Simulation Meeting

News

Recent and Imminent MC Production Activity

People News

- Manfred Paulini
  - Resigning as Simulation Group leader, after many dedicated years
  - Has had an enormous impact on CDF's simulation, most recently in getting us to the 5.3.1 release: Thank you!

- Soon Jun
  - Is replacing Manfred as leader of Simulation Group
  - Soon's leadership and expertise in offline and simulation will be a great asset: Welcome!

- Rachid Mazini
  - Has already been taking on part of day-to-day MC production activity at Toronto
  - Welcome! See his talk in this meeting.

- Un-ki Yang
  - Ending his tenure as TOP group MC coordinator
  - Has done a superb job: Thank you!

- Daniel Whiteson
  - Is replacing Un-ki as TOP group MC coordinator
  - Welcome!

Getting to 5.3.2: Recent Simplified History

- Main change in 5.3.1 → 5.3.2 was originally the beamlines fix – a production issue
- Part I: Material overlap under misalignment
  - L00/Beampipe containment volume overlap
  - Some passive material (rails) moved in strange ways
- Part II: Joao discovered/reported serious problems
  - Beampipe was missing
  - L00/SVX misalignment was not happening
- Intense effort launched & organized by Young-Kee
  - Beampipe put back in; misalignment switches fixed
  - Rails, bulkhead ledges, and inner screen geometry problems fixed
  - New crashing problem (fixed yesterday?)
  - 5.3.2 frozen and released today?

Summary of Some Recent Changes

From Matt H. (2004.06.17):

“

1) **Changed** the types of **geometric transformations** used to place the **L00 rails** to a set that commute with each other. Changed the default placement after looking at the construction diagrams.

2) **Included code** to **align all positive bulkhead components** using the space frame and barrel alignment constants.

3) **Adjusted** default **rail and barrel positions** to **eliminate** most **overlaps**. In both cases I moved the components inward. 200um for the bulkheads and 1mm for the rails. I don't think this will affect the physics purpose of the passive geometry. That this was necessary means that our current active sensor silicon alignment is slightly unphysical.

”

Some 5.3.2 Heroes

Chris N.

Elena G.

Joao G.d.C.

Liz S.-K.

Manfred P.

Matt H.

Reda T.

Saverio d'A.

Soon J.

Stephen L.

Thomas W.

Young-Kee K.

And many others…

Announcement: Run-Dependence in MC

Note that for 5.3.2, there are fundamental changes to the way MC production will be done.

See talk later in this meeting on MC Run Dependence.

Merging of minbias events to simulate multiple interactions will also be available (used by EWK group), but will **not** become the default for now.

A lot of work has gone into this improvement to the sophistication of our MC.

Summary of 5.3.x MC Production

5.3.1/2 Events Requested to date: 83.5M

5.3.1 Events Already Produced: 9.2M

Requested 5.3.2 Events not yet produced: 74.3M

Estimated Unrequested 5.3.2 Events: 36.5M
(uncertainty large)

5.3.1 Samples Recently Done & On Tape

jqcd0e cdfpqcd Pythia_photon_ptmin22 2M
jqcd1e cdfpqcd Pythia_photon_ptmin40 1.5M
jqcd2e cdfpqcd Herwig_photon_ptmin22 2M
jqcd3e cdfpqcd Herwig_photon_ptmin40 1.5M
jqcd1e cdfpqcd Pythia_photon_ptmin40 500K
jqcd3e cdfpqcd Herwig_photon_ptmin40 500K

wexo4w Pythia H->WW mH=130 GeV 150K [4.9.1]
sexo5t cdfpexo Pythia_DY_Zg_all 400K
sexo6t cdfpexo Pythia_DY_Zg_low 400K
sexo7t cdfpexo Pythia_DY_Zg_high 400K

New Triage Priorities Set by Conveners, Physics Coordinator, and Spokespeople

tt-bar

$Z \rightarrow e\ e$

$Z \rightarrow mu\ mu$

$W \rightarrow e\ nu$

$W \rightarrow mu\ nu$

QCD jet samples

Prioritized 5.3.2 Samples Ready for Production

2.3 M Top

ttopti Herwig ttbar incl 178 1.15M
ttopui PYTHIA ttbar incl 178 1.15M

32 M EWK

wewkee PYTHIA W->e,nu plus minbias 2M
wewk4m PYTHIA W->mu,nu plus minbias 2M
wewk8t PYTHIA W->tau,nu plus minbias 2M
zewkae PYTHIA Z->ee plus minbias 2M
zewk3m PYTHIA Z->mumu plus minbias 2M
zewk8t PYTHIA Z->tau,tau plus minbias 1M
zewk6t Z->tautau->ehadnununu 1M
zewk7t Z->tautau->muhadnununu 1M
wewk6t W->taunu->enununu plus filter 0.5M
wewk7t W->taunu->munununu plus filter 0.5M
wewkde W->enu with pt_W > 15 GeV 1.5M
wewk3m W->munu with pt_W > 15 GeV 1.5M
wewkce PYTHIA W->enu systematic sample 10M
wewk5t PYTHIA W->taunu minimum bias 5M

40 M QCD

jqcd4e cdfpqcd Pythia_dijet_ptmin0 5M *
jqcd5e cdfpqcd Pythia_dijet_ptmin18 5M *
jqcd6e cdfpqcd Pythia_dijet_ptmin80 5M *
jqcd7e cdfpqcd Pythia_dijet_ptmin140 5M *
jqcd8e cdfpqcd Herwig_dijet_ptmin3 5M *
jqcd9e cdfpqcd Herwig_dijet_ptmin18 5M *
jqcdae cdfpqcd Herwig_dijet_ptmin80 5M *
jqcdbe cdfpqcd Herwig_dijet_ptmin140 5M *

MC Production Schedule

Severely constrained by timing of 5.3.2 readiness.

6 weeks prior to ICHEP: end June.

Metric: 11s / ttbar event / 2.4 GHz

Time for 75M events @ 1 GHz: ~2 Gigaseconds

CPU needs to end of June: ~1.7 THz

Schedule is extremely tight:

- Use Toronto (BigMac) / Alberta (Thor) / WestGRID
- Use of DCAF resources is essential
- Physics groups encouraged to request minimum sample sizes
- Must work together if any 5.3.2 MC is to be ready for summer