

QCD Meeting 5/16/02

1. News/announcements Jay/Joey

Run 1 blessing

2. W/Z + gamma Marina Brozovic

Run 1 update

3. K0/Lambda production in min bias events
Franco Rimondi

Run 2

4. QCD data stripping Jay/Giuseppe
5. Dijet shapes in data and MC Mario Martinez-Perez

DPF Practice Talk

6. CDF Jet Algorithms in Run 2 Giuseppe Latino

Papers of the Week

- [hep-ph/0205132](#), C. Mesropian; Proceedings of `` Corfu 2001: Summer School and Workshop on High Energy Physics, September 1-14, 2001; In this talk we present the results from the measurement of the inclusive jet cross section and strong coupling constant based on the CDF Run 1B data, and discuss prospects for Run 2.
- [hep-ph/0205127](#), Multiparticle Production in QCD Jets, J.R. Andersen, N.H. Brook, Yu.L. Dokshitzer, V.A. Khoze, W. Kittel, W. Ochs, W.J. Stirling, G. Zanderighi; We briefly summarise the main results presented at the IPPP Workshop on Multiparticle Production in QCD Jets, held in Durham in December 2001.
- [hep-ph/0205096](#), NLO Partonic Event Generators; Stefan Weinzierl; Merging the benefits of an NLO calculation with event generators is a topic of current interest. Among other things, it is advantageous to be able to generate unweighted events according to NLO matrix elements. I report on an algorithm which generates a sequence of unweighted momentum configurations, each configuration containing either n or $n+1$ four-vectors, such that for any infrared safe observable the average over these configurations coincides with the NLO calculation up to errors of a resolution variable.

Abstracts submitted to Amsterdam

- QCD radiation of $t\bar{t}$ events
- Inclusive jet production at CDF
- Inclusive photon production at CDF
- Run 2 jet algorithms at CDF
- Direct photon cross section from conversions
- Quark and gluon jet fragmentation at CDF
- Underlying event in hard scatterings
- Multi-gap diffraction
- Charm meson cross sections

Talks

- QUARKS 2002 1-7 June, Novgorod, Russia
- QCD 2002, 5-9 August, Beijing
- Hadron Structure '02, Her'ľany, Slovakia, 22-27 Sept.

Message from Jonathan

- The latest physics table was tested Friday night at $1.7e31$ with a 270 Hz L2 accept rate and tolerable deadtime. Cross section was 16ub. Below I've listed the L2 triggers with the biggest cross sections. The cross sections from Friday are listed to the right of the trigger names. To get to 300 Hz at $5e31$, we will clearly need to cut further. Much improvement will come from the new HadronB and ElectronSVT L2 code. That covers the big offenders at the top of the list. Enhancements to L1 muon logic are being worked on to compensate for the lack of muon information in L2. CMX rates also suffer from beam backgrounds, so getting the CSX working is essential. Even if all of these fixes have the expected effect, we will still be short of the goal. Therefore, we need to look at cutting further on backup and calibration triggers as well as understanding some other high-rate physics triggers. Please review the list so we can make a plan on Tuesday.

Road to 5E31

** The following will be fixed by new Level 2 code:

L2_TWO_TRK2_D100_L1_OPPQ_DPHI135_SUMPT5.5	4357
L2_TRK2_D120_L1_CEM4_PT4	2498
L2_TWO_TRK2_D100_L1_SEVEN_TRK2	849

** Needs enhanced L1 muon logic

L2_AUTO_L1_CMUP6_PT4	1854
L2_AUTO_L1_TWO_CMU1.5_PT1.5	1100

** L2_AUTO_L1_CMU1.5_PT1.5_&_CMX1.5_PT2 1926

Needs enhanced L1 muon logic. Would also be helped by CSX, shielding.

*** Backup triggers. Can we remove or prescale further?

L2_CEM4_PT4_CES2_PS20	469
L2_PS100_L1_TWO_CEM2_PT2_OPPQ	288
L2_PS100_L1_JET10	197
L2_PS100_L1_EM8	143
L2_PS100_L1_JET5	142
L2_PS10_L1_CEM8_PT8	126
L2_PS10_L1_EM8_&_MET15	86
L2_PS10_L1_EM8_&_CMU1.5_PT1.5	54
L2_PS10_L1_EM8_&_CMX1.5_PT2	31

Road to 5E31

Note that for the L1_JET10 and L1_JET5, we also have a rate limited version at 1 Hz. These prescaled versions are used for paths that have no L2 cut but do have an L3 jet requirement as a check on the L2 trigger. Can we do that with the rate-limit sample?

- ** L2_CEM12_ISO 1476
Calibration trigger, prescale? Writing L2 code for photon+SVT
- ** L2_AUTO_L1_CMX6_PT8 948
Raise PT cut to 12 GeV. CSX or shielding would help.
- ** L2_TWO_TRK2_D100_L1_TWO_CEM2_PT2 780
Y2K requested this as a way to get J/psi->ee. Does anybody still want this?
Masa is working on the real L2 J/psi->ee code
- ** L2_CEM8_PT8_CES2 608
This is really a calibration trigger. However, it feeds a electron+isolated track.
What prescale is OK for the calibration side? What can be done to clean up the tau path?
- ** L2_TWO_JET15_L1_TWO_TRK6 589
Ditau trigger. Can we use isolated jet clusters?
- ** L2_TWO_TRK2_D100_&_L1_TWO_CJET5 488
Feeds high-pt B jet path. Needs new L2 code (jets and SVT). Even so, would be 200nb.
- ** L2_EM18_ISO 360
CDF/4718 says 100 nb. What's wrong?
- ** L2_CEM16_L1_MET15 331
This feeds the W no-track path. Can anything be done to cut the rate? It is mostly junk. It is not in 4718.
- ** L2_TWO_CEM2_PT2_CES1_PS10 298
This is really a place-holder for the J/psi trigger with a mass cut. Is this OK for now?
- ** L2_CEM4_PT4_CES2_&_CMX1.5_PT2 253
Might be helped by CSX? Shielding?
- ** L2_AUTO_L1_MET25 224
Raise MET cut to 35 as per CDF/4718
- ** L2_JET15_L1_MET25 223
Feeds MET+2 jets. Require 2 Jets 10 GeV. $|\eta| < 3$ OK?
- ** L2_TRK2_D120_L1_CMUP6_PT4 199
Could be helped with new L2 Code: 4 GeV XFT track + 2 GeV SVT with angle cuts.
Rates?
- ** L2_JET15_PS12 143
Increase prescale?

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May 16, 2002