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QCD mtg., Dec. 08, 2006.

Gen6 MC Stntuples

- **Datasets**
- **Features**
- **Blocks**
- **Jet70: Data vs. MC**
- **Next steps**
- **Summary**

Datasets

- http://www-cdf.fnal.gov/internal/physics/qcd/qcdmc6/

Features

- TopMCProd_v614mc_c.tar.gz
- Stntuple: 6.1.4 dev_243 (from Ray Culbertson)
- 1 datafile ➔ 1 ntuple file
  - **bb02cfaa.0001topt ➔ bb02cfaa.0001t0st**
- Name of ParentFile & LogFile (will be) saved in SAM metadata for ntuple file
- 20 Stntuple files per fileSet

Blocks in MC Stntuples

HeaderBlock
CalDataBlock
CcrDataBlock
CesDataBlock
CprDataBlock
Cp2DataBlock
PesCorrectedDataBlock
ClcDataBlock
EmtDataBlock
EmTimingBlock
HatDataBlock
TriggerBlock
TrigSimBlock
L3SummaryBlock
FwdDetDataBlock
DcasDataBlock
VertexBlock
PROD@PrimeVtxFinder
ZVertexBlock
TrackBlock
PROD@Phoenix_Tracking
PROD@PhoenixSI_Tracking
JetBlock
PROD@JetCluModule-cone0.7
PROD@JetCluModule-cone1.0
PROD@MidPointModule-cone0.4
PROD@MidPointModule-cone0.7
PROD@MidPointModule-cone1.0
PROD@MidPointModule-h1alg0.4
PROD@MidPointModule-h1alg0.7
PROD@MidPointModule-h1alg1.0
PROD@MidPointModule-merg50-cone0.7
PROD@KtClusModule-cone0.7
PROD@KtClusModule-cone0.5
PROD@KtClusModule-cone1.0

PROD@JetCluModule-had-cone0.4
PROD@JetCluModule-had-cone0.7
PROD@JetCluModule-had-cone1.0
PROD@MidPointModule-had-cone0.4
PROD@MidPointModule-had-cone0.7
PROD@MidPointModule-had-cone1.0
PROD@MidPointModule-had-merg50-cone0.7
PROD@KtClusModule-had-cone0.7
PROD@KtClusModule-had-cone0.5
PROD@KtClusModule-had-cone1.0
PROD@MidPointModule-par-cone0.4
PROD@MidPointModule-par-cone0.7
PROD@MidPointModule-par-cone1.0
PROD@MidPointModule-par-merg50-cone0.7
PROD@KtClusModule-par-cone0.7
PROD@KtClusModule-par-cone0.5
PROD@KtClusModule-par-cone1.0
GenpBlock
ObspBlock
ElectronBlock
Phoenix_Electrons
PhotonBlock
ClusterBlock
MuonBlock
TofMatchBlock

