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Trigger Efficiency Measurements in Re-Reco Data

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Overview

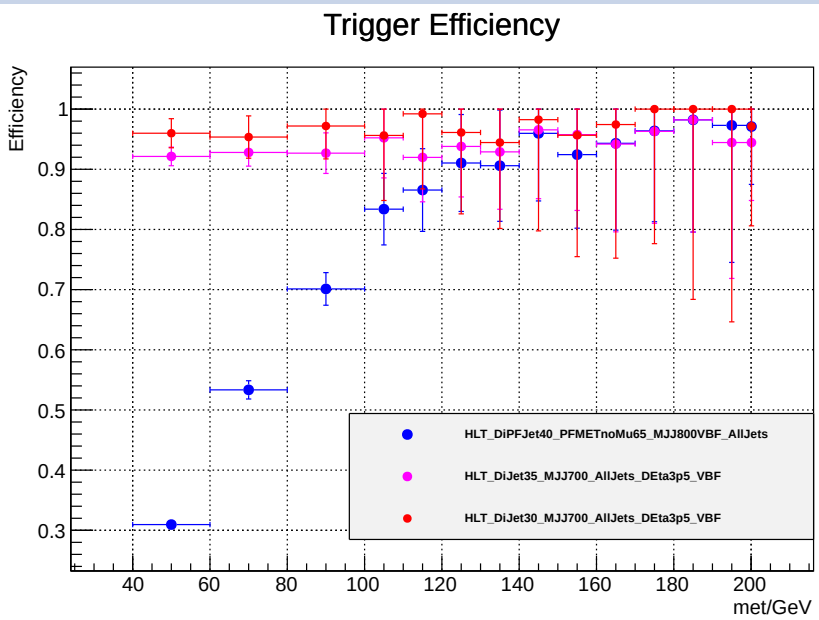
- Last time I presented 1D efficiencies for met, mjj and jet 2 pt
- The following changes were made:
  - Check the difference between the cuts used and those used by Phat for the paper
  - Get the $\Delta\eta_{jj}$ turn on
  - Check the effect of applying the L1 Trigger
- Preliminary results from 3D efficiency studies have been produced

Variable	My Cut	Phat's Cut
M_{jj}	> 1100	>1000
met	pfMet$>$130	metnomuon$>$200
$jet1pt$	>50	>55
$jet2pt$	>50	>55
$\Delta\eta_{jj}$	>4.2	>4.2
$\Delta\phi_{jj}$	No cut	No cut
$\eta_{j1} \cdot \eta_{j2}$	<0	<0
CJV	No cut	Cut
L1 met	No cut	>40

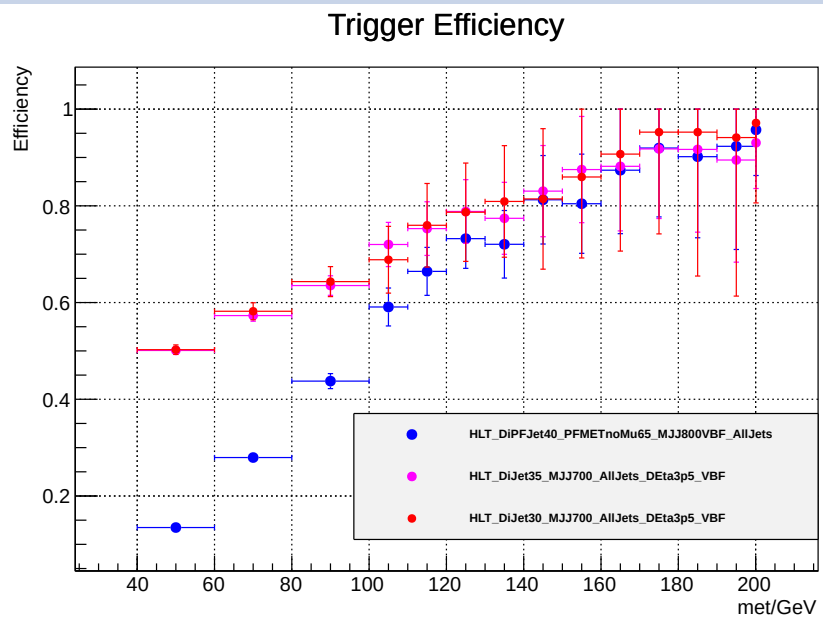
- Main differences are in L1 and Reco met cuts
- Minor differences in jet pt cuts and CJV

