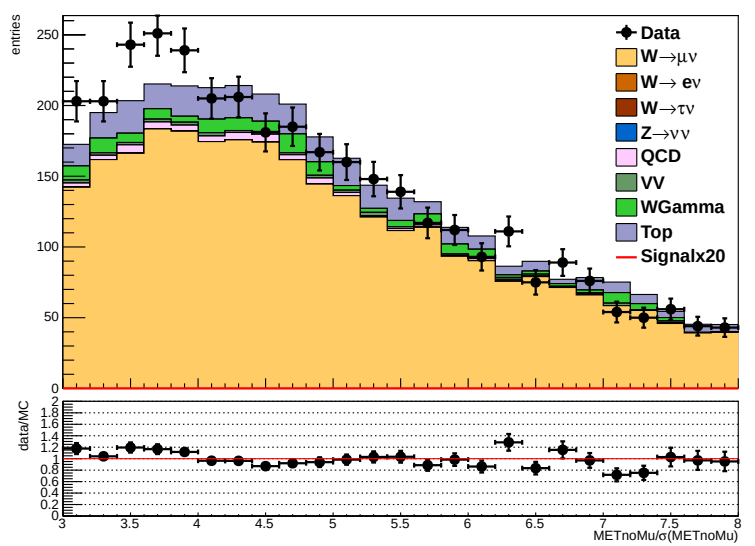
METnomu

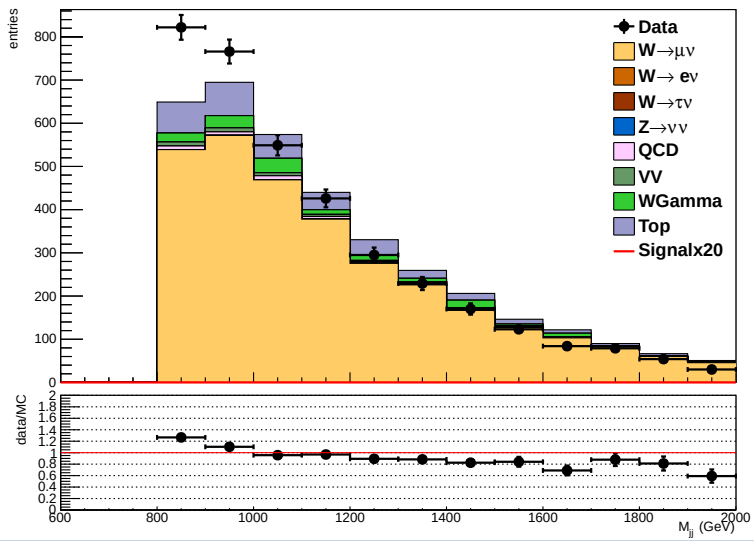


METnomusig



New control plots - munu

Mjj



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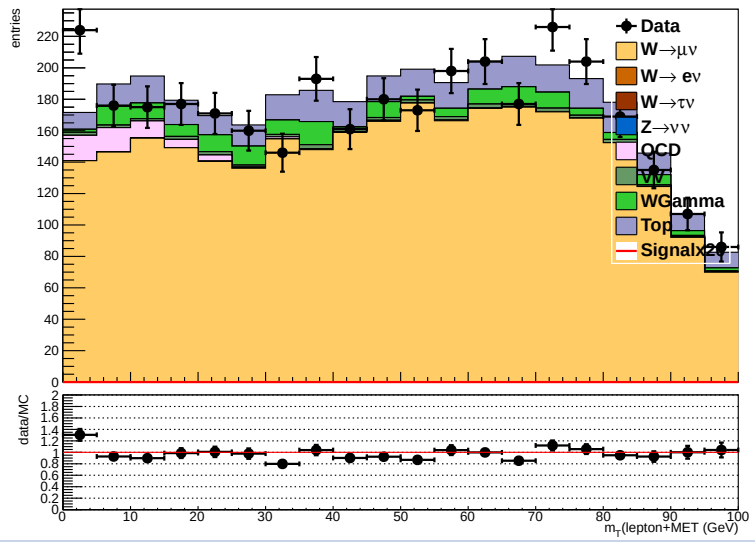
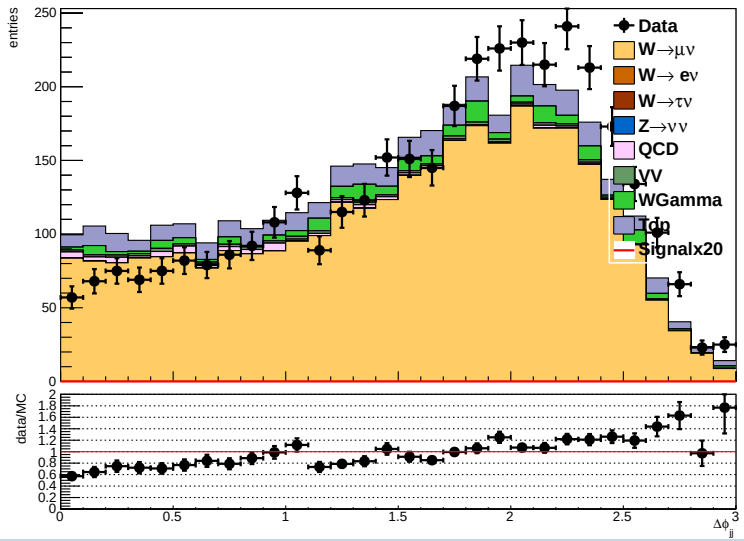
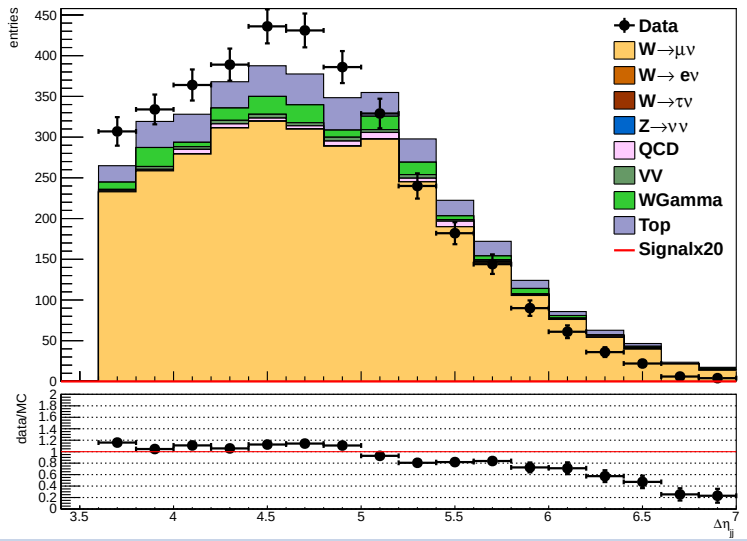


