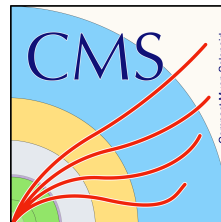# Weekly Report
NTUA
28/2/2020
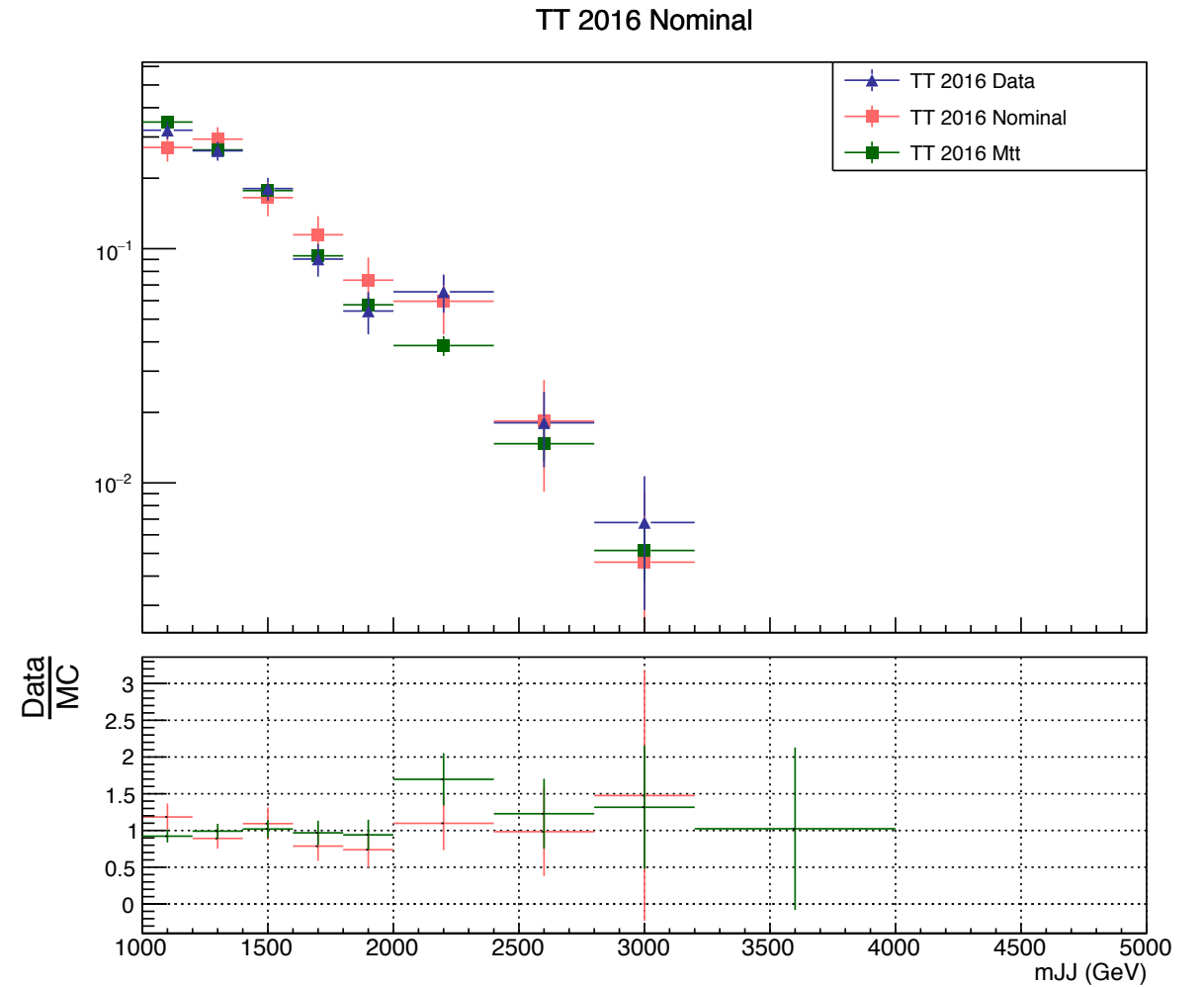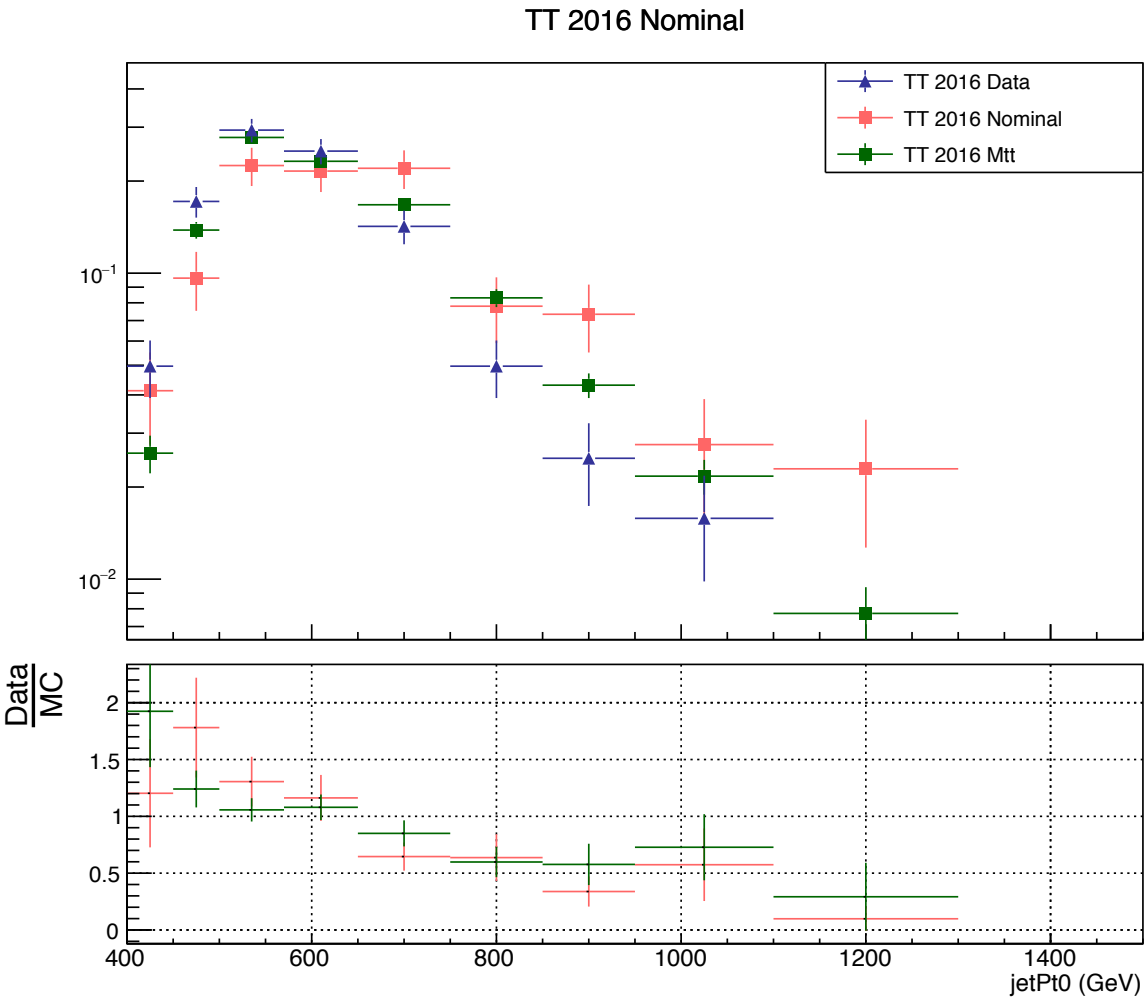
George Bakas

Status Report

- Analysis:
  - TMG Meeting
  - Inconsistencies between Mtt files and Nominal files--> 2017 and 2018
  - Especially the Mtt 700-1000 file