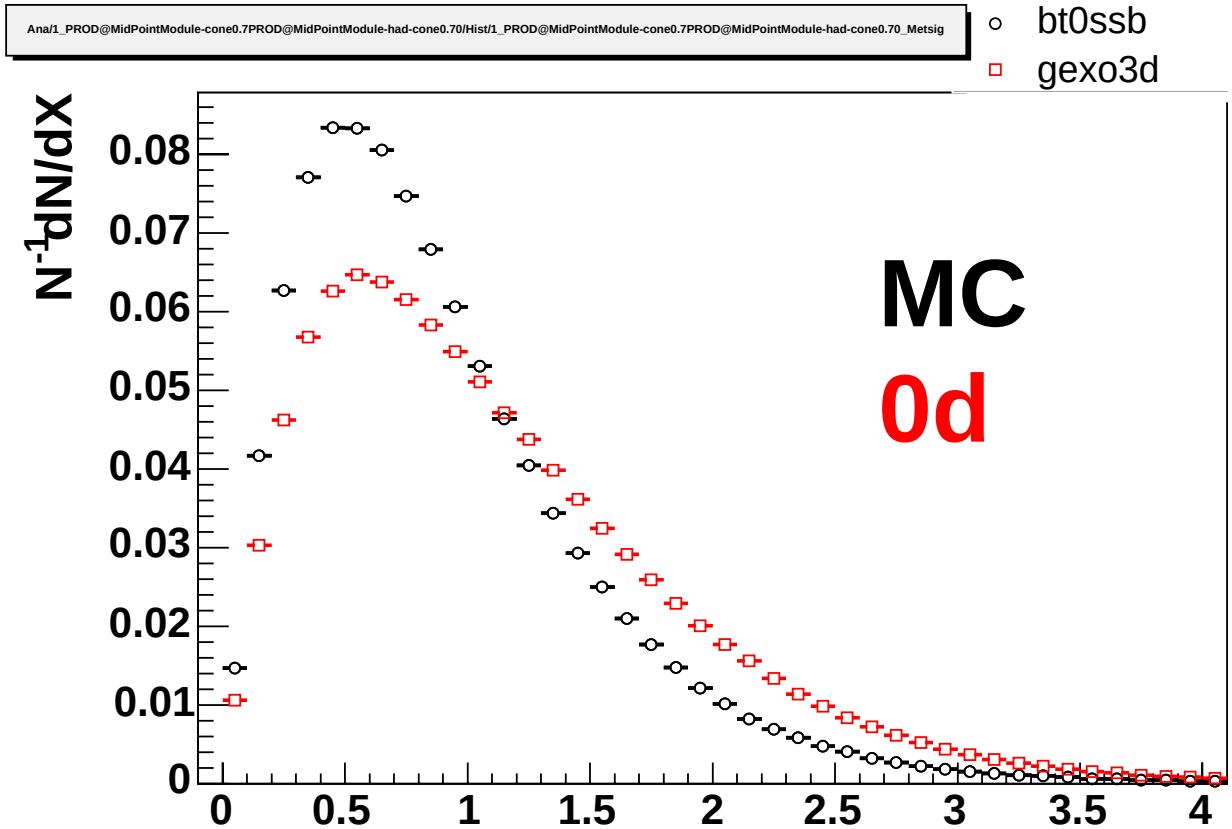
GenpBlock
ObspBlock
ElectronBlock
Phoenix_Electrons
PhotonBlock
ClusterBlock
MuonBlock
TofMatchBlock
Pi0Block
PROD@Pi0CandidateCollection_match
TauBlock
PROD@CdfTauCollection-Compatibility
PROD@CdfTauCollection-LeptonTrack
ConversionBlock
CosmicBlock
MetBlock
SecVtxTagBlock
PROD@SecVtxModule-JetClu-cone0.4-loose
PROD@SecVtxModule-JetClu-cone0.7
PROD@SecVtxModule-MidPoint-cone0.4
PROD@SecVtxModule-MidPoint-cone0.7
PROD@SecVtxModule-MidPoint-cone1.0
PROD@SecVtxModule-MidPoint-h1alg0.4
PROD@SecVtxModule-MidPoint-h1alg0.7
PROD@SecVtxModule-MidPoint-h1alg1.0
JetProbBlock
PROD@JetProbModule-MidPointModule-cone0.4
PROD@JetProbModule-JetCluModule-cone0.7
PROD@JetProbModule-MidPointModule-cone0.7
PROD@JetProbModule-MidPointModule-merg50-cone0.7

Analysis

- Split jobs by filesets: 51+34+12+10=107 total segments
- For this talk, look only at Jet70 (0d & 0i)
- MidPoint Cone 0.7
- Jet p_T corrections use Monica's function
- Cuts
  - Good run list V13
  - MetSig < 6
  - |z| < 60 cm
  - |y(jet)| < 1.2
  - Uncorrected jet p_T > 95. GeV
- All plots normalized to unit area