New control plots - munu

Dijet Dphi

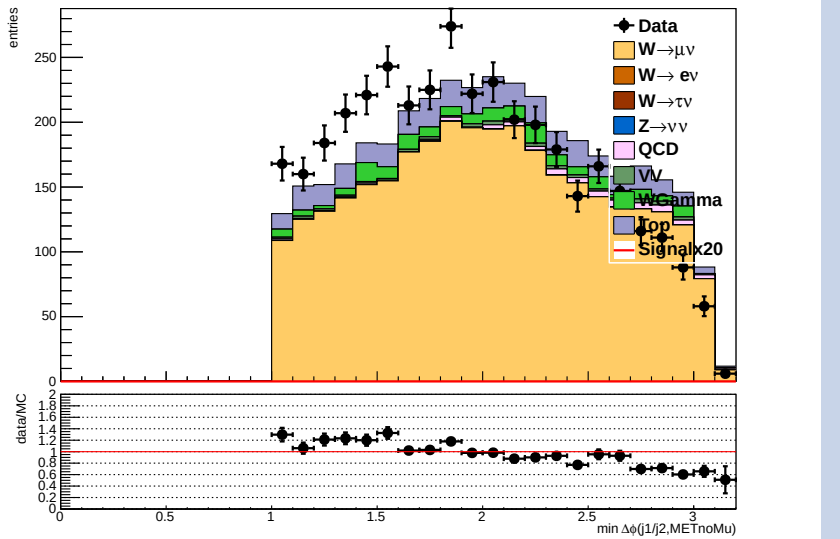


Detajj

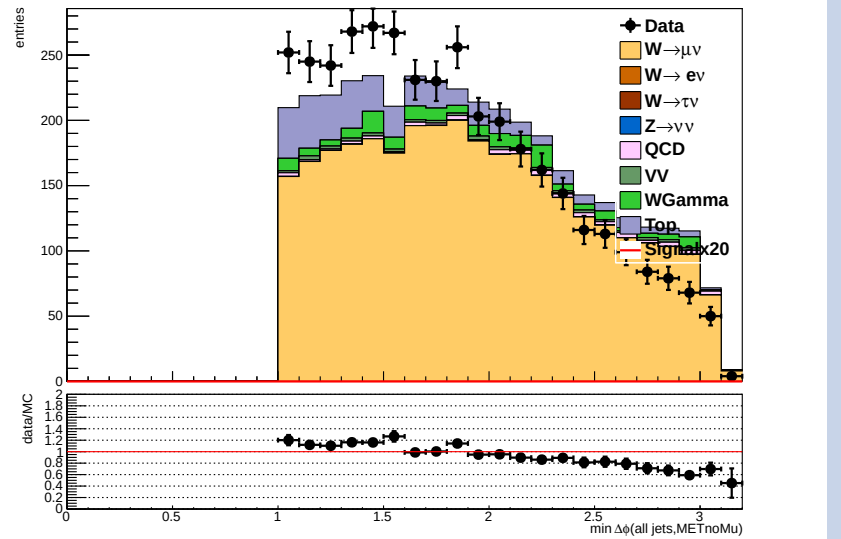


New control plots - munu

Leading jets-met mindphi

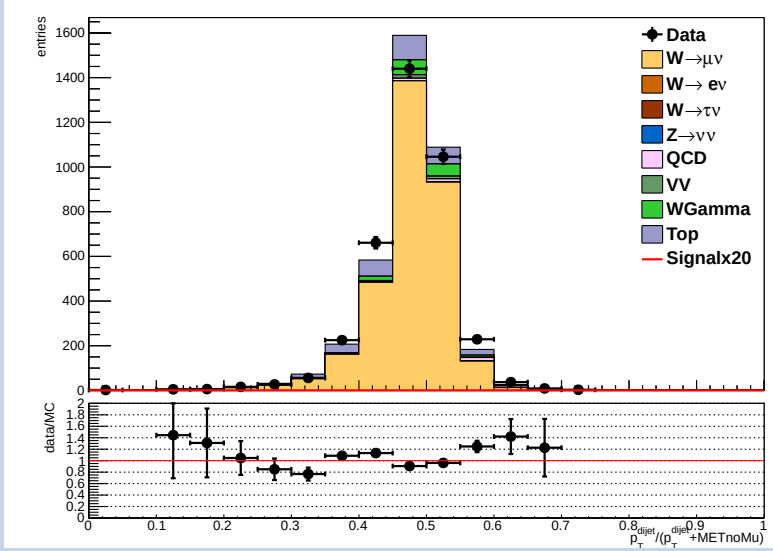


All jets-met mindphi



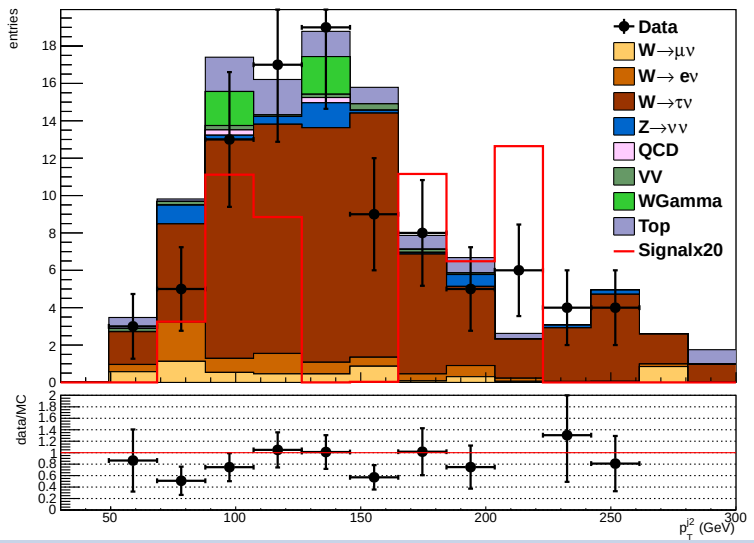
New control plots - munu

dijet-metnomu pt fraction