  - Mass fit

- NTUA HEP Site
  - Modifications
  - http://modio.physics.ntua.gr/~gbakas/HEP-NTUA-CMS-Online/

- HEP Data for TOP-18-013
  - Class ready for importing tables (histograms) using ROOT file

Control Region Shape Comparison

TT 2016 Nominal
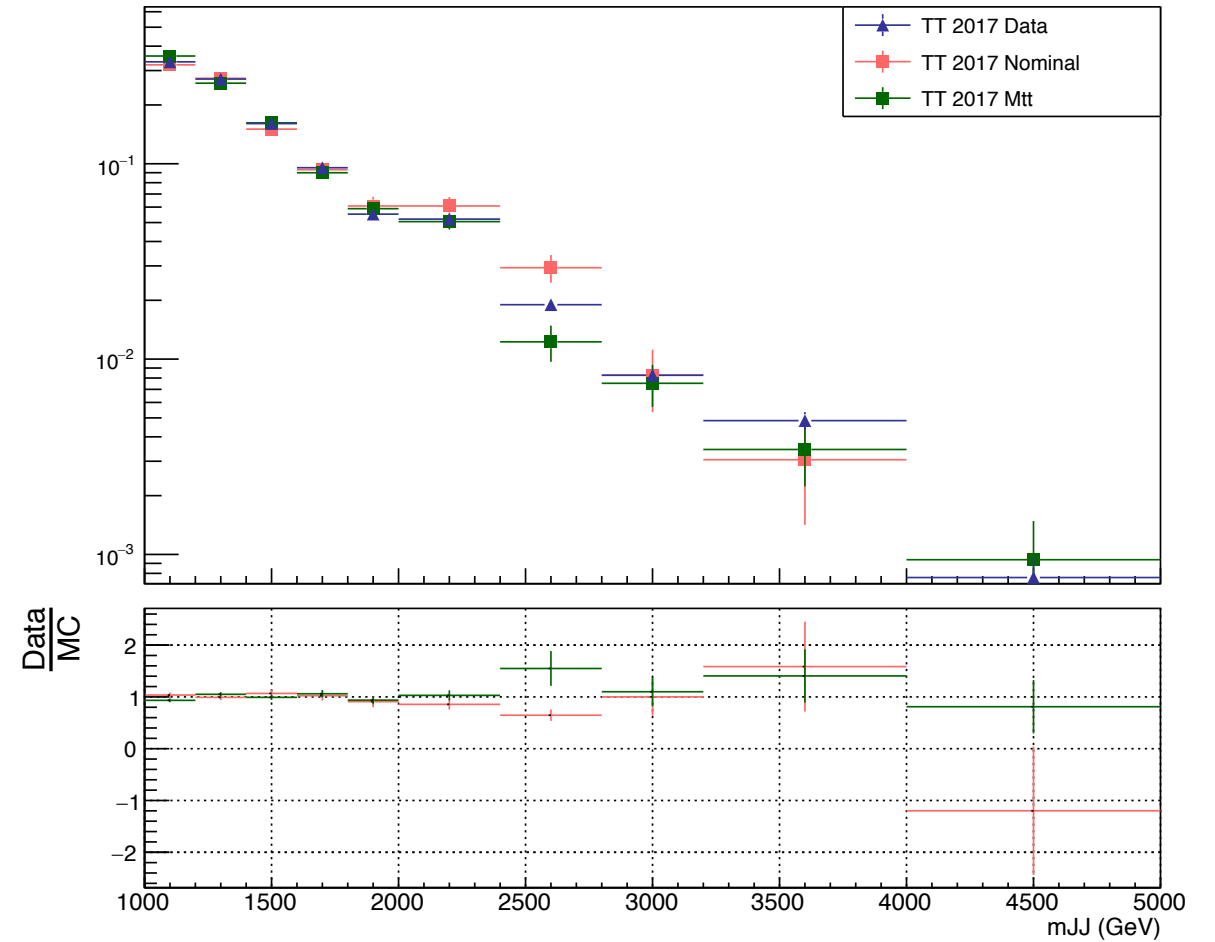
Control Region Shape Comparison

TT 2017 Nominal
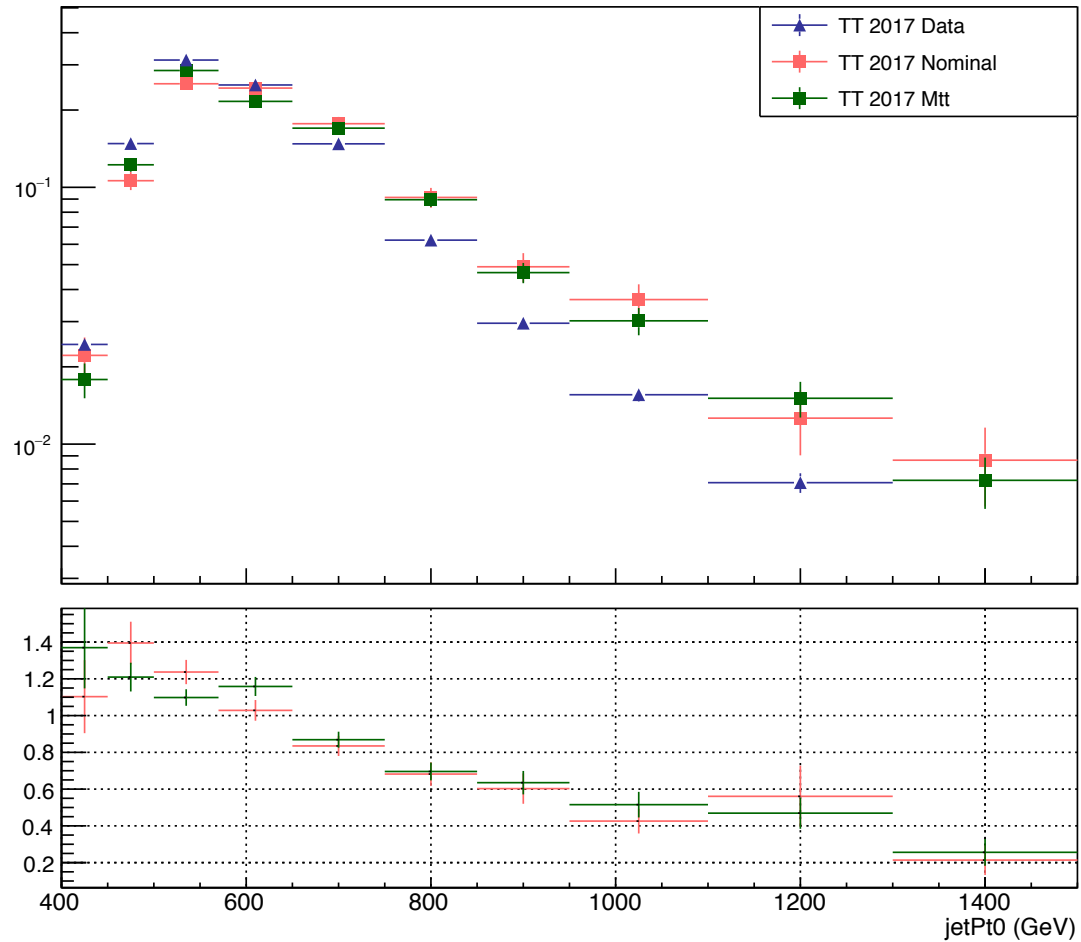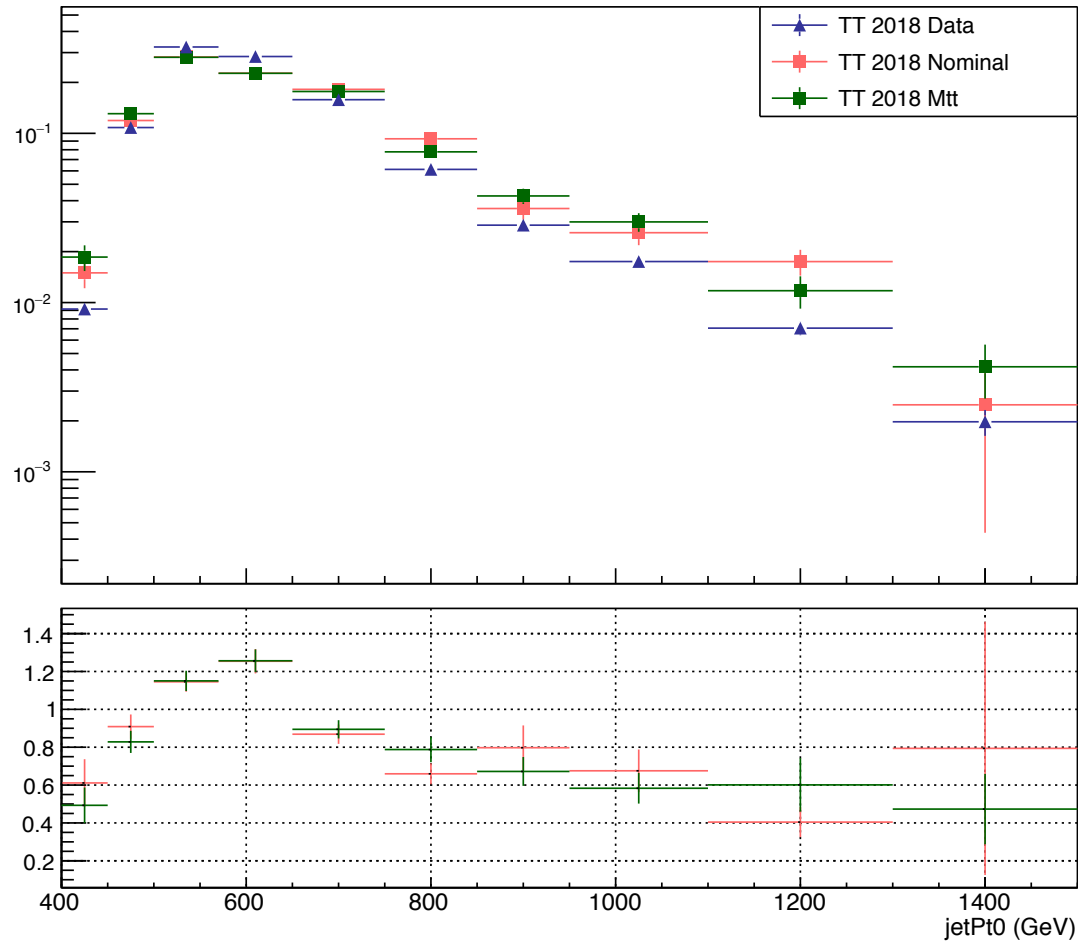
TT 2017 Nominal