Metsig

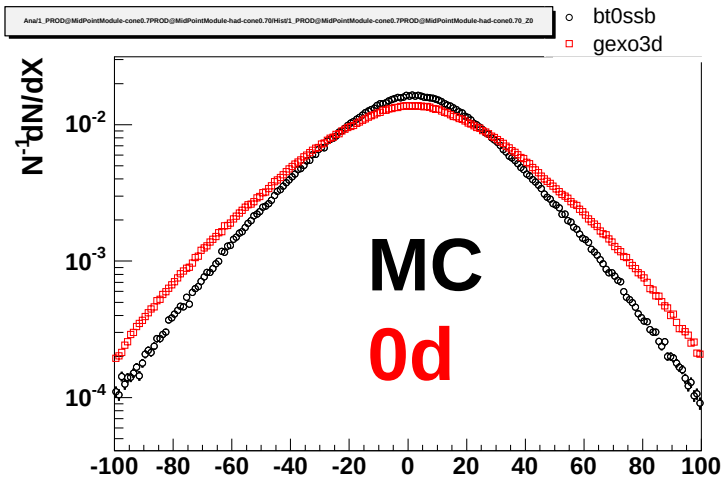
After goodrun, no other cuts

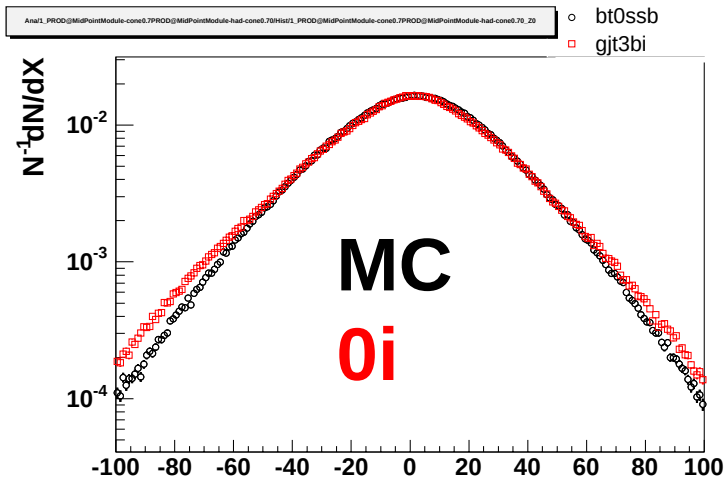


More activity in data ➔ hotter

Z of 1st vertex

After goodrun, no other cuts

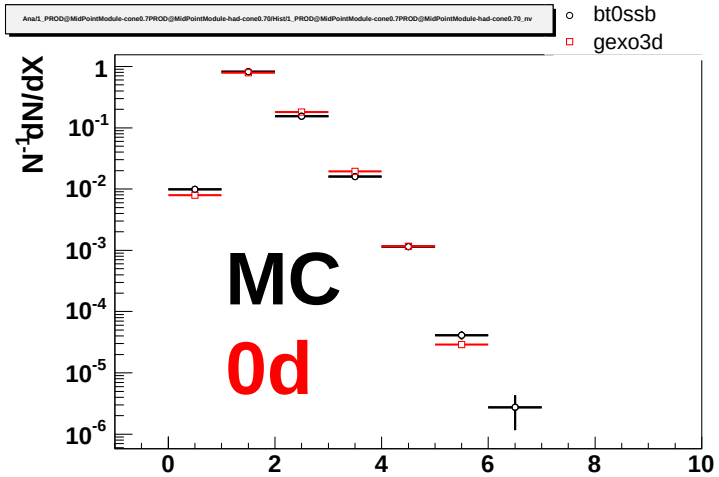


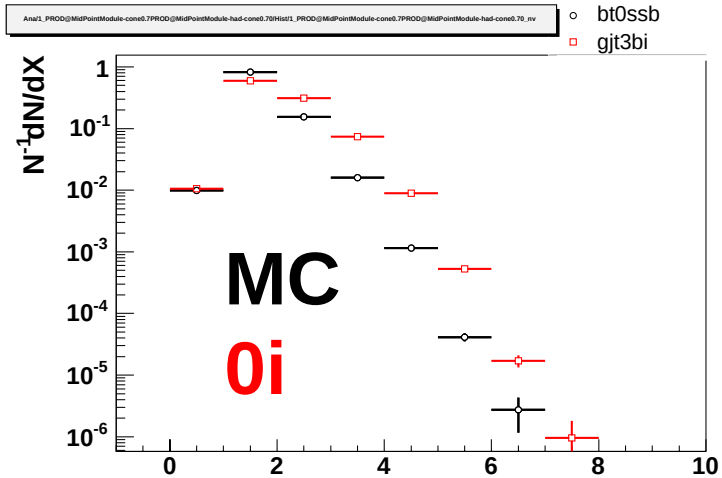


- **More activity in data ➔ hotter (for both DS)**
- **MC agrees better in 0i than 0d**