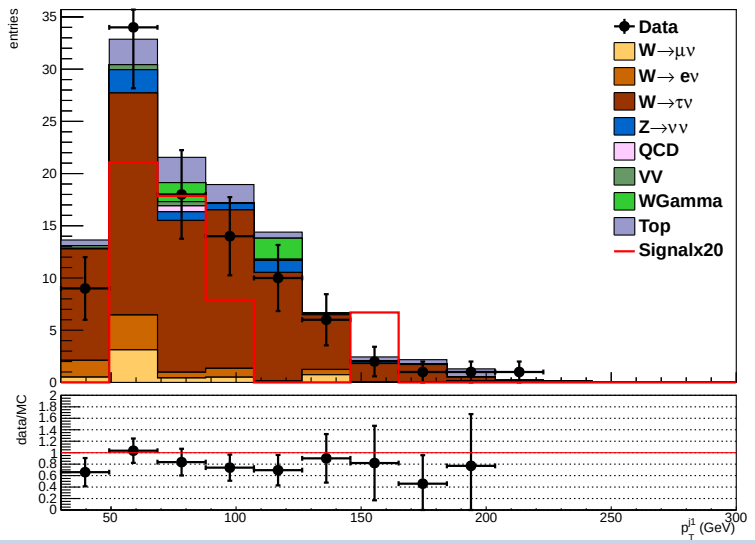


New control plots - taunu

Jet 1 pt



Jet 2 pt



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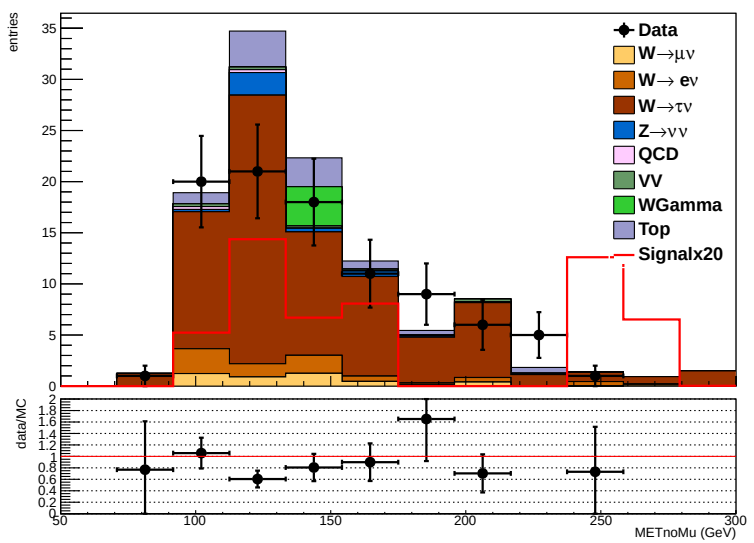
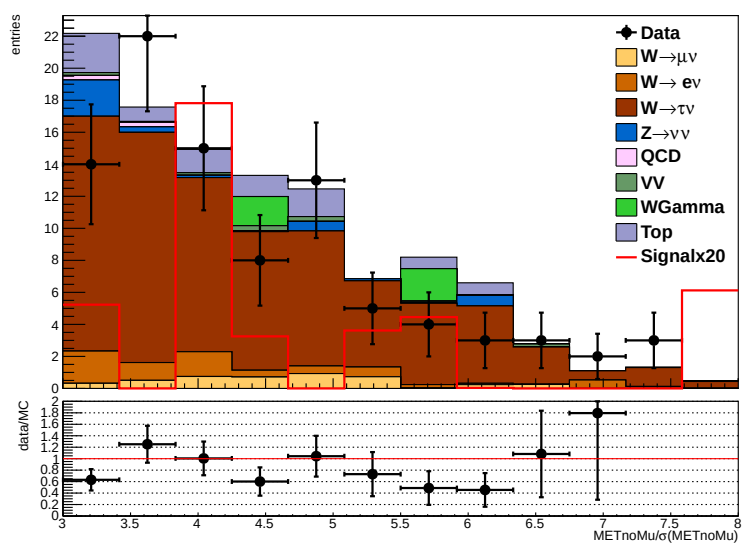


METnomusig



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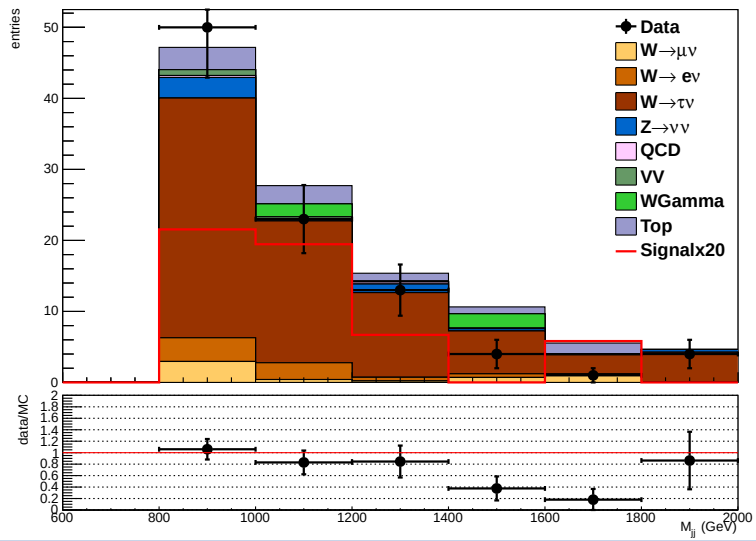
Mjj