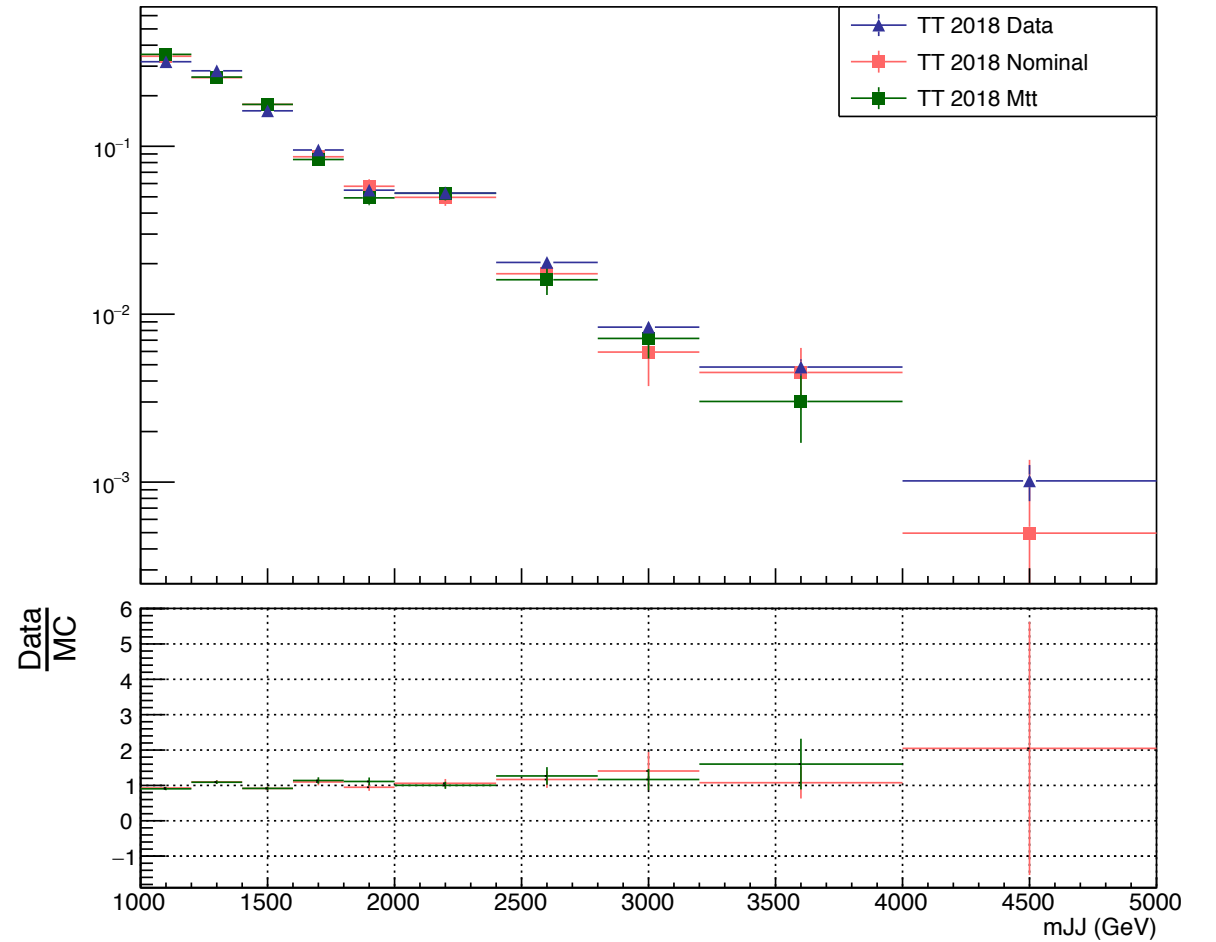# Control Region Shape Comparison

Mass Fit

- $D(m^t) = N_{tt}T(m^t; k_{scale}, k_{resol}) + N_{QCD}(1 + k_{QCD}m^t)Q_{CRA}(m^t) + N_{bkg}B(m^t)$

- 2016 CR uses a pre-scaled trigger → 1.67 pb^{-1} , because our 2016 trigger uses a b-tagging requirement
- Whereas 2017 and 2018 do not have a b-tagging requirement → ran un-prescaled with total lumi 41530 and 59740 pb^{-1}

- We care for this: $N_{QCD}(1 + k_{QCD}m^t)Q_{CRA}(m^t)$

k_{QCD} 2016	3.2358e+02 +/- 8.34e+02
k_{QCD} 2017	9.9659e-02 +/- 1.07e-01
k_{QCD} 2018	9.9984e-01 +/- 8.80e-01

N$_{QCD}$ 2016	2.7985e+03 +/- 1.87e+02
N$_{QCD}$2017	2.5907e+03 +/- 2.69e+02
N$_{QCD}$2018	4.6598e+03 +/- 3.31e+02

- Can this be a problem of $Q_{CRA}(m^t)$?
  - $Q_{CRA}(m^t)$ for 2016 almost 10^4 lower than 2017 or 2018

