

MC Production Issues

Status of Canadian Farms

MC Production Request Procedures

Recent and Known-to-Be Imminent Activity

“runMC” Status and current Caveats

List of Known / Potential Off-Site Facilities

Near-term Goals

Status of Canadian Farms

Toronto: BigMac Beowulf Cluster (Reda Tafirout)

- 224 Pentium4 dual-processor nodes, ~2.4 GHz / processor
- Recent intermittency due to benchmarking studies
- ~1 Gb/s optical connectivity to CA*net 4 research network
 - Recently observed drop in bandwidth to FNAL: under investigation
- 217 out of 224 nodes are presently functioning

Alberta: Thor Multiprocessor Facility (Bryan Carron, Jim Pinfeld)

- 170 processors rated at ~2 GHz
- ~1 Gb/s optical connectivity to CA*net 4 research network
- 50 processors allocated for “dc” CDF MC production

McGill: Nanotools Beowulf Cluster

- 350 Athlon dual-processor nodes, ~2 GHz / processor
- Currently, 100 Mb/s non-optical connectivity
- Presently in commissioning / benchmarking phase
- Up to 20% capacity expected to be available for CDF ME calculations

MC Production Requests: Best Order of Operations

1. Requestor(s): make need known to physics group
2. Physics group: establish intra-group priorities
3. MC Physics-Group Representative:
 1. Prepare and test TCL file or HEPG files
 2. Obtain a DFC_ID
 3. Communicate TCL/HEPG location, DFC_ID, N events, and code version to (both) Reda & Andreas
4. Reda & Andreas: allocate resources; set priorities
5. Physics Coordinator (Tony L.): helps set priorities, if necessary
6. MC Production Occurs
7. MC Physics-Group Representative:
 1. Notify requestor(s) about file locations
 2. Archive TCL and log files
8. Requestor(s) [or designated Validator]: validate produced files
9. MC Physics-Group Representative:
 1. Notify Reda & Andreas that output is validated
 2. Publicize MC sample availability to physics-group MC users
10. Reda: install files in the DFC

Recent and Known-To-Be Imminent Activity

Z → ee + 1 parton, various Q² values, 150k events, TOP

- Completed, On Tape

W + N jets, MadGraph, special Steve Mrenna version, ~2.4M events, TOP

- Completed, On Tape

Z → νν + jets, ALPGEN/Herwig, 600k events, 4.9.1, EXO

- Completed, On Tape

W + N jets, ALPGEN/Herwig, 3.6M events, 4.9.1, QCD

- Completed, On Tape

QCD dijets, pT_{min}=80 GeV, Pythia, 3M events, 4.9.1, EXO/QCD

- Completed, On Tape

H → WW, Pythia, 600k, different H masses, EXO

- Completed

Dibosons + Drell-Yan, MadGraph, ~400k events, TOP

- Pending

WW Inclusive, Pythia, 1M events, 4.9.1, TOP

- Pending

2 → 2 QCD, Herwig / Pythia, 10M events, 4.9.1, filter for b/c flavors, TOP/QCD

- Imminent (2 samples expected, with different spec's for TOP & QCD groups)

B production, BigMac Test, prior to a large inclusive sample, BOT

- Expected

“runMC” Status and current Caveats

- 4.9.1 runMC executable (incorporating cdfSim and ProductionExe) still in use
- 4.11.2 “split” scripts to run generic cdfSim and ProductionExe executables
 - Reda Tafirout
 - Now reasonably well tested
 - NB: still using QQ
 - NB: TRGSIM++_MC currently not used due to crashes in summer
 - Artificial limit of 1000 run sections due to size of random seed offsets: translates to a typical sample limit of ~3M events because of output file-size limitations
- Pasha’s special “summer_2003” branch of 4.9.1 runMC
 - Used for material studies by EWK group this summer
 - Provides functionality to run Pythia twice per event in the same job
 - NB: Not a part of the official MC production machinery

Off-Site CDF MC (Potential) Production Sites

(that I'm aware of)

- IPP-Canada (Toronto, Alberta, McGill)
- Glasgow: ScotGRID
- Universität Karlsruhe
- UC San Diego
- UIUC
- OSU
- Michigan
- LBNL
- Rutgers
- New Mexico
- Others? ...

Near-Term Goals

Main Theme: Readiness for Winter and 5.3.x Release

- Merge Pasha's EWK-specific functionality into official 5.3.x machinery
 - Avoid summer experience of multiple MC production paradigms!
 - Improve log-file content: log environmental variables and on-the-fly TCL files
- Test TRGSIM++_MC with patch dated 2003.09.11
 - If successful, apply to 4.11.2 and 5.3.x MC production
- Switch to use Evtgen decay kinematics
 - Drop QQ
 - Needs to be tested
- Remove artificial sample-size restrictions
- Identify official Simulation / Reconstruction Settings for 5.3.x
 - Beamlines
 - Repeat the use of a single run number? (Aaron Dominguez)
 - Representative run-number list? (Aaron Dominguez)
 - Run-by-run treatment, à la B group? (Saverio D'Auria)
 - Alignment Tables to use? (Aaron D. & Ray Culbertson)
- Begin to prepare other off-site facilities for official MC production