MET

L1 met $>$ 40 GeV

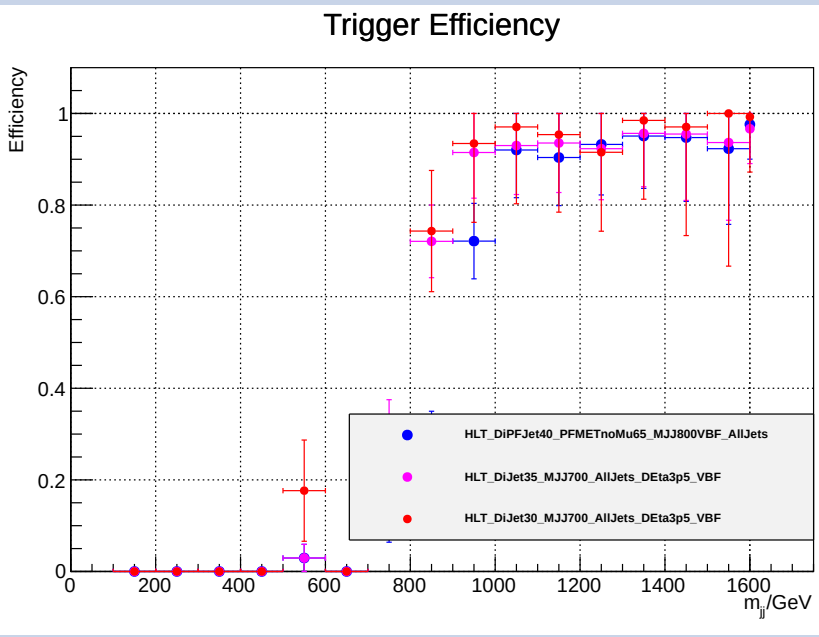


No L1 cut

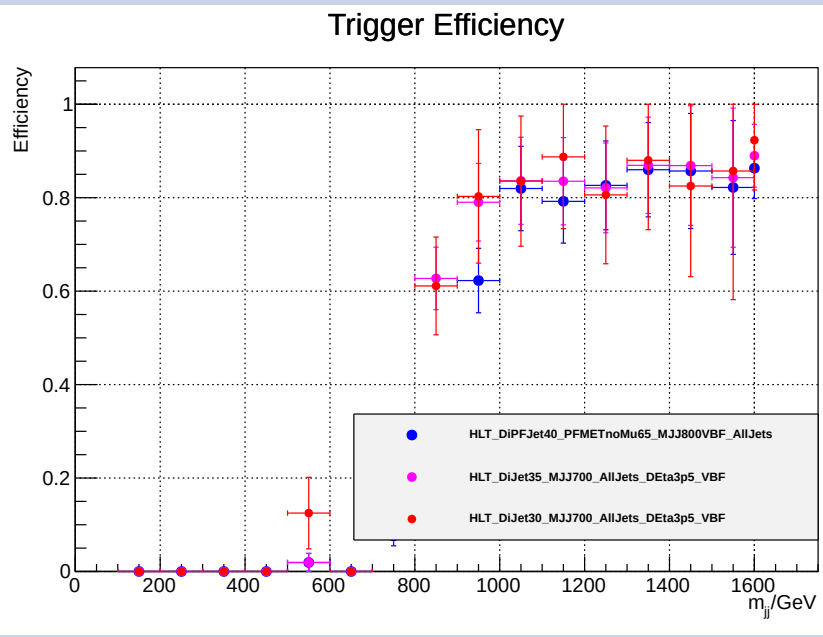


M_{jj}

L1 met $>$ 40 GeV