Response matrix comparison Mtt vs Nominal
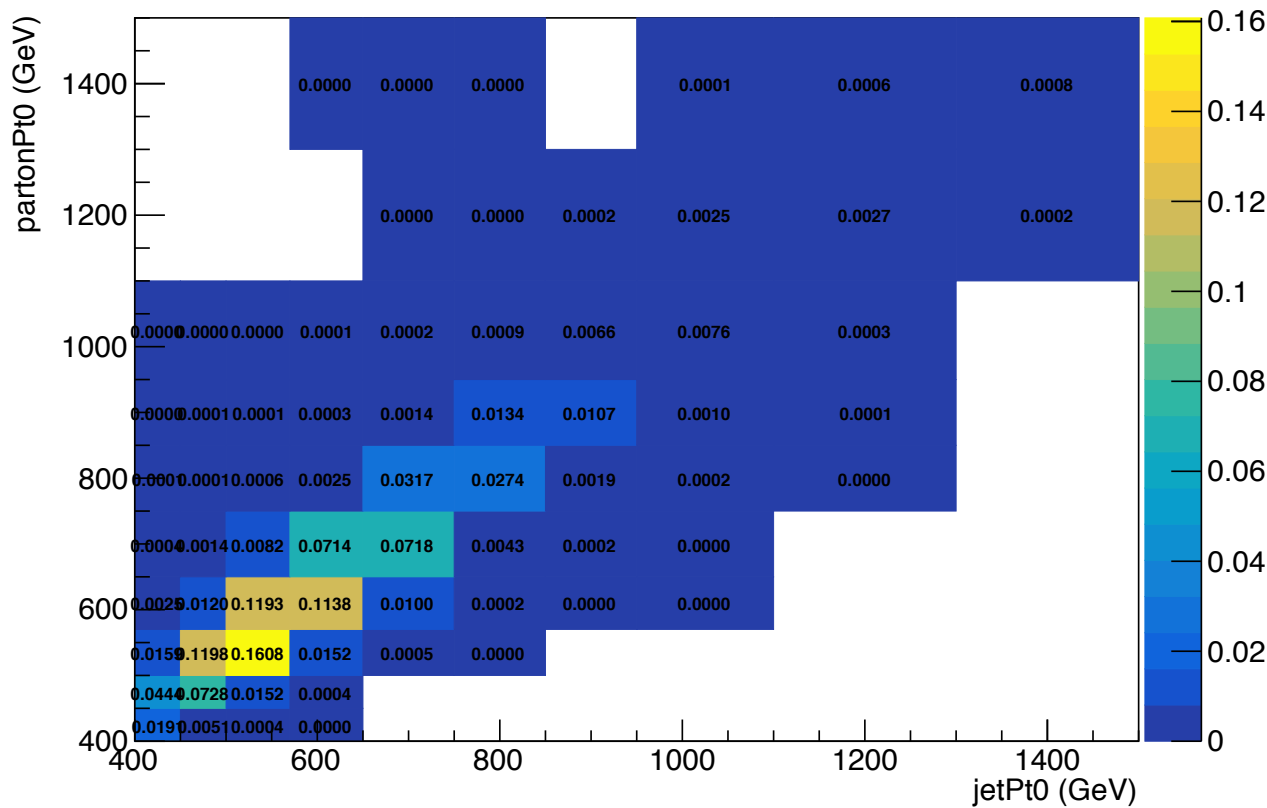
Response matrix comparison Mtt vs Nominal

Response Reco-Parton yJJ 2016
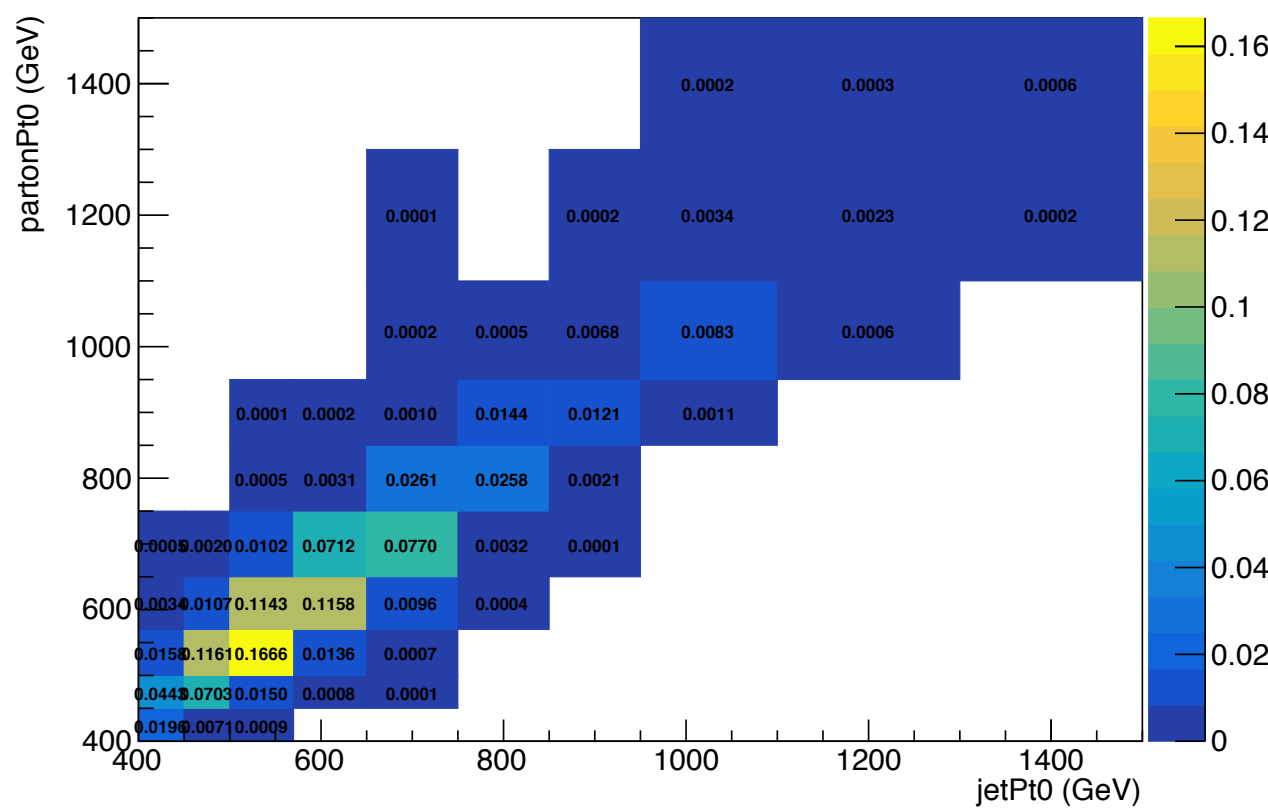
Response Reco-Parton yJJ 2016 NominalMC