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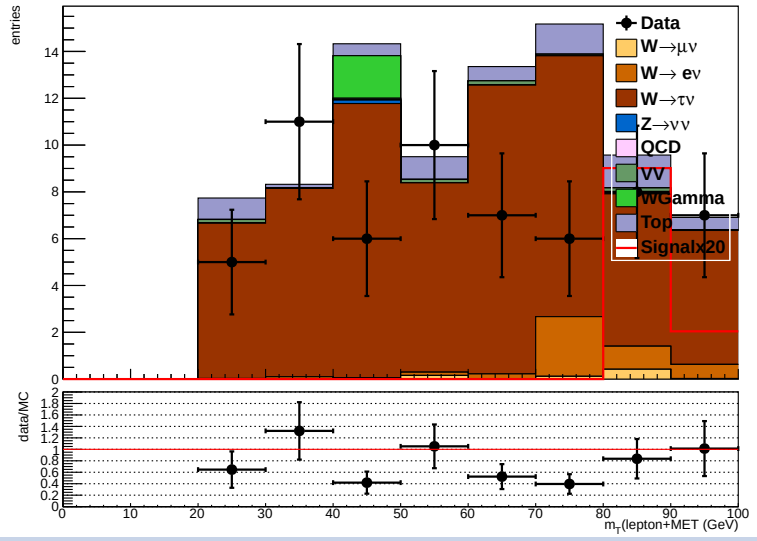
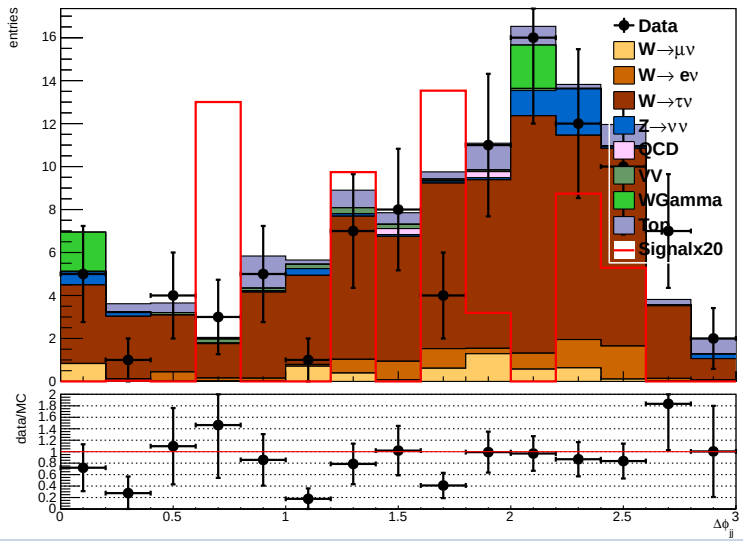
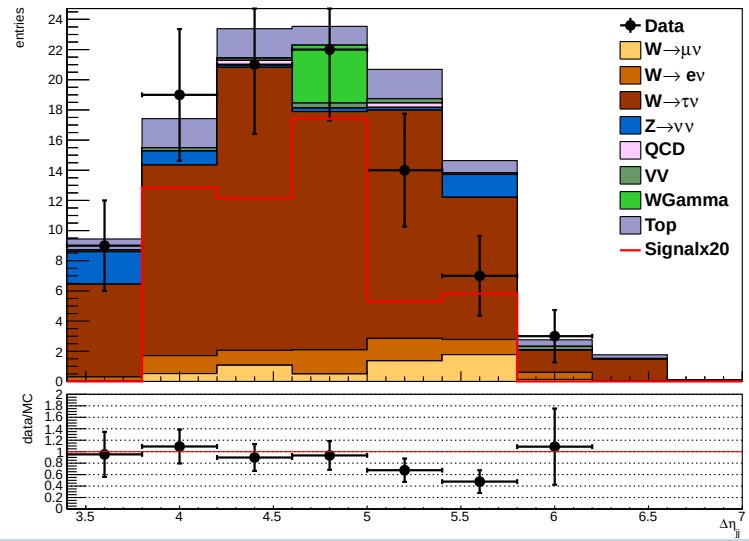