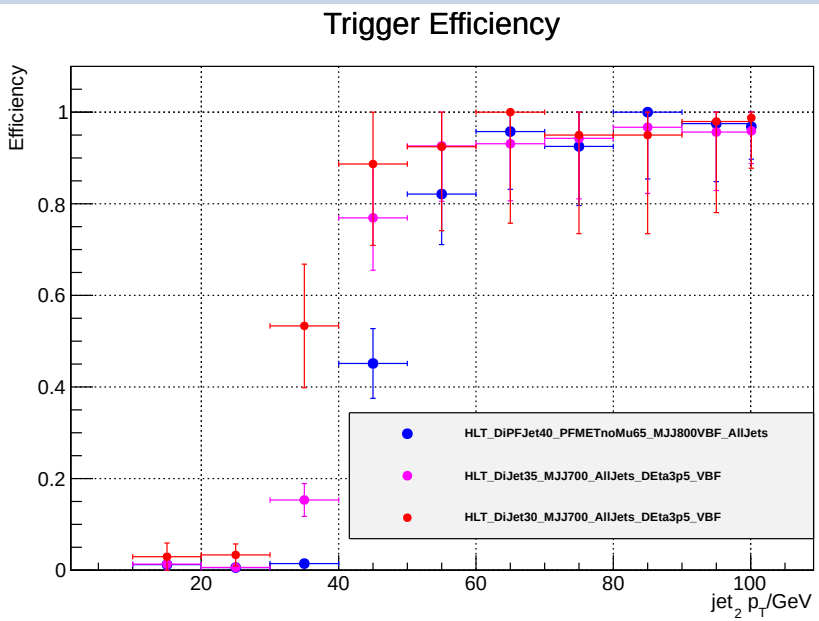


No L1 cut

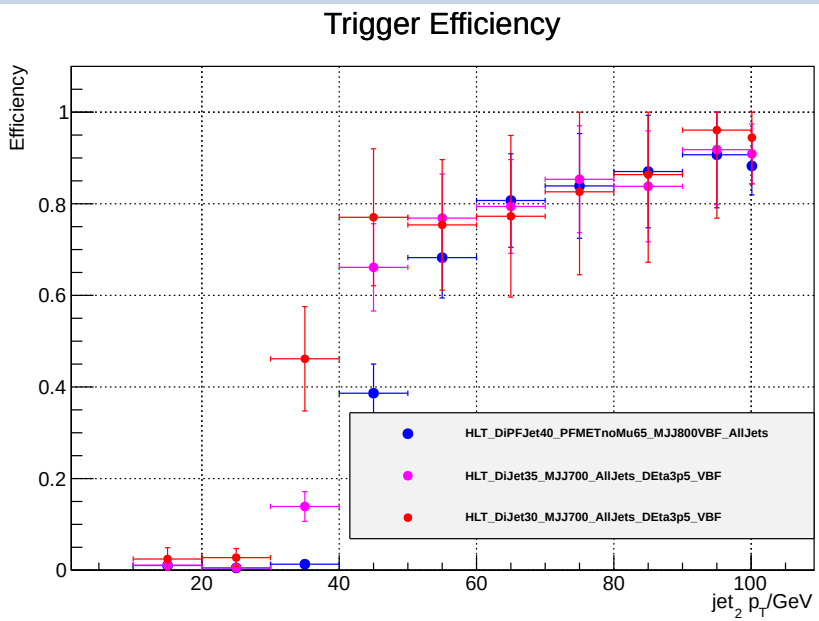


Jet 2 pt

L1 met $>$ 40 GeV