Response matrix comparison Mtt vs Nominal
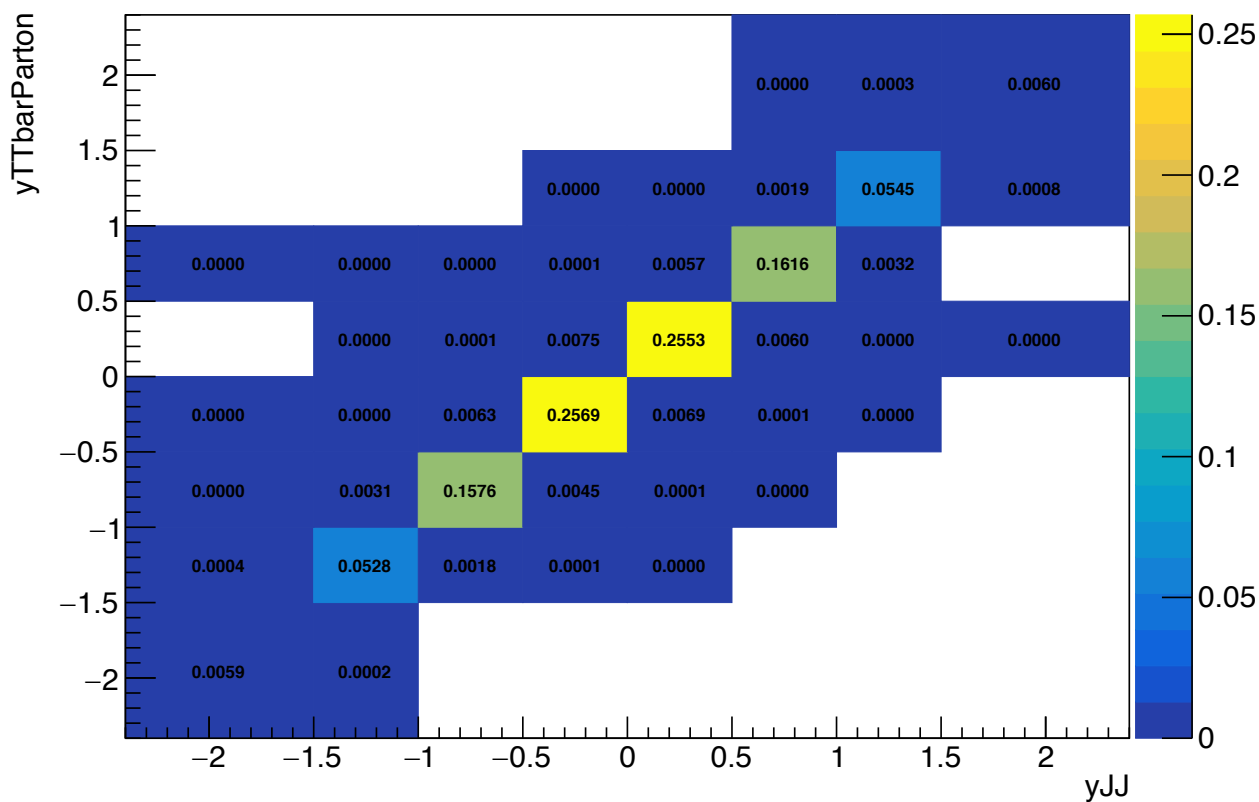