QCD Agenda 10/18/02

1. **News/announcements** **Jay/Joey**

Run 2

2. **Trigger table for high(er) luminosity**
   Rob Snihur 15'

3. **Diffractive group update: status and plans for winter conferences**
   Koji Terashi 15'

4. **Underlying event in jet events Gene Flanagan 15'**

5. **W + jets group update** **Rob Roser 15'**

6. **Extraction of the Non-Perturbative QCD b-Quark Fragmentation Distribution. From Delphi to CDF?**
   Eli Ben-Haim 20'

Run 1

7. **W/Z->jet jet** **Olga Lobban 30'**

Papers of the Week

- **hep-ph/0210213** ; HERWIG 6.5 Release Note G Corcella (MPI, Munich), IG Knowles (Edinburgh U.), G Marchesini (Milan Bicocca U. & INFN, Milan), S Moretti (CERN, Geneva & IPPP, Durham), K Odagiri (KEK, Tsukuba), P Richardson (Cambridge U., DAMTP), MH Seymour (Manchester U.), BR Webber (Cambridge U.)

  A new release of the Monte Carlo program HERWIG (version 6.5) is now available. The main new features are: support for the Les Houches interface to matrix element generators; additional SM and MSSM Higgs processes in lepton collisions; additional matrix elements for the spin correlation algorithm; a new version of the ISAWIG interface; interface to the MC@NLO program for gauge boson pairproduction in hadron collisions. This is planned to be the last major release of Fortran HERWIG. Future developments will be implemented in a new C++ event generator, HERWIG++.

I talked to Bryan and 6.501 is currently in preparation and he promises to add in LHAPDF.

Announcements

- Next ME/MC meeting on Friday Nov. 15 10 AM in One-West; there will be a shortened qcd meeting prior to the workshop
- Michelangelo will be here for the workshop; currently there are some tenuous plans to discuss b fragmentation and B cross section calculations with him, perhaps at the b or at the qcd meeting that week
- Boaz Klima from Moriond organizational group would like to have some word by Oct. 25 about what topics might be available for the Moriond conference
- TDWG meeting is moving from Tuesdays to Friday morning (10:30-11:30 AM) in the Pump Room
- Need to give feedback to Marjorie and Manfred regarding needed accuracy of current simulation for Winter conference analyses; version will be frozen soon

Jet Subgroup?

- There are a number of jet-related QCD analyses either underway or soon-to-be underway
  - inclusive jet cross section
  - dijet mass/angular distribution
  - b jet fragmentation/ b jet cross section
  - energy flow/jet shapes
  - k_T jet cross section
- Jay and I have been discussing the possibility/need of forming a specific jet sub-group as a forum for the people involved in the above analyses to work together/have more time for discussion than is available in either the qcd meeting itself or in the jet corrections meeting
- Most of work taking place now is at the level of jet corrections (cross-group effort, see list), but there has to be a specific focus on jet physics to prepare at least some of the above topics for the Winter conferences
- Of course, there will still be a great deal of discusssion at the qcd meetings
  - talk by Anwar last qcd meeting on inclusive jet cross section; talk by Mario in future meeting
  - talk by Mario at future meeting on jet cross section measurements in HERA
    - back to parton corrections?

Task List

Tasks needed to get jet corrections using Run I methodology (October-10-02)

1. Calorimeter E-scale work: Get (and keep) calibration to 1%

CEM: use high PT electrons

Short range : ETF (Eva, Larry Nodulman)

Long range : Larry Nodulman

CHA Use high PT and J/psi muons

Short range: Hyunsoo Kim, Robyn Madrak, Anant Gjjar

Long Range: ???

WHA Short range: Hyunsoo Kim, Anant Gjjar, Camille Gingsburg

Long Range: ???

PEM Laser calibration : Howard Budd, Phil Yoon

E-scale calibration studies:

PPR: Willis, Jedong Lee

Electrons: ETF?

Stability: E/P awaits stand-alone silicon

Long Range:???

PHA Laser calibration: Howard Budd, Phil Yoon

Stability: Muons, Camille?

Long Range: ????