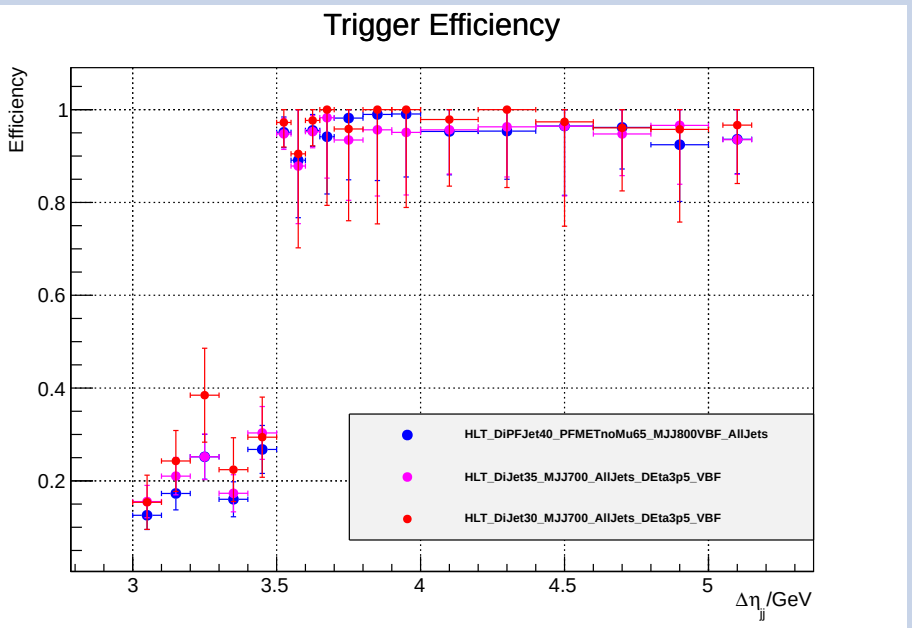


No L1 cut

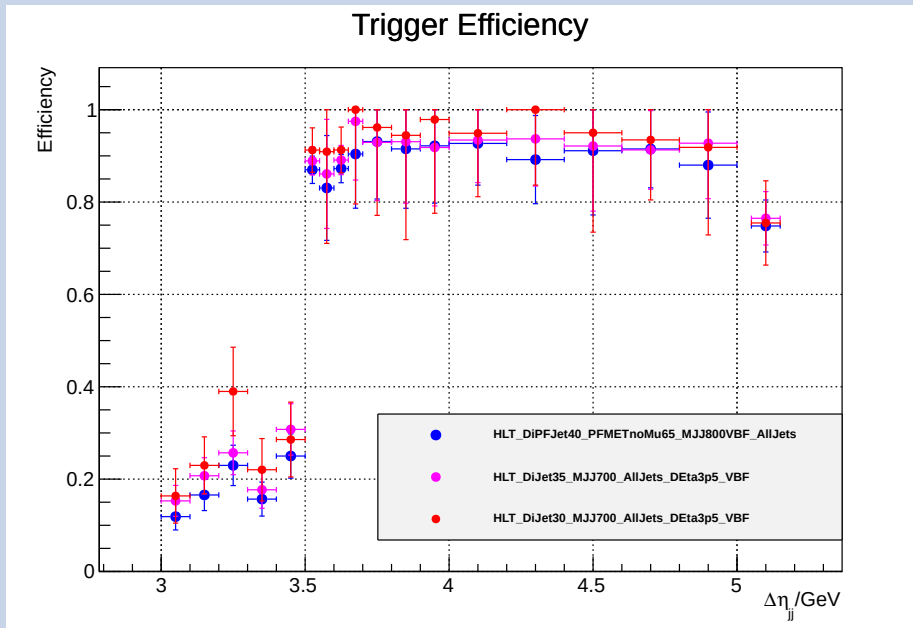


$\Delta\eta_{jj}$

L1 met $>$ 40 GeV