New control plots - taunu

Dijet Dphi

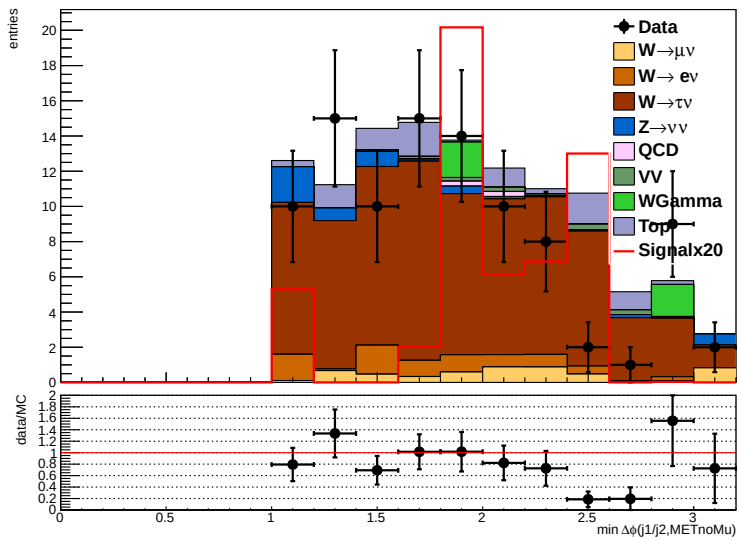


Detajj

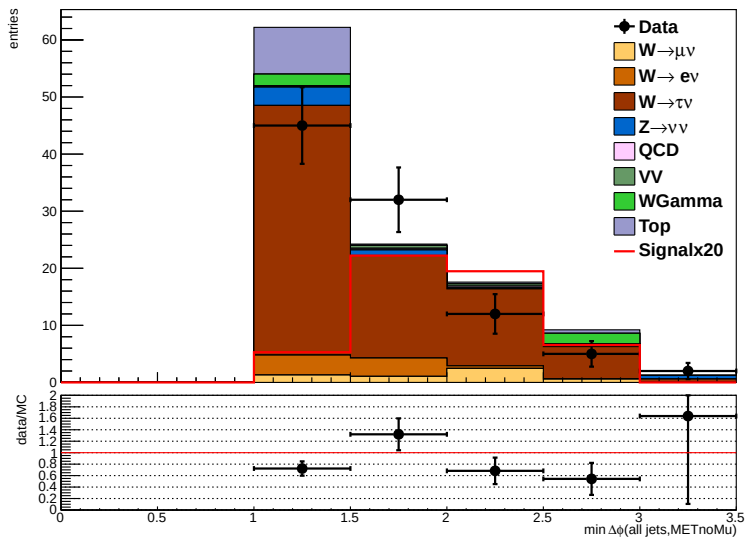


New control plots - taunu

Leading jets-met mindphi

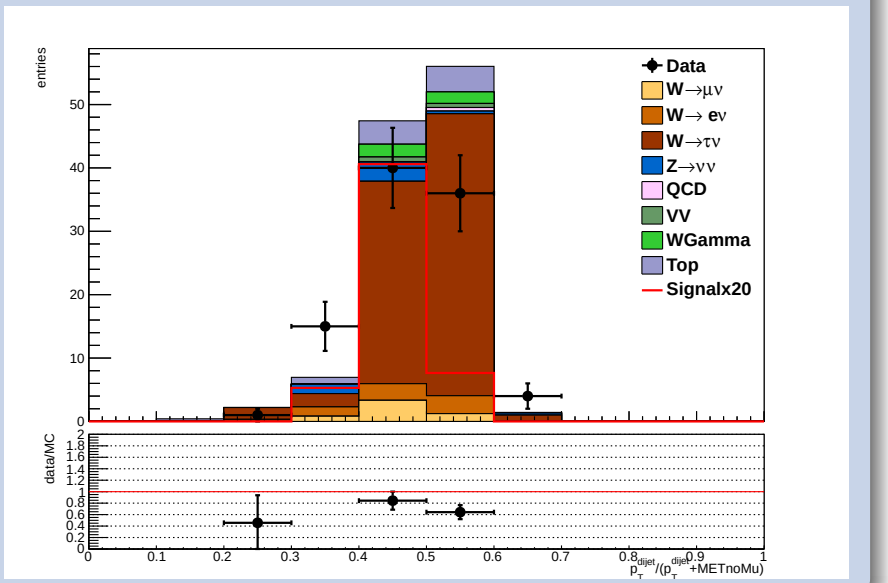


