ILCDirac and ILD Production

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Tokusui 2014

December 16th, 2014

DIRAC & ILCDIRAC

- DIRAC(*) project is a complete Grid solution.
  - DIRAC forms a layer between a particular community and various compute resources.
- ILCDIRAC forms a layer on top of DIRAC providing the computing needs of linear collider experiments.

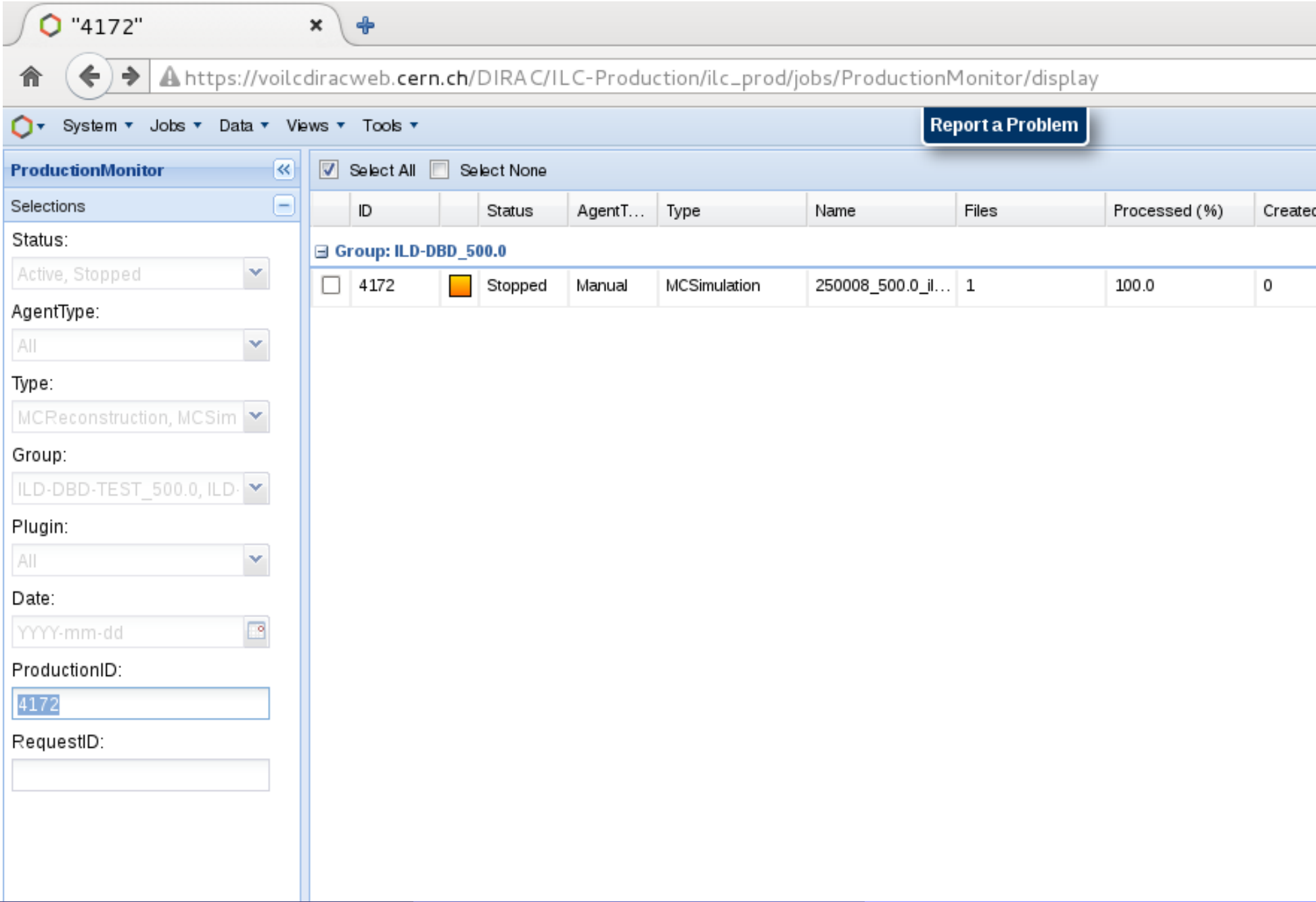
Future ILD Mass productions with ILCDIRAC

- ILD has decided to use `ilcdirac` in its next mass productions.
  - Reliable, scalable, easy to use, good experts support.
  - Other experiments already using it: `CLic`, `BelleII`, `Sid`.
- Recently i have joined the task force preparing the transition of ILD into using `ilcdirac`.

