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# MPI Analysis using 4 jet events

## Some helpful links

- Basic cleanup
- Information on PD sets
- Trigger Information [↗](#)
- Lumi Info
- The current version of the analyzer code can be found in CVS, [here](#) [↗](#).

References:

- Berger, et. al. [↗](#)
- CDF 1993 [↗](#), 1997 [↗](#)

## Analysis overview

The intention of this analysis is to make a measurement of the rate of secondary hard scatterings in a single nuclear interaction typically referred to as double parton scattering (DPS). Our study is modelled very closely on a similar study by the CDF collaboration published in 1993 (see links). Their approach can be summarised as utilising so called discriminator variable to characterise the differences in the topology of events involving 4 jets for the case that there is DPS and when there is only a single interaction. This is explained in more detail in the analysis notes, [link to AN](#).

## Standard selection cuts

- number of primary vertices = 1
- vertex  $|z| \leq 20$
- vertex number of DOF  $\geq 4$
- number of jets  $\geq 4$
- $|l| < 2.4$
- number of jet constituents  $> 1$
- number of charged constituents  $> 0$
- charged hadron fraction  $> 0$
- neutral fraction  $< 0.9$
- $p_T > 20$  GeV
- $p_{T,1} + p_{T,2} > 75$  GeV

## Datasets

- **NOTE** : There is a preselection applied while producing ntuples which requires that there be two jets with  $p_T > 5$  GeV in each event. The preselection also includes the selection of good lumi sections within the specified run range.

Dataset name	$N_{\text{init}}$ ( $10^6$ )	$N_{\text{preselected}}$ ( $10^6$ )	$N_{\text{final}}/$ $N_{\text{preselected}}$
--------------	---------------------------------	--	---

			(Standard selection)
<b>Data</b>			
/MinimumBias/Commissioning10-Sep17ReReco_v2/RECO (132440 - 135575)	572	19.4	0.021%
/JetMETTau/Run2010A-Nov4ReReco_v1/RECO ( 136035 - 137028)	15.04	0.78	0.34%
<b>MC - Pythia8</b>			
/QCD_Pt_15to30_Tune1_7TeV_pythia8/Fall10-START38_V12-v1/GEN-SIM-RECO	1.1	1.1	0.003%
/QCD_Pt_30to50_Tune1_7TeV_pythia8/Fall10-START38_V12-v1/GEN-SIM-RECO	1.1	1.1	0.7%
/QCD_Pt_50to80_Tune1_7TeV_pythia8/Fall10-START38_V12-v1/GEN-SIM-RECO	1.1	1.1	7.1%
/QCD_Pt_80to120_Tune1_7TeV_pythia8/Fall10-START38_V12-v1/GEN-SIM-RECO	1.1	1.1	19%
/QCD_Pt_120to170_Tune1_7TeV_pythia8/Fall10-START38_V12-v1/GEN-SIM-RECO	0.88	0.88	29%
<b>MC - Pythia6</b>			
/QCD_Pt_15to30_TuneZ2_7TeV_pythia6/Fall10-START38_V12-v1/GEN-SIM-RECO	5.45	5.44	0.002%
/QCD_Pt_30to50_TuneZ2_7TeV_pythia6/Fall10-START38_V12-v1/GEN-SIM-RECO	3.26	3.26	0.5%
/QCD_Pt_50to80_TuneZ2_7TeV_pythia6/Fall10-START38_V12-v1/GEN-SIM-RECO	3.19	3.19	4.9%
/QCD_Pt_80to120_TuneZ2_7TeV_pythia6/Fall10-START38_V12-v1/GEN-SIM-RECO	3.21	3.21	13%
/QCD_Pt_120to170_TuneZ2_7TeV_pythia6/Fall10-START38_V12-v1/GEN-SIM-RECO	3.05	3.05	21%
<b>Tune D6T</b>			
/QCD_Pt_15to30_TuneZ2_7TeV_pythia6/Fall10-START38_V12-v1/GEN-SIM-RECO	2.0		
/QCD_Pt_30to50_TuneZ2_7TeV_pythia6/Fall10-START38_V12-v1/GEN-SIM-RECO	0.5		
/QCD_Pt_50to80_TuneZ2_7TeV_pythia6/Fall10-START38_V12-v1/GEN-SIM-RECO	0.5		