All jets-met mindphi



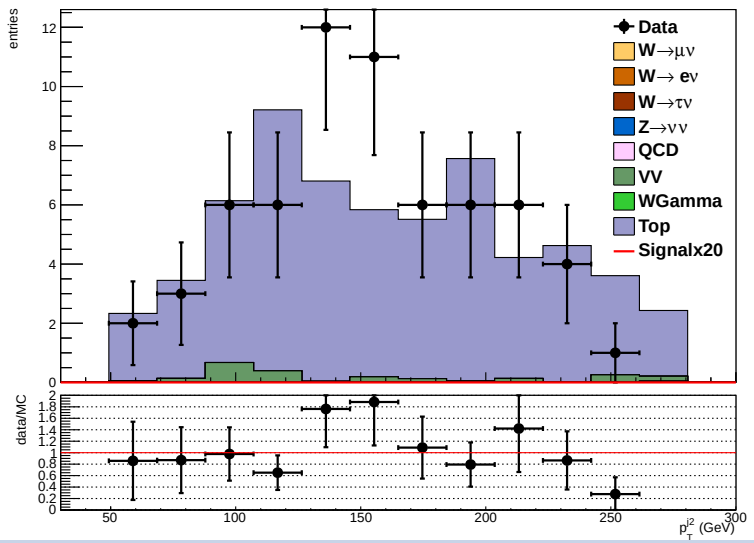
New control plots - taunu

dijet-metnomu pt fraction

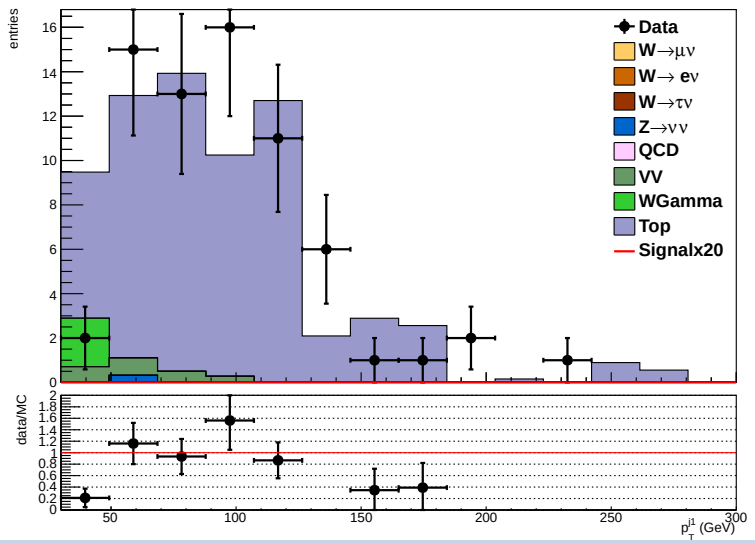


New control plots - top

Jet 1 pt

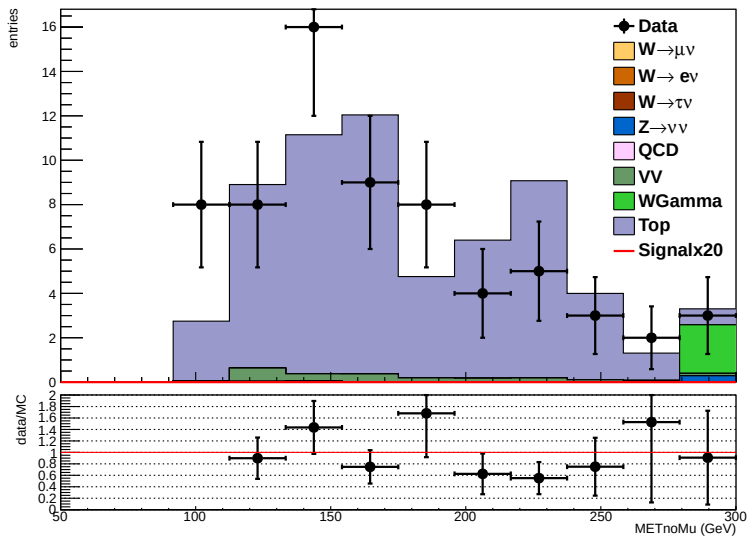


Jet 2 pt