(*) Distributed Infrastructure with Remote Agent Control

Run First Productions / Validation

- First ILD production jobs. using `ilcdirac`.
  - Simulation and reconstruction.
- We aim to validate these productions.
  - Compare with previous DBD mass productions produced w/o `ilcdirac`.

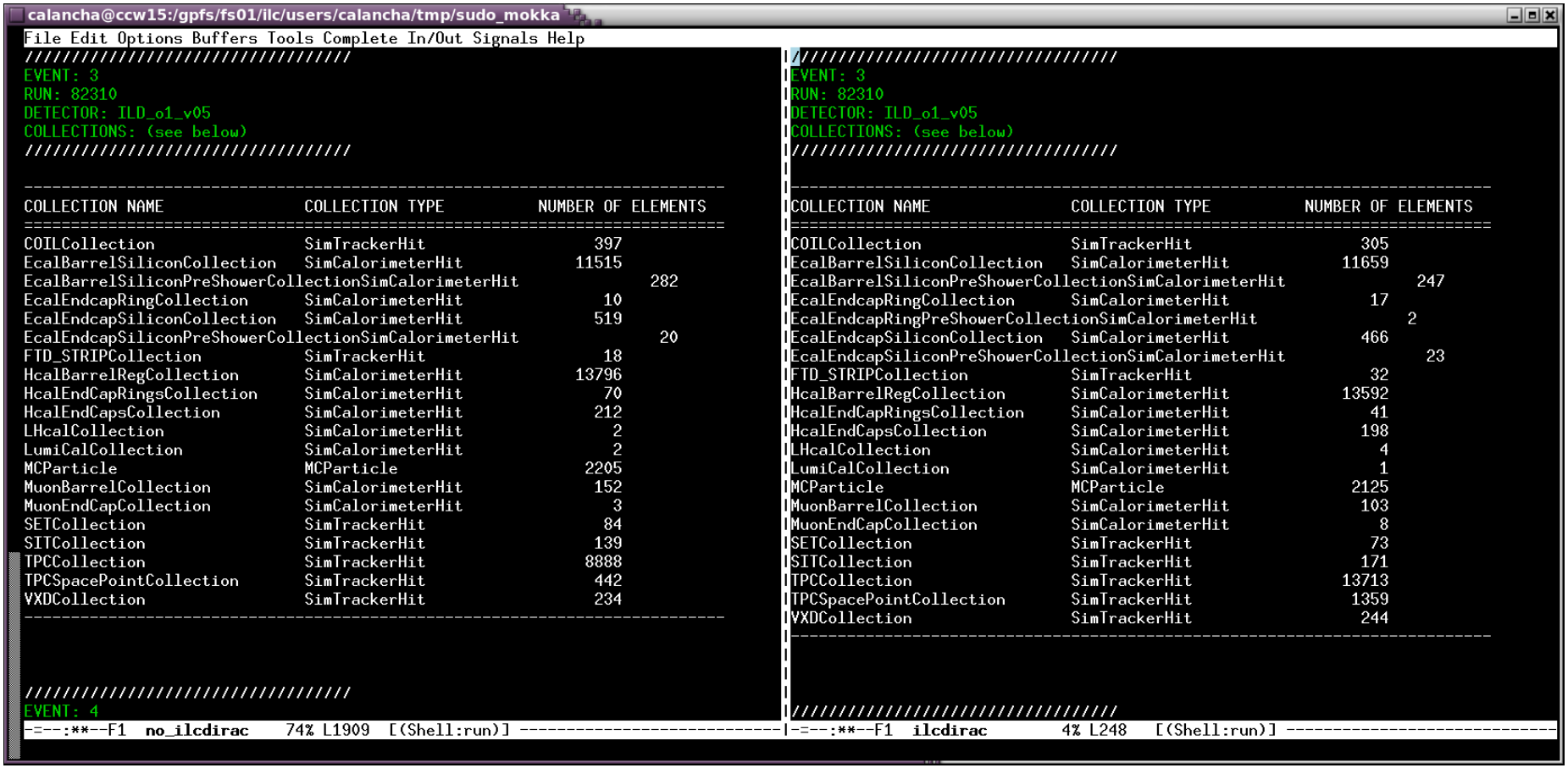

"4172"
https://voilcdiracweb.cern.ch/DIRAC/ILC-Production/ilc_prod/jobs/ProductionMonitor/display
System
Jobs
Data
Views
Tools
Report a Problem
ProductionMonitor
Selections
Status:
Active, Stopped
AgentType:
All
Type:
MCReconstruction, MCSim
Group:
ILD-DBD-TEST_500.0, ILD
Plugin:
All
Date:
YYYY-mm-dd
ProductionID:
4172
RequestID:
Select All
Select None
ID
Status
AgentT...
Type
Name
Files
Processed (%)
Created
Group: ILD-DBD_500.0
4172
Stopped
Manual
MCSimulation
250008_500.0_il...
1
100.0
0

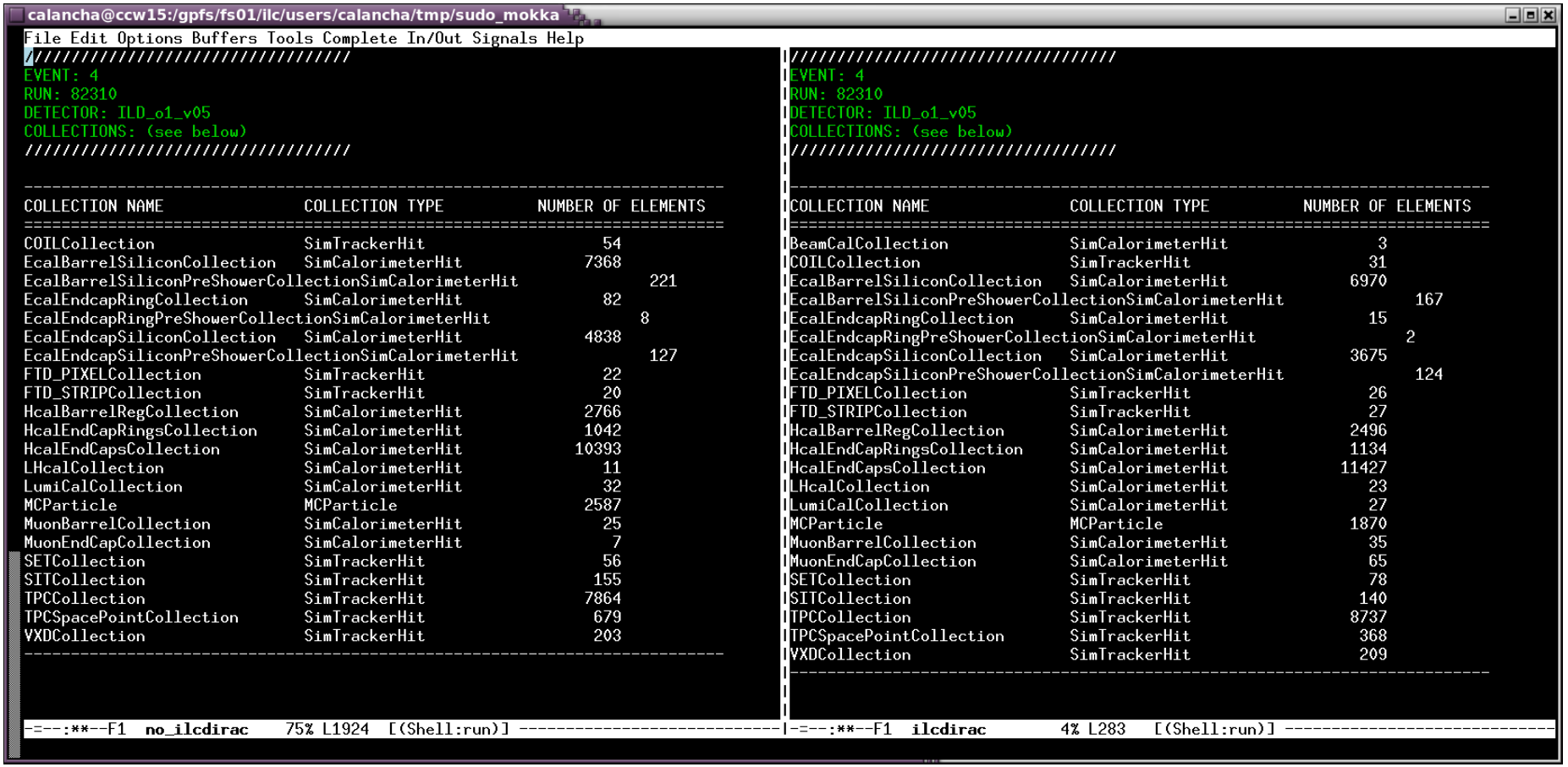
Initial Validation Plan

- Choose one process: 4f_ww_h, eR.pL @ 500 GeV .
- Simulate/Reconstruct process w/ `ilcdirac`
  - Using same input as used for the DBD: ILDConfig, Mokka seeds, ...
- Compare output with DBD samples using $LCIO/bin/anajob.