## Trigger

Trigger menu with storage mapping.  Hide it

Trigger name	Bit position
HLT_L1_BscMinBiasOR_BptxPlusORMinus	1
HLT_L1Jet6U	2
HLT_L1Jet10U	3
HLT_Jet15U	4
HLT_Jet30U	5
HLT_Jet50U	6
HLT_Jet70U	7
HLT_Jet100U	8
HLT_FwdJet20U	9
HLT_Jet15U_HcalNoiseFiltered	10
HLT_BTagIP_Jet50U	11
HLT_DiJetAve15U	12
HLT_DiJetAve30U	13
HLT_DiJetAve50U	14
HLT_DoubleJet15U_ForwardBackward	15
HLT_QuadJet15U	16
HLT_HT100U	17
HLT_Mu9	18
HLT_Mu11	19
HLT_Mu13	20
HLT_Mu15	21
HLT_Ele10_LW_L1R	22
HLT_Ele15_SW_L1R	23

HLT_Ele15_SW_CaloEleId_L1R	24
HLT_Ele17_SW_CaloEleId_L1R	25
HLT_Ele15_SW_TightEleId_L1R	26

Since we utilize both MinBias and JetMET samples and compare these to QCD samples, we need to select on a trigger that will give us a QCD dominated data samples. The lowest threshold jet trigger available is HLT\_Jet15U -- not prescaled at all for the selected range -- so we need to correct for any inefficiencies. To do this we considered turn-on curves for several kinematic distributions of the two leading jets in our selected events.

Our conclusion is to require the sum  $p_T$  of the leading two jets be greater than 75 GeV.

## Jet Energy Scale

Jet corrections are applied according to the prescribed methods on the jet correction twiki page. Things that need to be done here are:

- Include residual corrections.
- Include JEC uncertainties that are stored in the dataset. Propagate these to find the effect on our fits.

## Generator level studies

- Some simple overlays of pythia8 QCD with and without a DPS enrichment, [here](#).

## Data/MC comparisons

### Standard selection

Using JetMETTau stream data with runNumber  $\leq$  137208 and selecting HLT\_Jet15U, the yield is

Selection	$N_{\text{Events}}$
Initial number of events:	801803
Pass HLT selection	754542
One and only one primary vertex:	552959
Vertex displacement in z < cm:	552746
Vertex ndof $\geq$ 4:	552415
$\text{abs}( ) < 2.4$ :	323067
Miscellaneous jet quality cuts:	313393
$p_{T,1/2} > 20$ GeV and $p_{T,3/4} > 20$ :	3906
$p_{T,1} + p_{T,2} > 75$ GeV:	2644
Final number of events:	2644

The cuts are as described above. The most recent overlays with fit results are [here](#).

Older comparisons are [here](#) and [here](#).

## Isolated dijet pair selection

We take an alternative approach which picks out events that are "signal"-like, i.e., they consist of two isolated dijet pairs. The isolation selection requires the pair consisting of the leading two jets ( $j_1$  and  $j_2$ ) be in the opposite side of the detector (w.r.t.  $\eta$ ) than the pair made up of the next two jets ( $j_3$  and  $j_4$ ). We then also require that the  $\Delta$  of the jets in each pair be greater than 2.0. Hence we have two isolated dijet pairs. This selection greatly reduces the number of selected events so we lower the  $p_T$  threshold on  $j_3$  and  $j_4$  to 10 GeV. **Results are here**. This was expanded to include the effects of a scan on the minimum sum  $p_T$  of the second pair. **Results are here**.