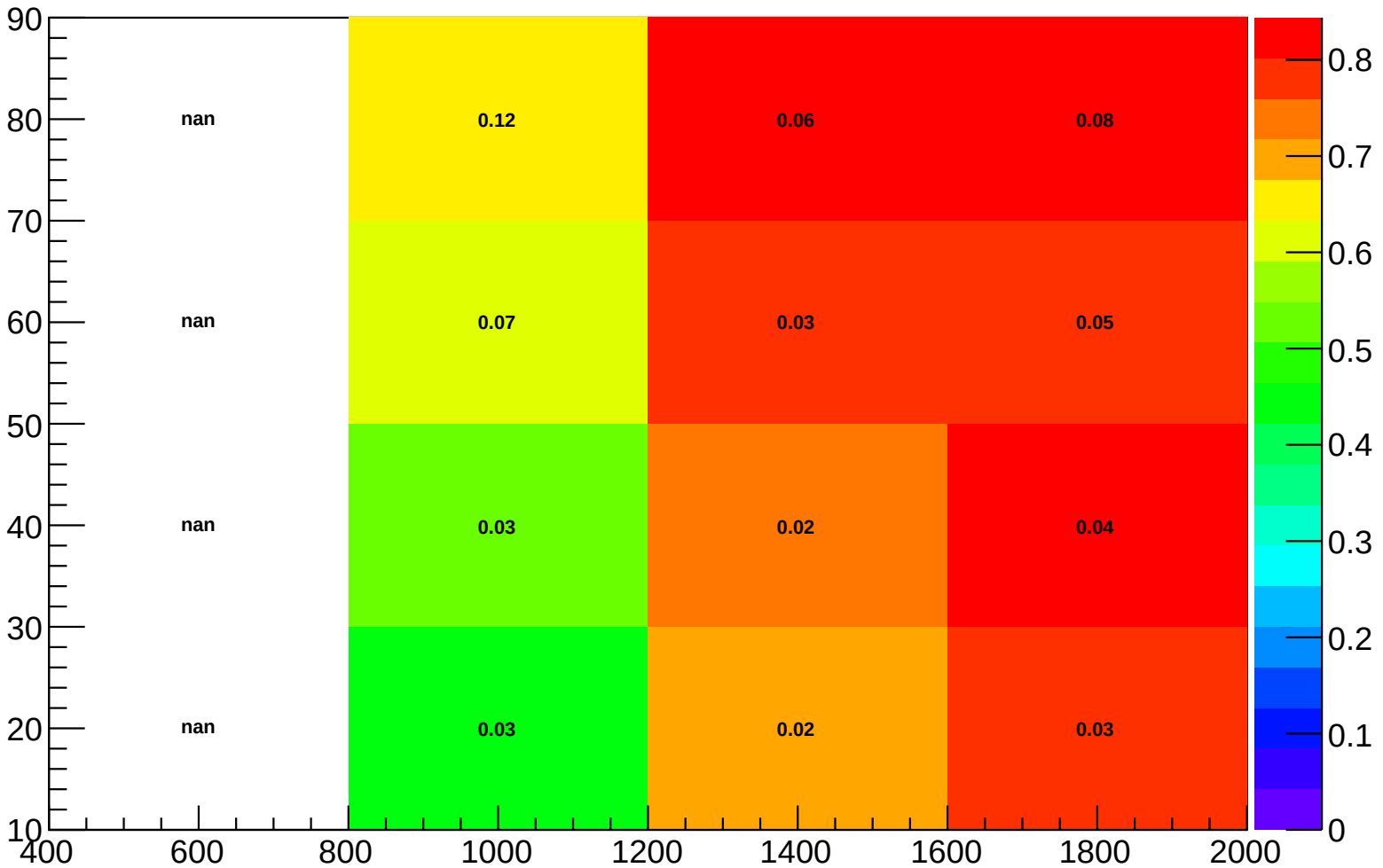
No L1 cut



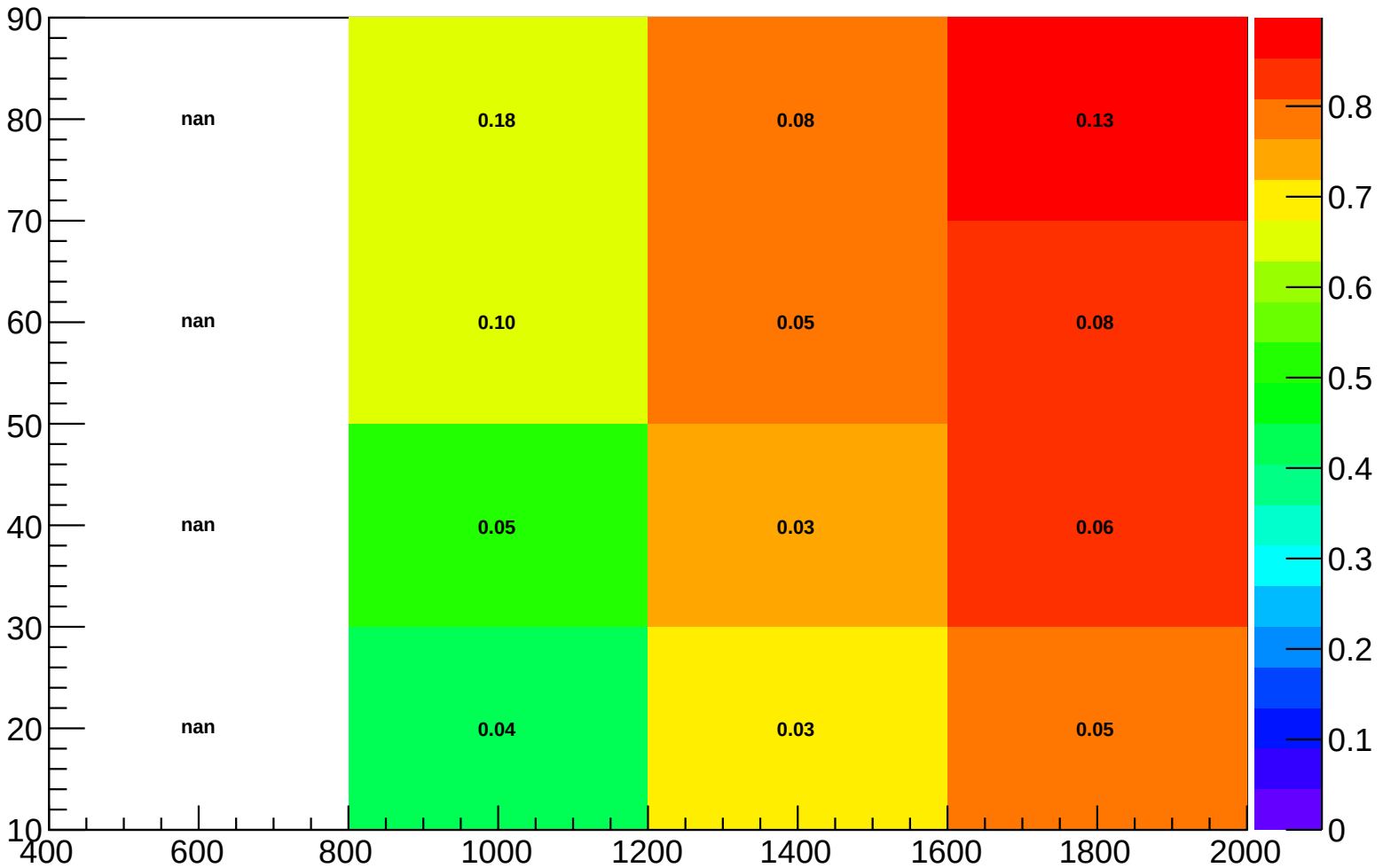
3D Efficiencies

- Picked bins in mjj, met and jet 2 pt cut
- Statistics are very limited when more than about 3 bins are used for each variable
  - jet 1 pt cut was relaxed to 30 GeV to increase stats