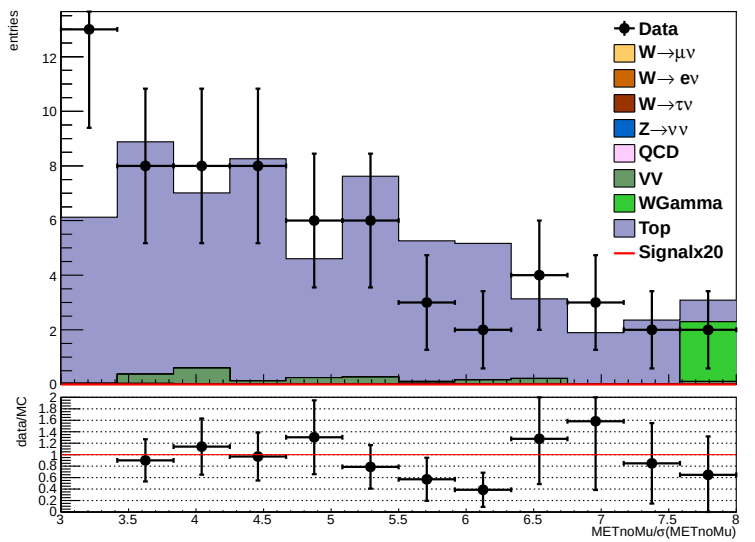


New control plots - top

METnomu

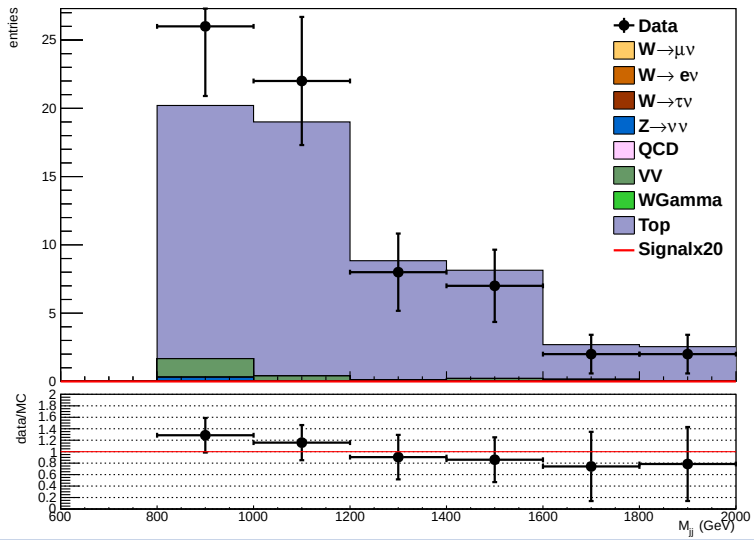


METnomusig

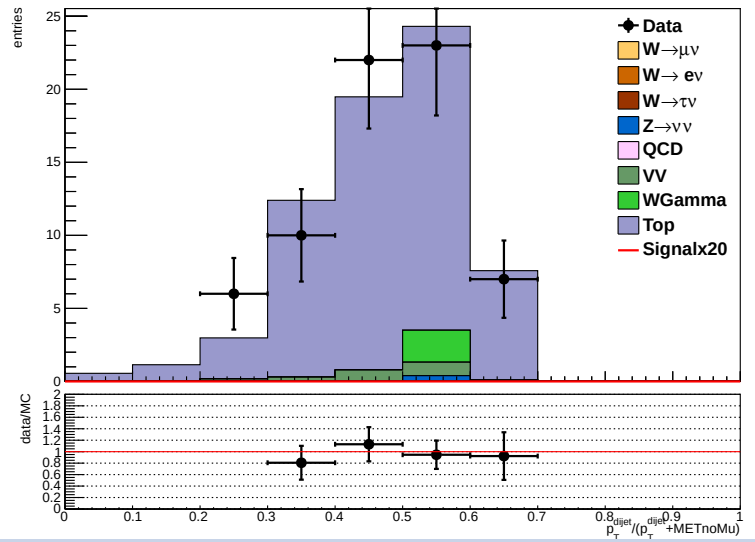


New control plots - top

Mjj

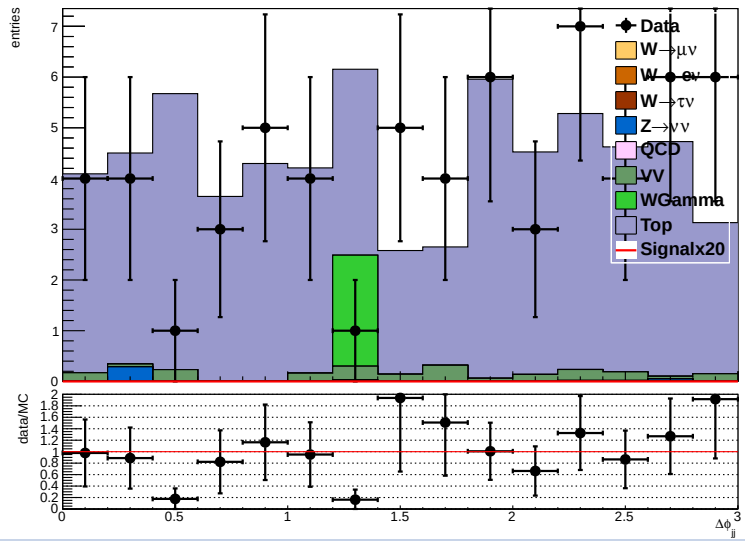