Older comparison.  Hide it

## Old comparisons

Data	Runs
/MinimumBias/Comissioning10-SD_JetMETTau-Jun14thSkim_v1/RECO	132440 - 135807
/JetMETTau/Run2010A-Jun14thReReco_v2/RECO	135808 - 137546
MC	
/QCD_Pt-15_7TeV-pythia8/Spring10-START3X_V26B-v2/GEN-SIM-RECO	
/QCD_Pt-20_TuneD6T_7TeV-pythia6/Summer10-START36_V10-v1/GEN-SIM-RECO	

Selection cut	Data	Pythia 8	Pythia 6	Signal
Initial number of events:	1286731	3866466	4650673	
Pass HLT selection	1222406	791134	1961961	
One and only one primary vertex:	1076132	751180	1893103	
Vertex displacement in $z < 15$ cm:	1075551	751180	1893102	
Vertex ndof $\geq 4$ :	1075407	751165	1893076	
$\text{abs}(\ ) < 2.4$ :	749475	458647	1282702	
Miscellaneous jet quality cuts:	742030	455035	1272134	
$p_{T} > 20$ GeV:	11302	10227	30545	
$p_{T,1} + p_{T,2} > 70$ GeV:	8543	8026	20415	
5th jet $pt < 15$ :	4624	3845	11123	

## JMT on QCD

- NOTE: The leading jet  $p_T$  cut was raised to 35 GeV.

Data	Runs
/MinimumBias/Comissioning10-SD_JetMETTau-Jun14thSkim_v1/RECO	132440 - 135807
/JetMETTau/Run2010A-Jun14thReReco_v2/RECO	135808 - 137546
MC	
/QCD_Pt-15_7TeV-pythia8/Spring10-START3X_V26B-v2/GEN-SIM-RECO	

## Kinematic quantities

$p_T$  for four leading jets: jet 1, jet 2, jet 3, jet 4

- $H_T$
- $MH_T$

- of four leading jets [↗](#)
- of four leading jets [↗](#)

### Discriminator variables

- $S_{p_T}$  [↗](#)
- $S_{\min}$  [↗](#)
- $\Delta S$  [↗](#)

### on QCD

Data	Runs
/MinimumBias/Commissioning10-Jun14thReReco_v1/RECO	132440 - 135807
/MinimumBias/Run2010A-Jun14thReReco_v2/RECO	135808 - 137546
MC	
/QCD_Pt-15_7TeV-pythia8/Spring10-START3X_V26B-v2/GEN-SIM-RECO	N/A

### Kinematic quantities

$p_T$  for four leading jets: jet 1 [↗](#), jet 2 [↗](#), jet 3 [↗](#), jet 4 [↗](#)

- $H_T$  [↗](#)
- $MH_T$  [↗](#)
- of four leading jets [↗](#)
- of four leading jets [↗](#)

### Discriminator variables

- $S_{p_T}$  [↗](#)
- $S_{\min}$  [↗](#)
- $\Delta S$  [↗](#)

## Data/Data comparisons for leading jet $p_T > 20$ GeV and $p_T > 35$ GeV

### Some kinematic quantities

$p_T$  for four leading jets: jet 1 [↗](#), jet 2 [↗](#), jet 3 [↗](#), jet 4 [↗](#)

- $H_T$  [↗](#)
- $MH_T$  [↗](#)
- of four leading jets [↗](#)

- ♦ of four leading jets [↗](#)

## Discriminator variables

- $S_{p_T}$  [↗](#)
- $S_{\min}$  [↗](#)
- $\Delta S$  [↗](#)

## Comparison of MC with DPS on and off

Comparisons for various  $p_T$  cuts from June 2010 are here [↗](#).