Number of vertices

After goodrun, no other cuts

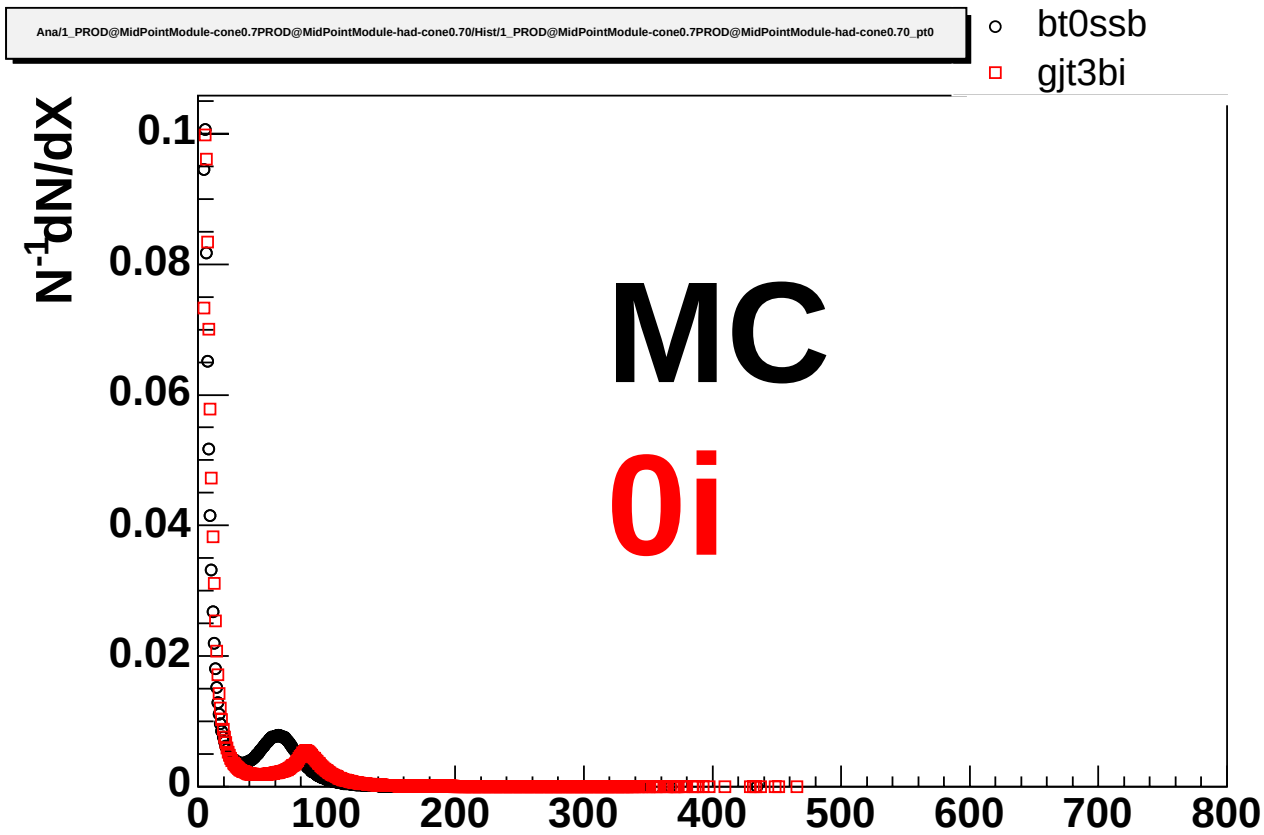




- **More activity in data ➔ hotter (for both DS)**
- **MC agrees better in 0d than 0i**