HLT_DiJet35, $120 < met < 160$



HLT_DiJet30, $120 < met < 160$



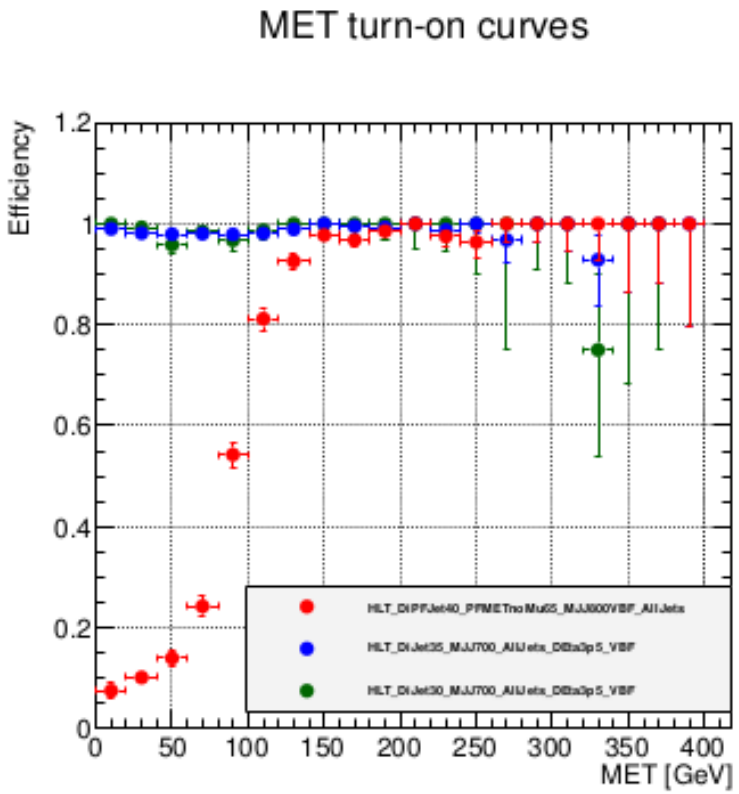
Conclusions

- Shape differences seen before between my and Phat's curves seem to be due to L1 met cut
- $\Delta\eta_{jj}$ turn on curve seems very sharp
  - We therefore have the option of relaxing our offline cut or increasing the trigger threshold in future

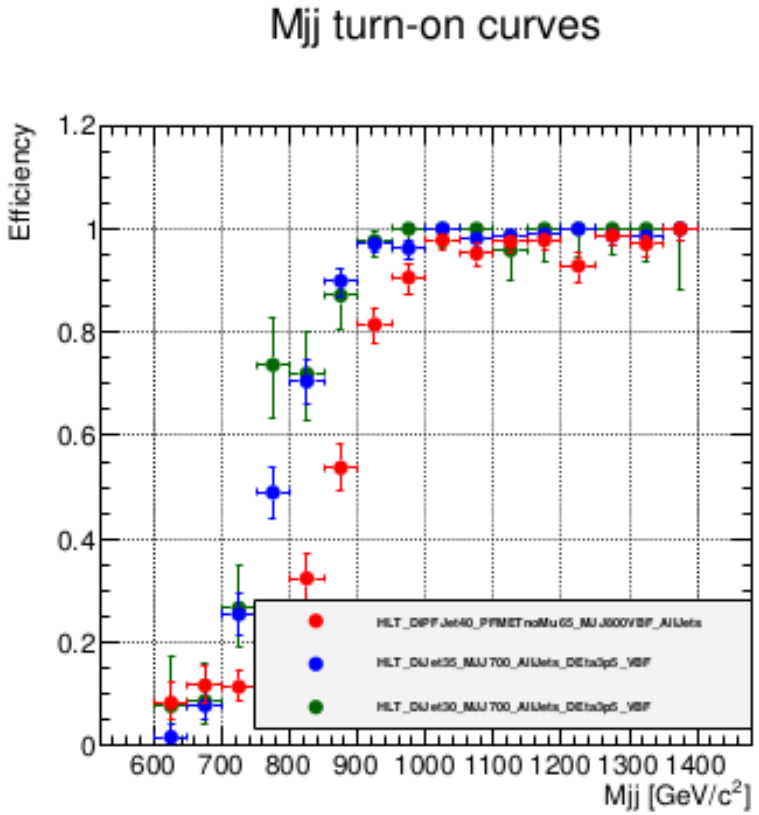
- 3D trigger efficiency work is in progress
- Code to write 1D efficiencies into format read in by analysis frameworks is being written