2. From particle to Jets (short range)

2.1 Use gam-jet balance, after correcting the photon (Giuseppe)

2.1.1 Compare raw jet energies with Run I for different cone sizes

2.1.2 Apply Run I corrections to Run II data and calculate the balance

3. What is needed before we release 0th order corrections.

3.1 Understand WHA E-scale (Hyunsoo)

3.2 Understand the 3% E-scale shift from run I (Giuseppe)

suspects: WHA E-scale

loss of low PT towers (Giuseppe, Robin)

3.3 Understand why the 4.5% shift obtained in gam-jet balance (3+1.5%

due to the CHA E-scale shift) becomes 7% for corrected jets (Giuseppe

and others).

3.4 Obtain time and eta dependent corrections for the Plug.

with Minbias: Beate et al.

with di-jets and gam+jets: Charles Currat, Giuseppe Latino

from jet cross-section: Frank Chlebana

long range ???

3.5 Get information on N_vertices in the event (Jean-Francois, Beate, Mario)

3.6 Find underlying event energy in Min-bias events (Mario).

3.7 Get corrections as a function of PT from di-jet balance (Anwar, Gene).

3.8 Evaluate uncertainty on jet energy.

4. What is needed before we declare the simulation "good enough".

4.1 Get offline code V4.8.4 running, i.e., get latest tower energy bug fixed (Beate and others).

4.2 Obtain the 3 million HERWIG Jet20 events we asked for (mc_produc. group)

4.3 Compare with JET20 di-jet balance data to check that eta cracks are in the correct place (Charles et al).

4.4 Obtain gam + jets HERWIG MC events and compare with data.

4.4 Retune longitudinal (after the 4% CHA shift) and lateral energy flow (Soon).

4.5 Fix possible bugs found in 4.2-4.4 above

5. Special runs to check jet E-scale to 1%

5.1 Minbias events for isolated track PT<4 GeV.

5.2 Isolated track triggers for PT > 3, 7 GeV.

5.3 Low prescale BMU triggers.

5.3 Low prescale for JET20 trigger.

6. Absolute E-scale determination (central)

6.1 Measure tracking efficiency in di-jet events (as a function of PT track, y, track separation, PT of jet, etc.).

6.2 Tune jet fragmentation in MC to reproduce data.

6.3 Use MC to determine absolute correction.

6.4 Evaluate systematics from calorimeter non-linearity, fragmentation and underlying event.

7. Other corrections and systematics

7.1 Out of cone correction.

7.2 Splash-out?

Offline Q&A with Avi and Pierre

Dear Colleagues,

Here is information on the current situation with offline releases and our plans for the short term (sorry if you got this message more than once).

Q: What release should I use now?

A: The base release that you should use now is: 4.8.4
The main purpose of this release is to reprocess the data for the winter conferences on the farms. Farms processing is ongoing with > 30 million events processed. We are also currently processing incoming data with 4.8.4.

Q: When will I get a release that has the "official" simulation package for the Winter Conferences?

A: We are currently working on a release that will have the default simulation package for the Winter conferences. This release will be called 4.9.0. When it is out, hopefully within a week, you should use it for your analysis. Note that we are not changing the core (production) reconstruction for this release, we are adding simulation (and some database tools).

Q: What happened to 4.8.3?

A: Because of problems with multi-branch root and I/O modules, we have removed 4.8.3. The data written with 4.8.3 cannot be read back with 4.8.4. This release should NOT be used.

Q: Where is the documentation, how do we keep up to date?

A: We are in the process of making a web page that provides information on the status of releases and our plans. The link to this page will be:
http://www-cdf.fnal.gov/upgrades/computing/off_analysis.html
This link should be available by Monday at the latest. You should consult this page frequently if your are planning to do an analysis using the 4.8.4 data.

For the past month, we have concentrated on building a release to reprocess data for the Winter Conferences on the farms. This has required all of our attention: we made many releases that needed to be tested and validated. The pace of this work has been very rapid and has made it very difficult for many users to follow what is going on. We are aware of that, and we are working on improving the situation now that things are settling down. We are now working toward a stable, consolidated release (4.9.0 mentioned above) for all users.