## Discriminator variables

- 
- 
- 
- 
- 
- 

## Comparison of $S_{p_T}$ for MC generated with phase space $p_{T,\min} = 50$ GeV/c or 20 GeV/c.

- Cuts applied are  $p_T > 15$  GeV and  $|\eta| < 2.5$ .
- MC samples were generated using Pythia8 with the following options in the config file:

```
PythiaParameters = cms.PSet(
  processParameters = cms.vstring('Main:timesAllowErrors = 10000',
    'ParticleDecays:limitTau0 = on',
    'ParticleDecays:tau0Max = 10.',
    'Beams:allowVertexSpread = on',
    'PhaseSpace:pTHatMin = 50.',
    'HardQCD:all = on',
    'SecondHard:generate = on',
    'SecondHard:TwoJets = on')
```

Phase space  $p_{T,\min} = 50$  GeV:

Output of Pythia generator for DPS on. [▶ Hide it](#) [▾](#)

```
*----- PYTHIA Process Initialization -----*
|
| We collide p+ with p+ at a CM energy of 7.000e+03 GeV
|
|-----|
| Subprocess                Code | Estimated |
|                               | max (mb) |
|-----|
| g g -> g g                111 | 2.241e-02 |
| g g -> q qbar (uds)       112 | 3.144e-04 |
| q g -> q g                113 | 2.731e-02 |
| q q(bar)' -> q q(bar)'    114 | 3.688e-03 |
```

Some kinematic quantities

## MPIAnalysis < Main < TWiki

```

| q qbar -> g g                115 | 2.894e-05 |
| q qbar -> q' qbar' (uds)     116 | 1.430e-05 |
| g g -> c cbar                 121 | 1.046e-04 |
| q qbar -> c cbar              122 | 4.761e-06 |
| g g -> b bbar                 123 | 1.027e-04 |
| q qbar -> b bbar              124 | 4.715e-06 |
|                               |         |
*----- End PYTHIA Process Initialization -----*

```

```

*----- PYTHIA Multiple Interactions Initialization -----*
|                               |         |
|           sigmaNonDiffractive = 48.45 mb |         |
|           pT0 = 3.12 gives sigmaInteraction = 152.06 mb: accepted |         |
|                               |         |
*----- End PYTHIA Multiple Interactions Initialization -----*

```

PYTHIA Warning in MultipleInteractions::init: maximum increased by factor 1.539

```

*----- PYTHIA Flag + Mode + Parm + Word Settings (changes only) -----*

```

Name	Now	Default
Beams:allowVertexSpread	on	off
HardQCD:all	on	off
Main:timesAllowErrors	10000	10
ParticleDecays:limitTau0	on	off
PhaseSpace:pTHatMin	50.00000	0.0
SecondHard:generate	on	off
SecondHard:TwoJets	on	off

```

*----- End PYTHIA Flag + Mode + Parm + Word Settings -----*

```

Begin processing the 1st record. Run 1, Event 1, LumiSection 1 at 19-May-2010 00:32:23 CDT

...

```

*----- PYTHIA Event and Cross Section Statistics -----*

```

Subprocess	Code	Number of events			sigma (estim)
		Tried	Selected	Accepted	
-----					
First hard process:					
g g -> g g	111	675	91	79	2.553e-0
g g -> q qbar (uds)	112	5	0	0	0.000e+0
q g -> q g	113	789	75	61	2.295e-0
q q(bar)' -> q q(bar)'	114	122	13	10	3.592e-0
q qbar -> g g	115	0	0	0	0.000e+0
q qbar -> q' qbar' (uds)	116	0	0	0	0.000e+0
g g -> c cbar	121	7	2	0	0.000e+0
q qbar -> c cbar	122	0	0	0	0.000e+0
g g -> b bbar	123	5	0	0	0.000e+0
q qbar -> b bbar	124	0	0	0	0.000e+0
sum		1603	181	150	5.207e-0
-----					
Second hard process:					
g g -> g g	111	667	74	60	2.327e-0
g g -> q qbar (uds)	112	8	2	1	2.542e-0
q g -> q g	113	806	84	72	2.317e-0
q q(bar)' -> q q(bar)'	114	112	18	15	4.645e-0
q qbar -> g g	115	0	0	0	0.000e+0
q qbar -> q' qbar' (uds)	116	1	1	1	8.626e-1
g g -> c cbar	121	3	2	1	2.000e-0