Backup

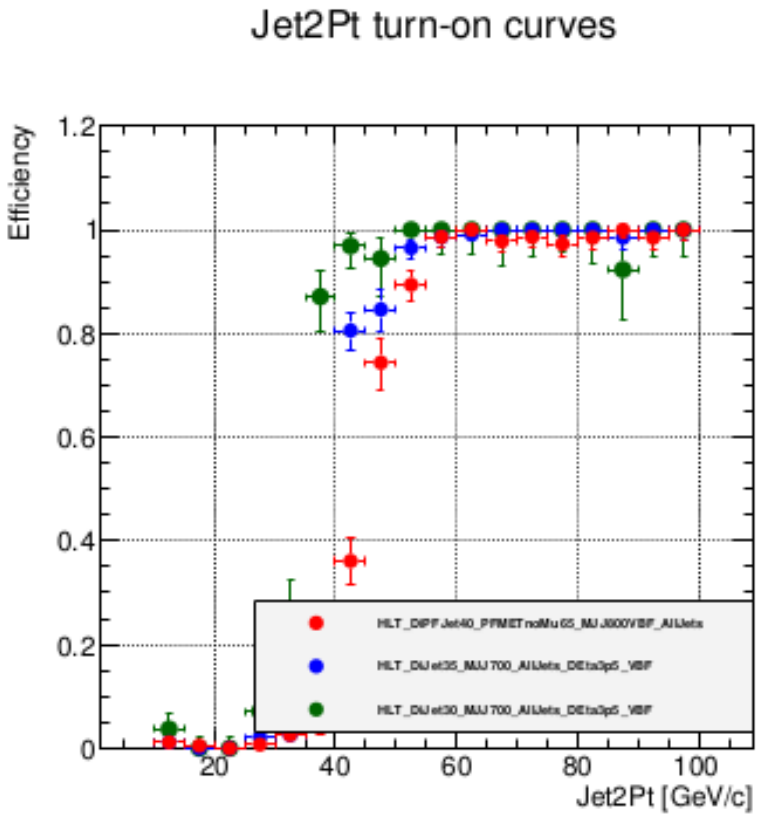
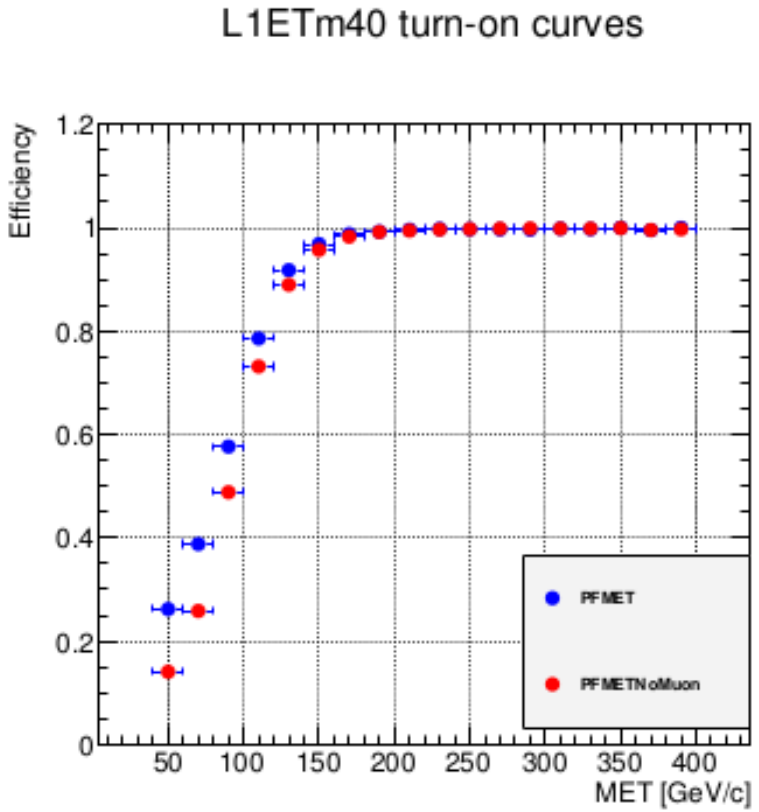
Phat's efficiencies - met



Phat's efficiencies - mjj



Phat's efficiencies - j2pt



Phat's efficiencies - l1met