Problems Found

1. The Mokka seeds cannot be set by hand in production jobs.
   - In user jobs it is allowed to set those seeds by the user.
2. Comparison of the events in a binary basis seems not possible
   - Found small differences on hit collections.
     - I cannot conclude the diffs. appear because using VS not using `ilcdirac`.
     - I found similar fluctuations when running `Mokka` locally w/o `ilcdirac`.
   - Running jobs on different platforms may cause small differences.
     - Different c++ compiler versions.
     - 32 vs 64 bits architectures.


calancha@ccw15:/gpfs/fs01/ilc/users/calancha/tmp/sudo_mokka
File Edit Options Buffers Tools Complete In/Out Signals Help
EVENT: 3
RUN: 82310
DETECTOR: ILD_o1_v05
COLLECTIONS: (see below)
COLLECTION NAME COLLECTION TYPE NUMBER OF ELEMENTS
COILCollection SimTrackerHit 397
EcalBarrelSiliconCollection SimCalorimeterHit 11515
EcalBarrelSiliconPreShowerCollectionSimCalorimeterHit 282
EcalEndcapRingCollection SimCalorimeterHit 10
EcalEndcapSiliconCollection SimCalorimeterHit 519
EcalEndcapSiliconPreShowerCollectionSimCalorimeterHit 20
FTD_STRIPCollection SimTrackerHit 18
HcalBarrelRegCollection SimCalorimeterHit 13796
HcalEndCapRingsCollection SimCalorimeterHit 70
HcalEndCapsCollection SimCalorimeterHit 212
LHcalCollection SimCalorimeterHit 2
LumiCalCollection SimCalorimeterHit 2
MCParticle MCParticle 2205
MuonBarrelCollection SimCalorimeterHit 152
MuonEndCapCollection SimCalorimeterHit 3
SETCollection SimTrackerHit 84
SITCollection SimTrackerHit 139
TPCCollection SimTrackerHit 8888
TPCSpacePointCollection SimTrackerHit 442
VXDCollection SimTrackerHit 234
EVENT: 4
-=--:**--F1 no_ilcdirac 74% L1909 [(Shell:run)]
EVENT: 3
RUN: 82310
DETECTOR: ILD_o1_v05
COLLECTIONS: (see below)
COLLECTION NAME COLLECTION TYPE NUMBER OF ELEMENTS
COILCollection SimTrackerHit 305
EcalBarrelSiliconCollection SimCalorimeterHit 11659
EcalBarrelSiliconPreShowerCollectionSimCalorimeterHit 247
EcalEndcapRingCollection SimCalorimeterHit 17
EcalEndcapRingPreShowerCollectionSimCalorimeterHit 2
EcalEndcapSiliconCollection SimCalorimeterHit 466
EcalEndcapSiliconPreShowerCollectionSimCalorimeterHit 23
FTD_STRIPCollection SimTrackerHit 32
HcalBarrelRegCollection SimCalorimeterHit 13592
HcalEndCapRingsCollection SimCalorimeterHit 41
HcalEndCapsCollection SimCalorimeterHit 198
LHcalCollection SimCalorimeterHit 4
LumiCalCollection SimCalorimeterHit 1
MCParticle MCParticle 2125
MuonBarrelCollection SimCalorimeterHit 103
MuonEndCapCollection SimCalorimeterHit 8
SETCollection SimTrackerHit 73
SITCollection SimTrackerHit 171
TPCCollection SimTrackerHit 13713
TPCSpacePointCollection SimTrackerHit 1359
VXDCollection SimTrackerHit 244
-=--:**--F1 ilcdirac 4% L248 [(Shell:run)]