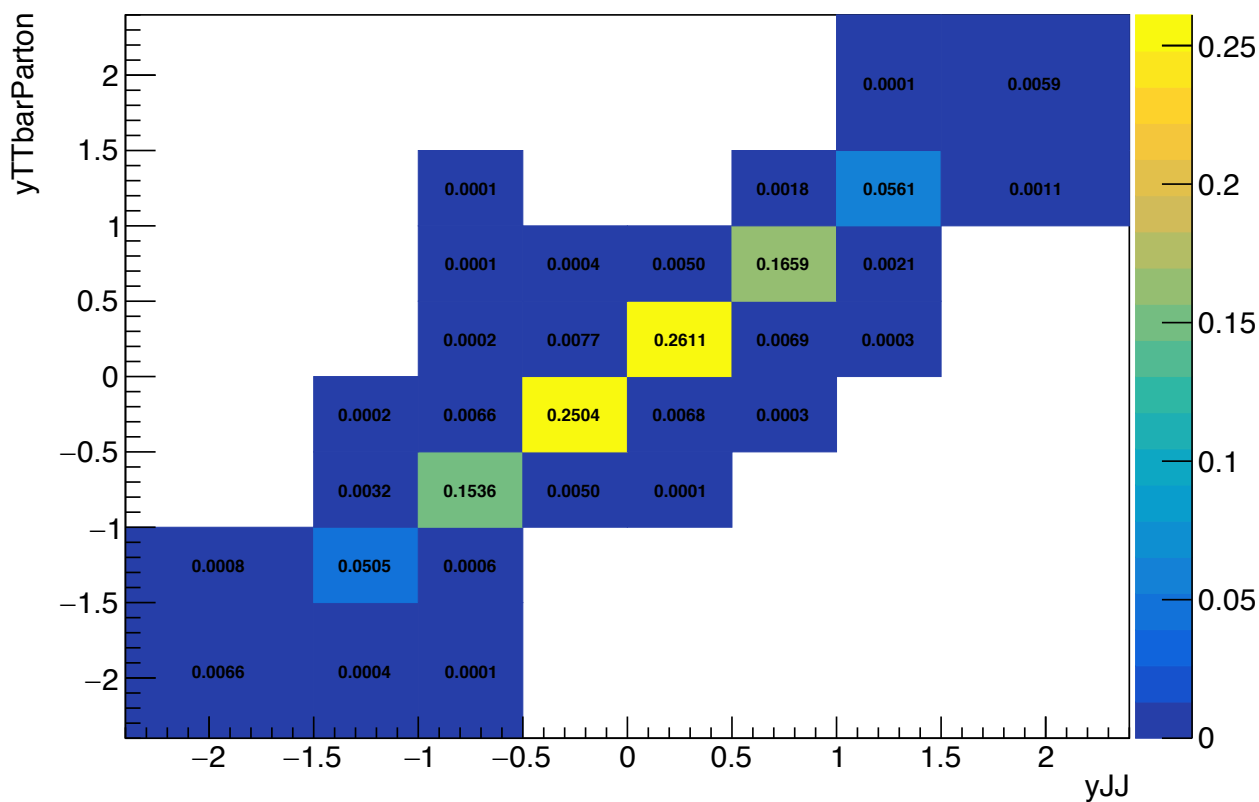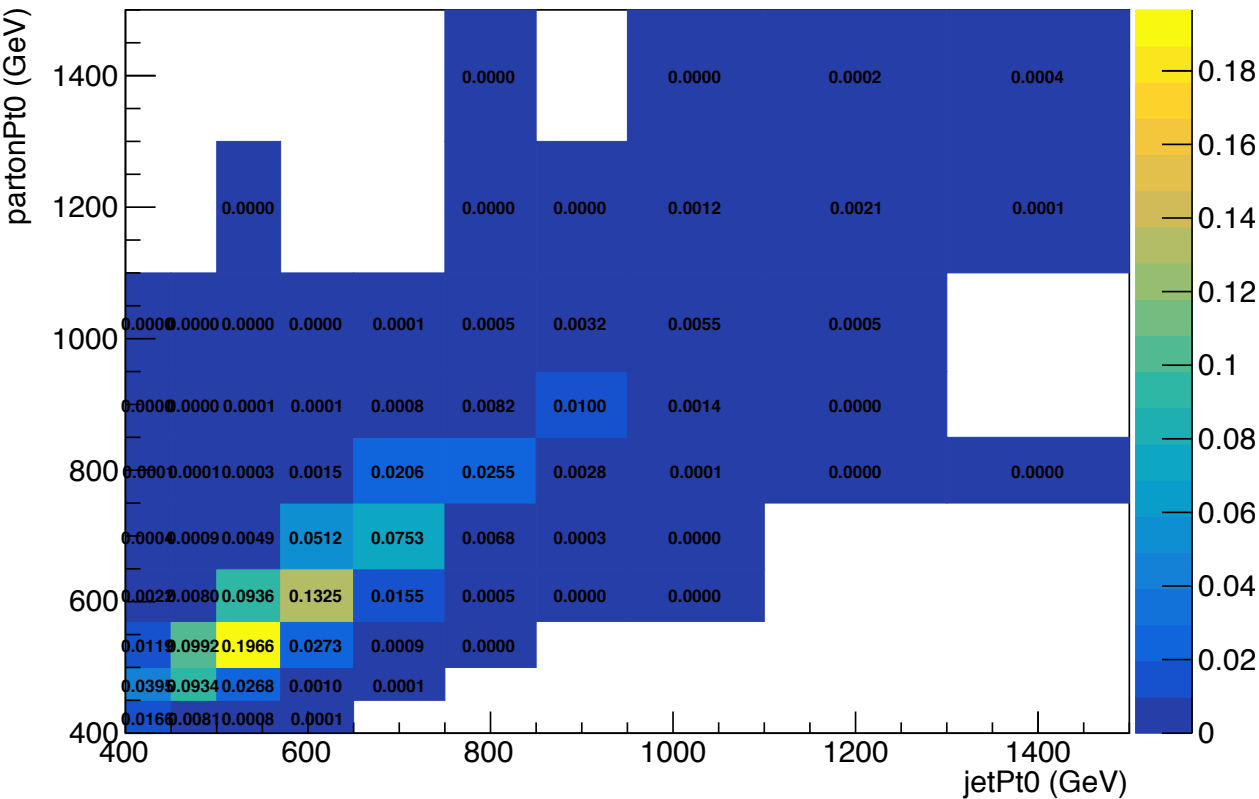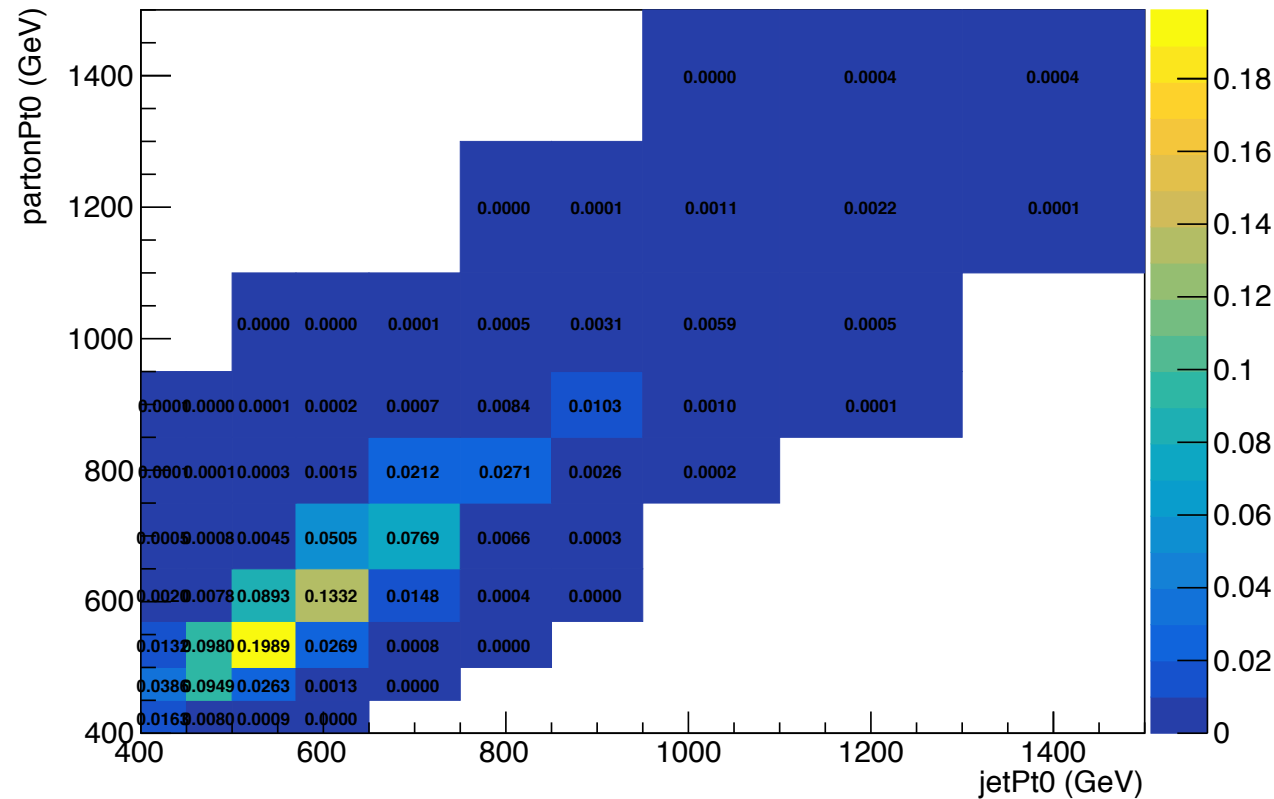