## MPIAnalysis < Main < TWiki

```

| q qbar -> c cbar          122 |           1           0           0 | 0.000e+0
| g g -> b bbar             123 |           2           0           0 | 0.000e+0
| q qbar -> b bbar          124 |           0           0           0 | 0.000e+0
|
| sum                        |          1600          181          150 | 5.162e-0
|
-----
|
| Uncombined cross sections for the two event sets were 6.412e-03 and 6.453e-03 mb, respectively
| using a sigma(nonDiffractive) of 4.845e+01 mb and an impact-parameter enhancement factor of
|
*----- End PYTHIA Event and Cross Section Statistics -----*

```

### Output of Pythia generator for DPS off. [Hide it](#)

```

*----- PYTHIA Process Initialization -----*
|
| We collide p+ with p+ at a CM energy of 7.000e+03 GeV
|
-----
| Subprocess                Code | Estimated |
|                            |           | max (mb) |
-----
| g g -> g g                111 | 2.241e-02 |
| g g -> q qbar (uds)      112 | 3.144e-04 |
| q g -> q g                113 | 2.731e-02 |
| q q(bar)' -> q q(bar)'  114 | 3.688e-03 |
| q qbar -> g g            115 | 2.894e-05 |
| q qbar -> q' qbar' (uds) 116 | 1.430e-05 |
| g g -> c cbar            121 | 1.046e-04 |
| q qbar -> c cbar         122 | 4.761e-06 |
| g g -> b bbar            123 | 1.027e-04 |
| q qbar -> b bbar         124 | 4.715e-06 |
|
*----- End PYTHIA Process Initialization -----*

*----- PYTHIA Multiple Interactions Initialization -----*
|
|          sigmaNonDiffractive = 48.45 mb
|
| pT0 = 3.12 gives sigmaInteraction = 151.76 mb: accepted
|
*----- End PYTHIA Multiple Interactions Initialization -----*
PYTHIA Warning in MultipleInteractions::init: maximum increased by factor 1.541

*----- PYTHIA Flag + Mode + Parm + Word Settings (changes only) -----*
|
| Name                        | Now | Default |
|-----|-----|-----|
| Beams:allowVertexSpread    | on  | off     |
| HardQCD:all                 | on  | off     |
| Main:timesAllowErrors      | 10000 | 10     |
| ParticleDecays:limitTau0   | on  | off     |
| PhaseSpace:pTHatMin        | 50.00000 | 0.0   |
|
*----- End PYTHIA Flag + Mode + Parm + Word Settings -----*
Begin processing the 1st record. Run 1, Event 1, LumiSection 1 at 19-May-2010 00:27:57 CDT
...

*----- PYTHIA Event and Cross Section Statistics -----*
|

```

## MPIAnalysis < Main < TWiki

Subprocess	Code	Number of events			
		Tried	Selected	Accepted	
g g -> g g	111	577	64	64	2.9
g g -> q qbar (uds)	112	3	1	1	9.5
q g -> q g	113	597	71	71	3.0
q q(bar)' -> q q(bar)'	114	89	13	13	4.2
q qbar -> g g	115	1	0	0	0.0
q qbar -> q' qbar' (uds)	116	0	0	0	0.0
g g -> c cbar	121	0	0	0	0.0
q qbar -> c cbar	122	0	0	0	0.0
g g -> b bbar	123	3	1	1	1.6
q qbar -> b bbar	124	0	0	0	0.0
sum		1270	150	150	6.5

\*----- End PYTHIA Event and Cross Section Statistics -----\*

$S_{p_T}$  with DPS turned off and on and the corresponding individual jet  $p_T$  and sum  $p_T$  (linear/log) distributions.