calancha@ccw15:/gpfs/fs01/ilc/users/calancha/tmp/sudo_mokka
File Edit Options Buffers Tools Complete In/Out Signals Help
EVENT: 4
RUN: 82310
DETECTOR: ILD_o1_v05
COLLECTIONS: (see below)
COLLECTION NAME | COLLECTION TYPE | NUMBER OF ELEMENTS
COILCollection | SimTrackerHit | 54
EcalBarrelSiliconCollection | SimCalorimeterHit | 7368
EcalBarrelSiliconPreShowerCollectionSimCalorimeterHit | 221
EcalEndcapRingCollection | SimCalorimeterHit | 82
EcalEndcapRingPreShowerCollectionSimCalorimeterHit | 8
EcalEndcapSiliconCollection | SimCalorimeterHit | 4838
EcalEndcapSiliconPreShowerCollectionSimCalorimeterHit | 127
FTD_PIXELCollection | SimTrackerHit | 22
FTD_STRIPCollection | SimTrackerHit | 20
HcalBarrelRegCollection | SimCalorimeterHit | 2766
HcalEndCapRingsCollection | SimCalorimeterHit | 1042
HcalEndCapsCollection | SimCalorimeterHit | 10393
LHcalCollection | SimCalorimeterHit | 11
LumiCalCollection | SimCalorimeterHit | 32
MCParticle | MCParticle | 2587
MuonBarrelCollection | SimCalorimeterHit | 25
MuonEndCapCollection | SimCalorimeterHit | 7
SETCollection | SimTrackerHit | 56
SITCollection | SimTrackerHit | 155
TPCCollection | SimTrackerHit | 7864
TPCSpacePointCollection | SimTrackerHit | 679
VXDCollection | SimTrackerHit | 203
-=--:**--F1 no_ilcdirac 75% L1924 [(Shell:run)]
EVENT: 4
RUN: 82310
DETECTOR: ILD_o1_v05
COLLECTIONS: (see below)
COLLECTION NAME | COLLECTION TYPE | NUMBER OF ELEMENTS
BeamCalCollection | SimCalorimeterHit | 3
COILCollection | SimTrackerHit | 31
EcalBarrelSiliconCollection | SimCalorimeterHit | 6970
EcalBarrelSiliconPreShowerCollectionSimCalorimeterHit | 167
EcalEndcapRingCollection | SimCalorimeterHit | 15
EcalEndcapRingPreShowerCollectionSimCalorimeterHit | 2
EcalEndcapSiliconCollection | SimCalorimeterHit | 3675
EcalEndcapSiliconPreShowerCollectionSimCalorimeterHit | 124
FTD_PIXELCollection | SimTrackerHit | 26
FTD_STRIPCollection | SimTrackerHit | 27
HcalBarrelRegCollection | SimCalorimeterHit | 2496
HcalEndCapRingsCollection | SimCalorimeterHit | 1134
HcalEndCapsCollection | SimCalorimeterHit | 11427
LHcalCollection | SimCalorimeterHit | 23
LumiCalCollection | SimCalorimeterHit | 27
MCParticle | MCParticle | 1870
MuonBarrelCollection | SimCalorimeterHit | 35
MuonEndCapCollection | SimCalorimeterHit | 65
SETCollection | SimTrackerHit | 78
SITCollection | SimTrackerHit | 140
TPCCollection | SimTrackerHit | 8737
TPCSpacePointCollection | SimTrackerHit | 368
VXDCollection | SimTrackerHit | 209
-=--:**--F1 ilcdirac 4% L283 [(Shell:run)]

Validation Based on Event Distributions

- Validation should be performed comparing physical distributions.
  - Preliminary checks by CERN group show that DBD samples are statistically compatible with our new produced samples.
  - Additional checks with other samples will be perform soon.

After Validation

Accept User Requests

- We have received a few requests to produce new samples.
- We will attend then once validation process is over.

How to make a request

- By e-mail with the people on charge:
  - Lu Shaojun <shaojun.lu@desy.de>
  - C. Calancha <calancha@post.kek.jp>

Additional Information

- ilcdirac wiki
- ilcdirac for users

Summary/Prospects

- ILD will use `ilcdirac` in next productions.
- First ILD test productions successfully run using this tool.

Validation

- Comparison of new samples with DBD ones should not be made just looking the event hit collections.
  - It may be differences according with OS used.
- The validation should be done checking event distributions.
  - Preliminary tests showed consistent distributions.
  - We will extend those tests comparing other processes.

New Requests

- Once validation is complete we will accept user requests.