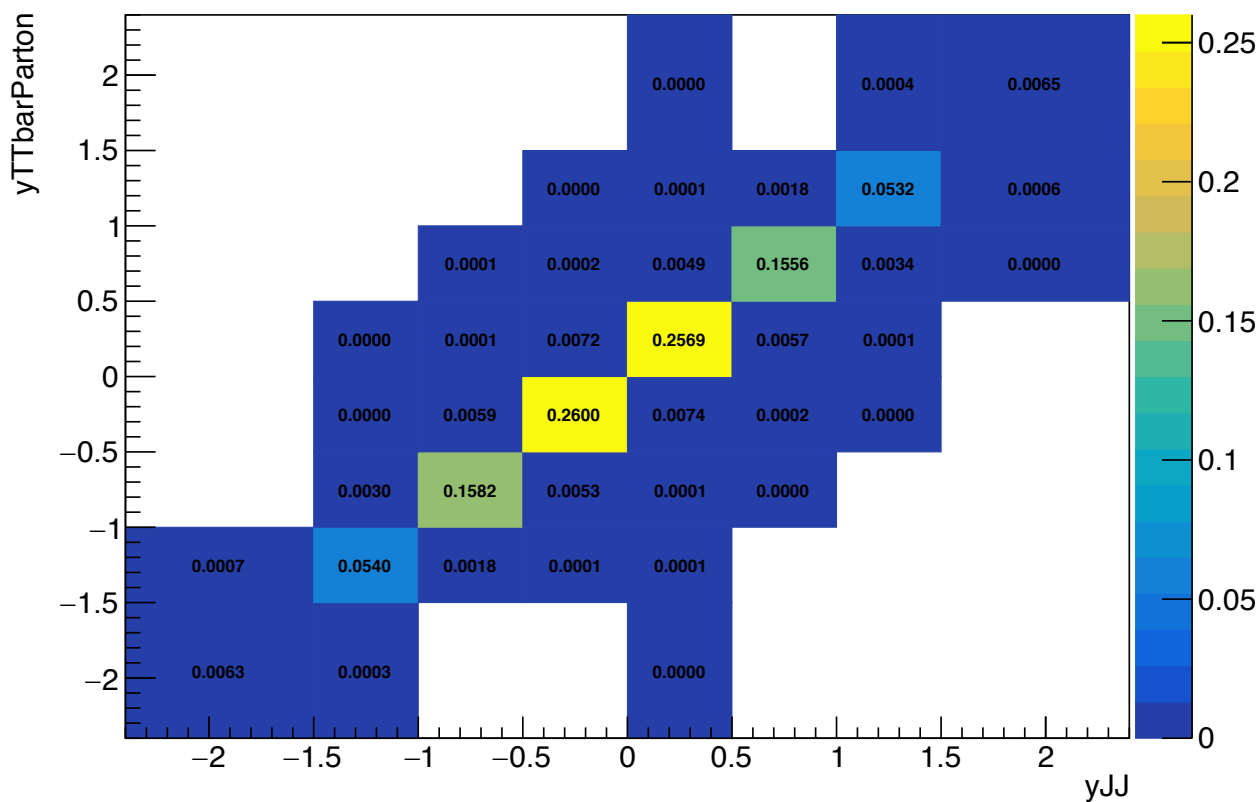Response Reco-Parton jetPt0 2017

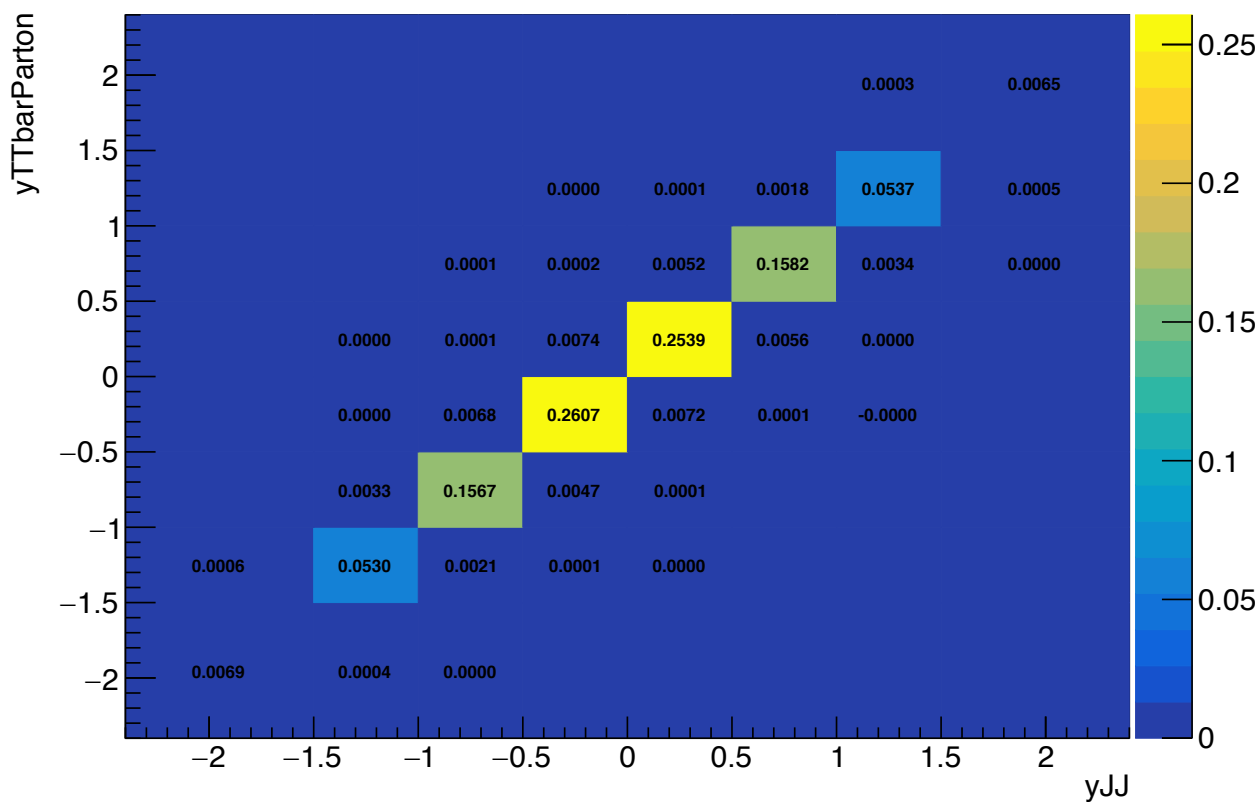Response Reco-Parton jetPt0 2017 NominalMC

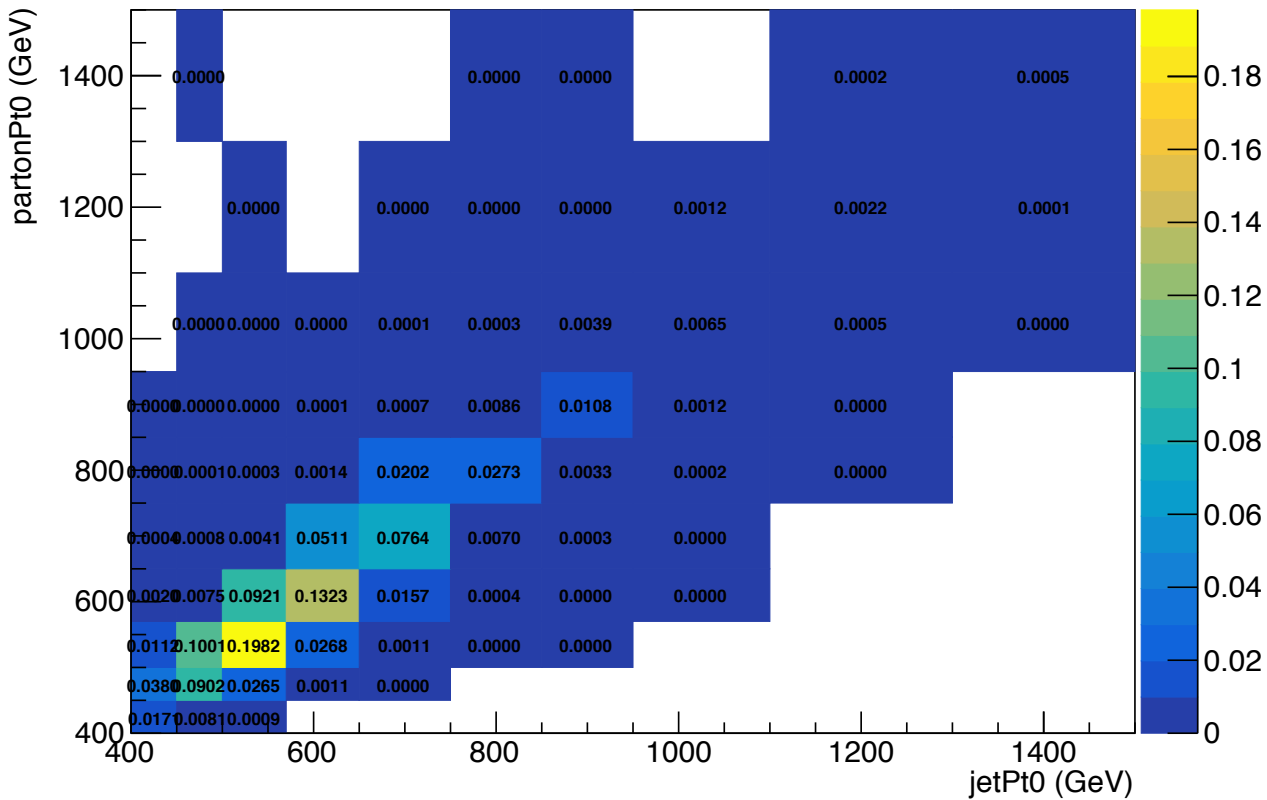# Response matrix comparison Mtt vs Nominal