Jet pT: Before jet cuts

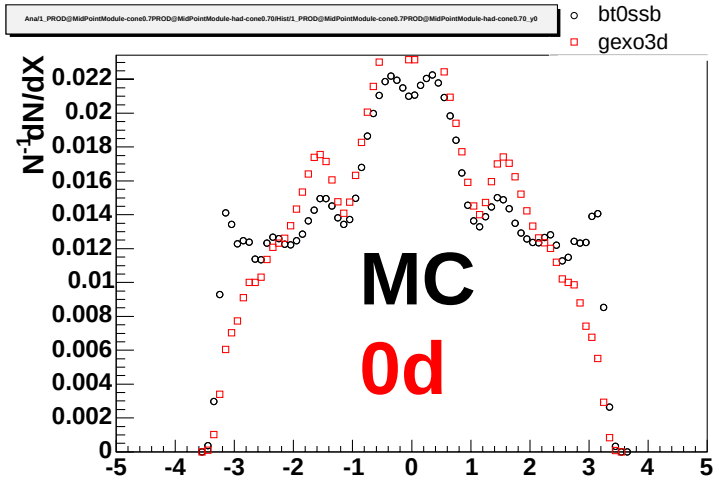
After goodrun + event cuts

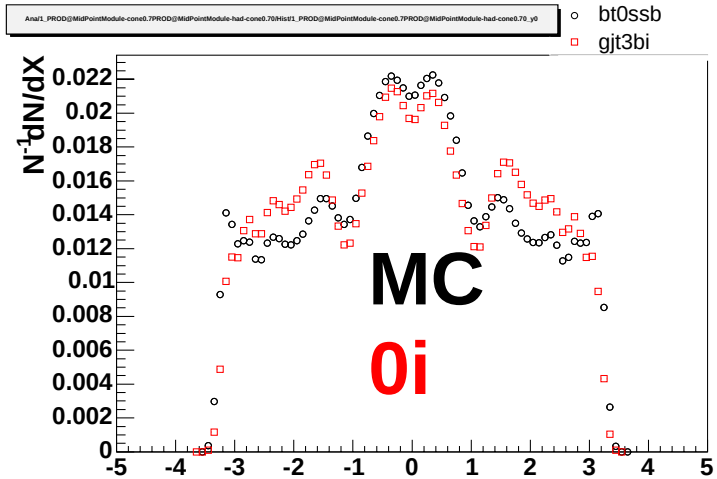


Shows thresholds

Jet Rapidity: Before jet cuts

- After goodrun + event cuts

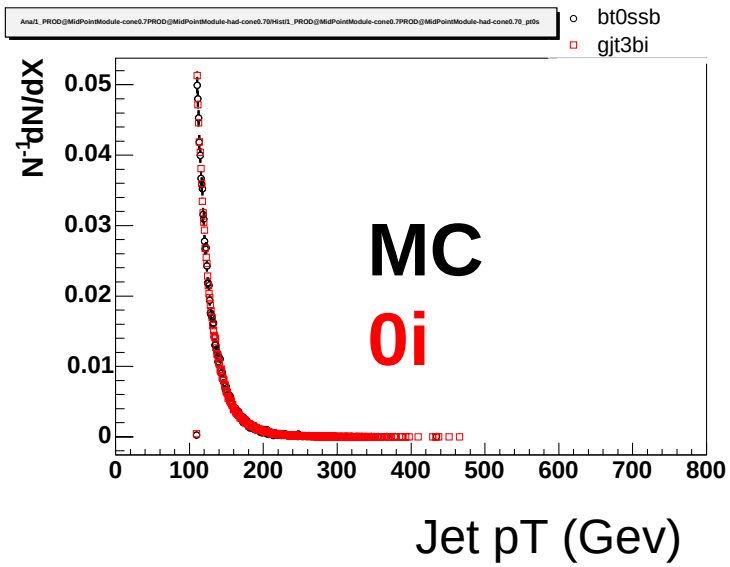


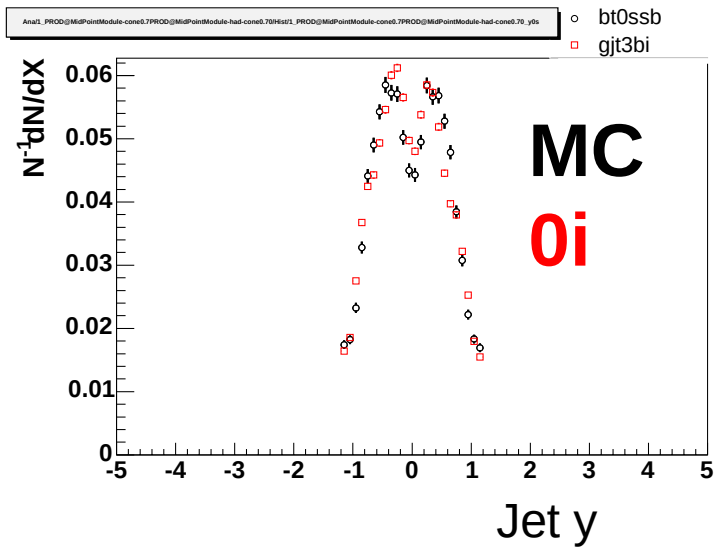


Do we expect better agreement?