Phase space  $p_{T,\min} = 20$  GeV:

Output of Pythia generator for DPS on. [Hide it](#)

```
*----- PYTHIA Process Initialization -----*
|
| We collide p+ with p+ at a CM energy of 7.000e+03 GeV
|
|-----|
| Subprocess          Code | Estimated |
|                    |          | max (mb) |
|-----|-----|
| g g -> g g          111 | 1.369e+00 |
| g g -> q qbar (uds) 112 | 1.461e-02 |
| q g -> q g          113 | 8.726e-01 |
| q q(bar)' -> q q(bar) 114 | 9.340e-02 |
| q qbar -> g g       115 | 6.842e-04 |
| q qbar -> q' qbar' (uds) 116 | 3.085e-04 |
| g g -> c cbar       121 | 4.812e-03 |
| q qbar -> c cbar     122 | 1.020e-04 |
| g g -> b bbar       123 | 4.322e-03 |
| q qbar -> b bbar     124 | 9.671e-05 |
|
|-----|-----|
*----- End PYTHIA Process Initialization -----*

*----- PYTHIA Multiple Interactions Initialization -----*
|
|          sigmaNonDiffractive = 48.45 mb
|
| pT0 = 3.12 gives sigmaInteraction = 152.06 mb: accepted
|
*----- End PYTHIA Multiple Interactions Initialization -----*
PYTHIA Warning in MultipleInteractions::init: maximum increased by factor 1.539

*----- PYTHIA Flag + Mode + Parm + Word Settings (changes only) -----*
|
| Name                    | Now | Default
```

## MPIAnalysis < Main < TWiki

```

|
| Beams:allowVertexSpread          |                               | on | off
| HardQCD:all                      |                               | on | off
| Main:timesAllowErrors            |                               | 10000 | 10
| ParticleDecays:limitTau0         |                               | on | off
| PhaseSpace:pTHatMin              |                               | 20.00000 | 0.0
| SecondHard:generate              |                               | on | off
| SecondHard:TwoJets               |                               | on | off
|

```

\*----- End PYTHIA Flag + Mode + Parm + Word Settings -----\*

Begin processing the 1st record. Run 1, Event 1, LumiSection 1 at 18-May-2010 19:25:05 CDT

...

\*----- PYTHIA Event and Cross Section Statistics -----\*

Subprocess	Code	Number of events			sigma (estim)
		Tried	Selected	Accepted	
-----					
First hard process:					
g g -> g g	111	88	16	16	1.339e-0
g g -> q qbar (uds)	112	0	0	0	0.000e+0
q g -> q g	113	71	7	6	5.480e-0
q q(bar)' -> q q(bar)'	114	11	4	4	1.323e-0
q qbar -> g g	115	0	0	0	0.000e+0
q qbar -> q' qbar' (uds)	116	0	0	0	0.000e+0
g g -> c cbar	121	0	0	0	0.000e+0
q qbar -> c cbar	122	0	0	0	0.000e+0
g g -> b bbar	123	0	0	0	0.000e+0
q qbar -> b bbar	124	0	0	0	0.000e+0
sum		170	27	26	2.019e-0
-----					
Second hard process:					
g g -> g g	111	74	15	14	1.224e-0
g g -> q qbar (uds)	112	0	0	0	0.000e+0
q g -> q g	113	54	10	10	6.589e-0
q q(bar)' -> q q(bar)'	114	5	1	1	1.247e-0
q qbar -> g g	115	0	0	0	0.000e+0
q qbar -> q' qbar' (uds)	116	0	0	0	0.000e+0
g g -> c cbar	121	1	1	1	1.527e-0
q qbar -> c cbar	122	0	0	0	0.000e+0
g g -> b bbar	123	0	0	0	0.000e+0
q qbar -> b bbar	124	0	0	0	0.000e+0
sum		134	27	26	2.023e-0
-----					