dijet-metnomu pt fraction

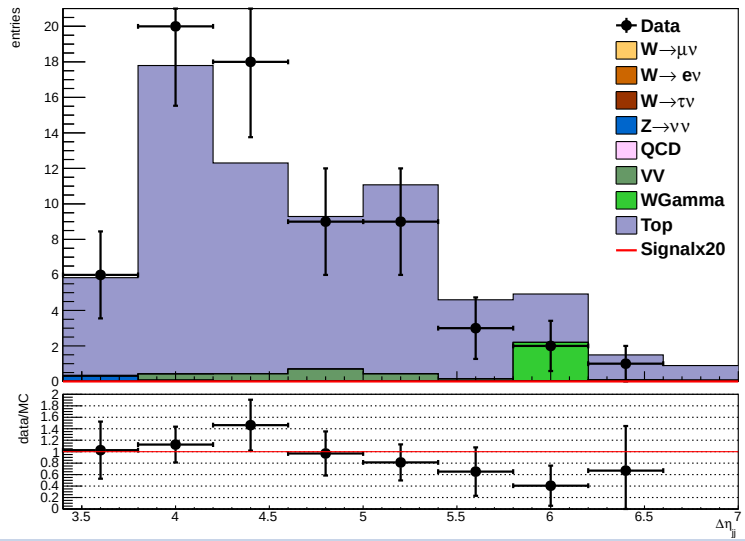


New control plots - top

Dijet Dphi

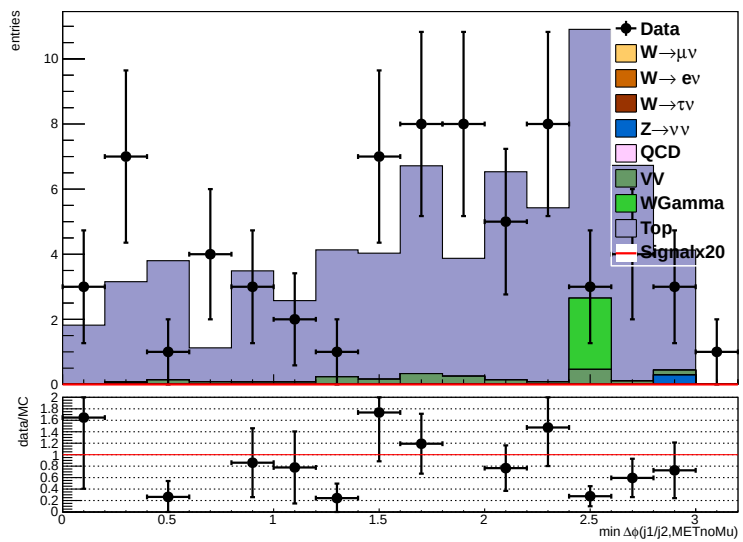


Detajj



New control plots - top

Leading jets-met mindphi



All jets-met mindphi