Jets: After jet cuts

- After goodrun + event + jet cuts





Distributions are sculpted by cuts ➔ better agreement

Next steps

1. Analyze 3 other MC datasets,
   and compare with data
2. Add ~10 stntuples to MC jet70 datasets
3. Make stntuples for btopla

   HF-enriched Pythia dijets pt>20 (with high pt central leptons)
4. Generate more MC dijet samples at higher p_T-hat (120, 150, etc.)
5. Make stntuples for 4.

Summary

- Gen6 MC Stntuples exist for 4 inclusive dijet samples corresponding to 1.2/fb
- Web page exists w/ more info
- Quick data-MC comparison of Jet70 shows reasonable agreement
  - Data is slightly more active than MC (“hotter”)
  - Do we expect better agreement in y?
- Stntuples available using standard catalog
- Please help to look at them

Backups

Useful SAM commands

- fcdflnx9 104% sam describe dataset definition --defname="bt0sqb"
- Definition Name : bt0sqb
- Definition Id : 73582
- Description : 6.1.4 Stntuple dev_243 v0 of btopqb (Pythia dijet 18 MinBias EvtGen) with jets flags active
- Creation date : 27-Oct-2006 05:00:00 (UTC)
- User name : snihur
- Group name : test
- Dimensions : CDF.DATASET bt0sqb
- fcdflnx9 105% sam describe dataset definition --defname="bt0srb"
- Definition Name : bt0srb
- Definition Id : 73580
- Description : 6.1.4 Stntuple dev_243 v0 of btoprb (Pythia_dijet_40_MinBias_614mcb) with jets flags active
- Creation date : 27-Oct-2006 05:00:00 (UTC)
- User name : snihur
- Group name : test
- Dimensions : CDF.DATASET bt0srb
- fcdflnx9 106% sam describe dataset definition --defname="bt0ssb"
- Definition Name : bt0ssb
- Definition Id : 73583
- Description : 6.1.4 Stntuple dev_243 v0 of btopsb (Pythia_dijet_60_MinBias) with jets flags active
- Creation date : 27-Oct-2006 05:00:00 (UTC)
- User name : snihur
- Group name : test
- Dimensions : CDF.DATASET bt0ssb
- fcdflnx9 107% sam describe dataset definition --defname="bt0stb"
- Definition Name : bt0stb
- Definition Id : 73584
- Description : 6.1.4 Stntuple dev_243 v0 of btoptb (Pythia_dijet_90_MinBias) with jets flags active
- Creation date : 27-Oct-2006 05:00:00 (UTC)
- User name : snihur
- Group name : test
- Dimensions : CDF.DATASET bt0stb
- fcdflnx9 108% sam list files --dim="__set__ btopqb" --count
- 1026 files match the given constraints.
- fcdflnx9 109% sam list files --dim="__set__ btoprb" --count
- 839 files match the given constraints.
- fcdflnx9 110% sam list files --dim="__set__ btopsb" --count
- 239 files match the given constraints.
- fcdflnx9 111% sam list files --dim="__set__ btoptb" --count
- 198 files match the given constraints.
- fcdflnx9 112% sam list files --dim="__set__ bt0sqb" --count
- 1020 files match the given constraints.
- fcdflnx9 113% sam list files --dim="__set__ bt0srb" --count

SAM Metadata

```
addParams = {
   'generated' : {
   'generator' : 'Pythia',
   'showering' : 'Pythia',
   'process' : 'dijetPtHat>90',
   'minbias' : 'yes',
   'simulatedversion' : '6.1.4mcb',
   'effective_cross_section' : '1.961E-05mb'
}
   'cdf' : {
   'LogFile' : 'snihur_btoptb1_v1_p0_000148.tgz'
}
}
addFields = { 'parents': [ 'bb02cfaa.0001topt' ]
```