Response Reco-Parton yJJ 2017

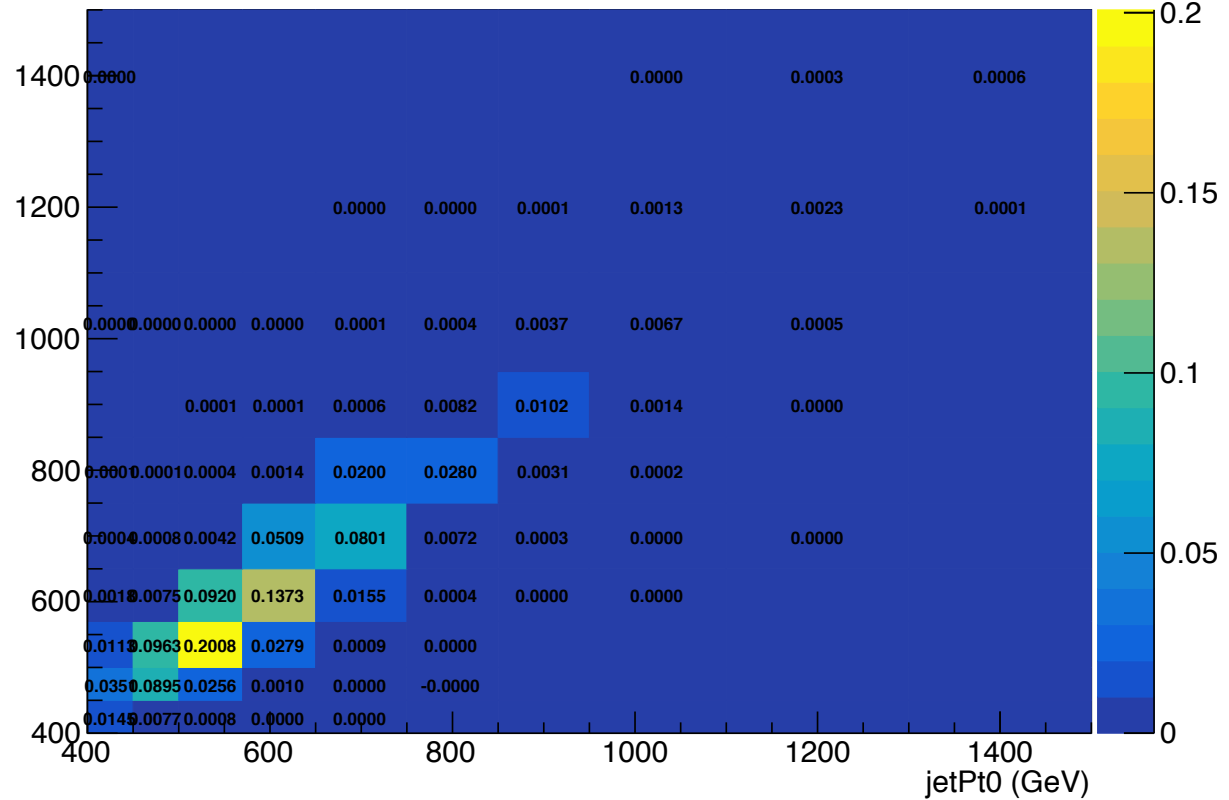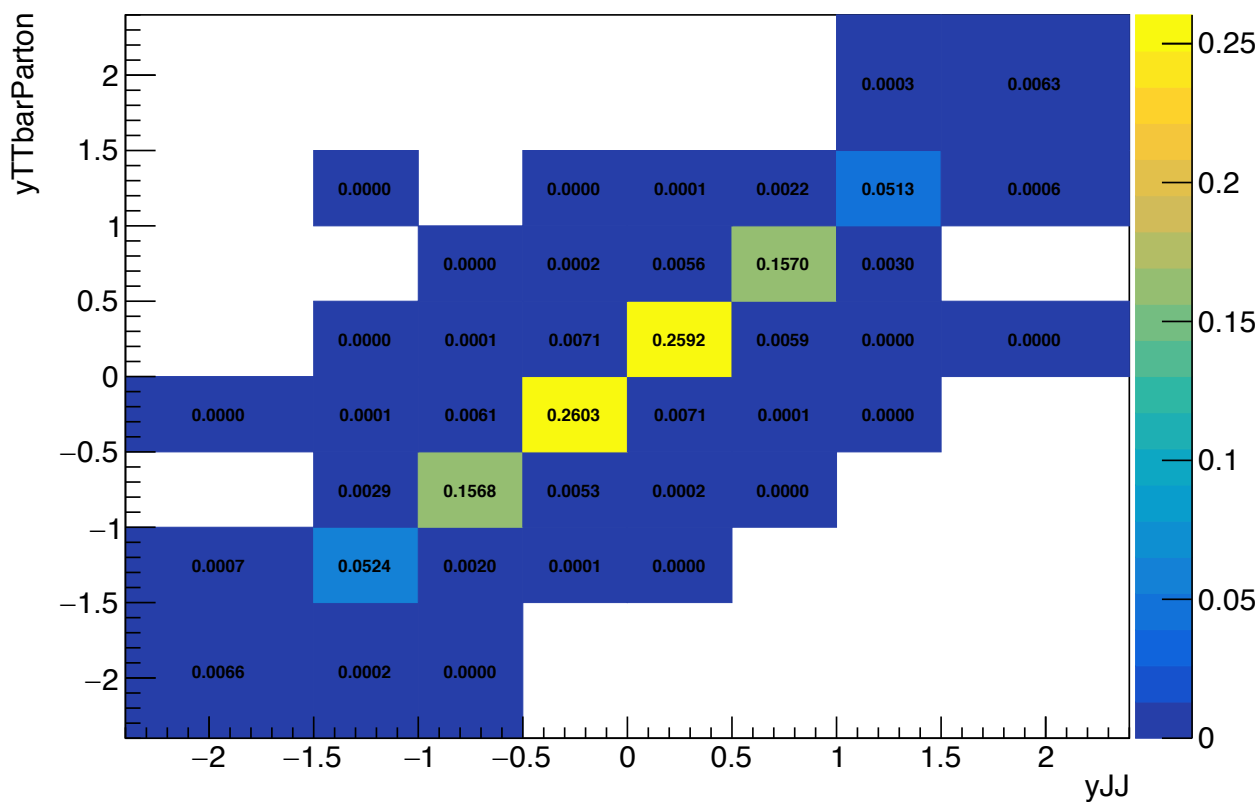Response Reco-Parton yJJ 2017 NominalMC

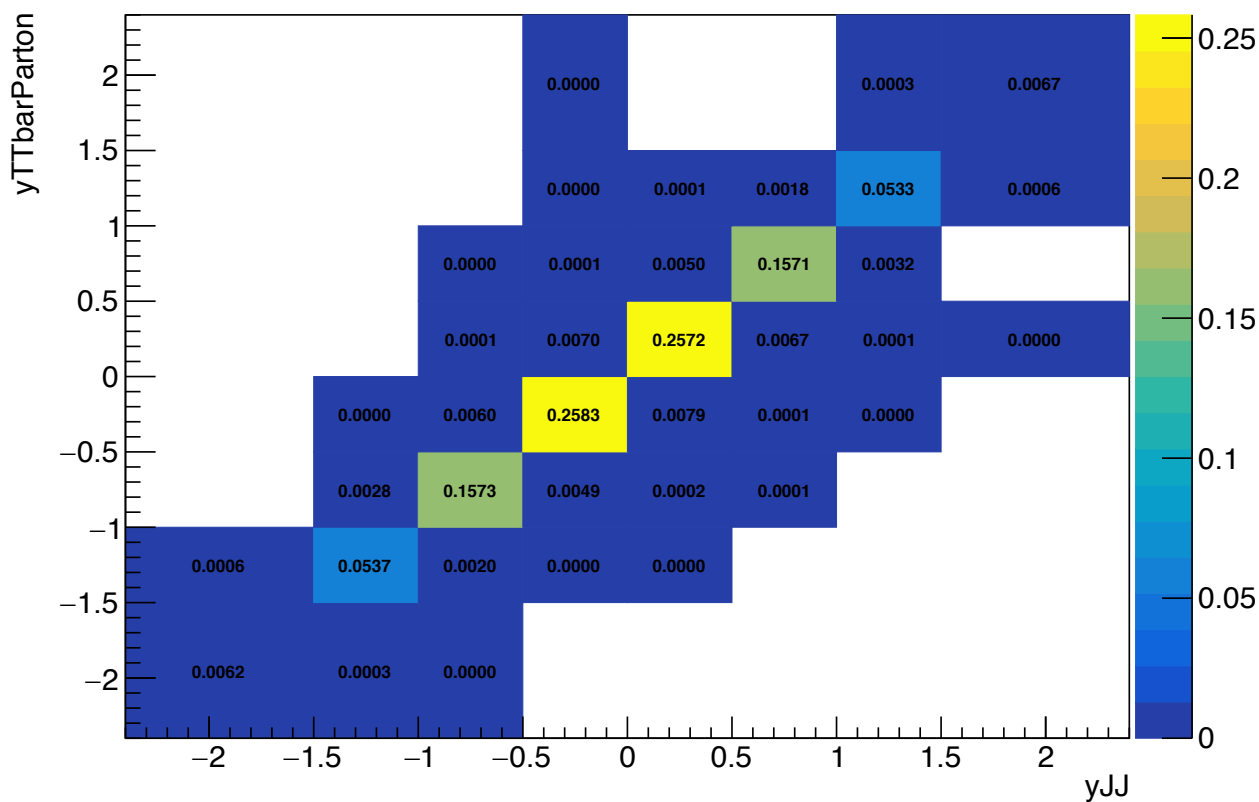# Response matrix comparison Mtt vs Nominal

Response matrix comparison Mtt vs Nominal

Response Reco-Parton yJJ 2018

Response Reco-Parton yJJ 2018 NominalMC

BACKUP

Control Region Shape Comparison