Uncombined cross sections for the two event sets were 3.340e-01 and 3.448e-01 mb, respectively using a sigma(nonDiffractive) of 4.845e+01 mb and an impact-parameter enhancement factor of

\*----- End PYTHIA Event and Cross Section Statistics -----\*

Output of Pythia generator for DPS off. [Hide it](#)

```

*----- PYTHIA Process Initialization -----*
|
| We collide p+ with p+ at a CM energy of 7.000e+03 GeV
|

```

## MPIAnalysis < Main < TWiki

```

|-----|
| Subprocess                               Code | Estimated |
|                                           | max (mb)  |
|-----|
| g g -> g g                               111 | 1.369e+00 |
| g g -> q qbar (uds)                     112 | 1.461e-02 |
| q g -> q g                               113 | 8.726e-01 |
| q q(bar)' -> q q(bar)'                 114 | 9.340e-02 |
| q qbar -> g g                           115 | 6.842e-04 |
| q qbar -> q' qbar' (uds)               116 | 3.085e-04 |
| g g -> c cbar                           121 | 4.812e-03 |
| q qbar -> c cbar                        122 | 1.020e-04 |
| g g -> b bbar                           123 | 4.322e-03 |
| q qbar -> b bbar                        124 | 9.671e-05 |
|-----|
*----- End PYTHIA Process Initialization -----*

*----- PYTHIA Multiple Interactions Initialization -----*
|
|           sigmaNonDiffractive = 48.45 mb
|
|   pT0 = 3.12 gives sigmaInteraction = 151.76 mb: accepted
|
*----- End PYTHIA Multiple Interactions Initialization -----*
PYTHIA Warning in MultipleInteractions::init: maximum increased by factor 1.541

*----- PYTHIA Flag + Mode + Parm + Word Settings (changes only) -----*
|
| Name                                     | Now | Default
|-----|-----|-----|
| Beams:allowVertexSpread                 | on  | off
| HardQCD:all                             | on  | off
| Main:timesAllowErrors                   | 10000 | 10
| ParticleDecays:limitTau0                | on  | off
| PhaseSpace:pTHatMin                     | 20.00000 | 0.0
|-----|-----|-----|
*----- End PYTHIA Flag + Mode + Parm + Word Settings -----*
Begin processing the 1st record. Run 1, Event 1, LumiSection 1 at 18-May-2010 19:29:02 CDT
...

*----- PYTHIA Event and Cross Section Statistics -----*
|
| Subprocess                               Code | Number of events |
|                                           | Tried  Selected  Accepted |
|-----|-----|-----|-----|
| g g -> g g                               111 | 669    85    85 | 1.5
| g g -> q qbar (uds)                     112 | 3      1     1 | 3.4
| q g -> q g                               113 | 419   58    58 | 1.0
| q q(bar)' -> q q(bar)'                 114 | 43     6     6 | 7.9
| q qbar -> g g                           115 | 0      0     0 | 0.0
| q qbar -> q' qbar' (uds)               116 | 0      0     0 | 0.0
| g g -> c cbar                           121 | 1      0     0 | 0.0
| q qbar -> c cbar                        122 | 0      0     0 | 0.0
| g g -> b bbar                           123 | 1      0     0 | 0.0
| q qbar -> b bbar                        124 | 0      0     0 | 0.0
|-----|-----|-----|
| sum                                     | 1136  150  150 | 2.6
|-----|-----|-----|
*----- End PYTHIA Event and Cross Section Statistics -----*

```

$S_{p_T}$  ' with DPS turned off and on and the corresponding individual jet  $p_T$  and sum  $p_T$  (linear/log) distributions.

-- NateOdell - 29-Apr-2010

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This topic: Main > MPIAnalysis

Topic revision: r75 - 2011-05-03 - NateOdell



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