

Metadata, Layout, and Usage (obsolete)



Obsolete Page

Most of the contents of this page are obsolete. It is kept here for reference only.

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Layout/Design

```
HPS
- engrun2014
- - RAW
- - pass0
- - - RECON
- - - DST
- - - DQM*
- - passN*
- - ...
- testrun2012*
- mdc*
...
```

* = NOT YET

The terminal, capitalized "directories" are actually called "Groups" in the data catalog's terminology. A "group" is a collection of only data sets (files), does not contain subgroups nor subdirectories, and can have its own metadata. When a "group" is assigned metadata, that metadata applies to all of its files.

The choice was made to assign any metadata that applies to RAW (EVIO) files only to the RAW files. So, searching for reconstructed files based on raw metadata is a 2-step process (first find the RAW files that satisfy the criteria, then find the corresponding reconstructed files), although we have wrapper scripts to do this in one step.

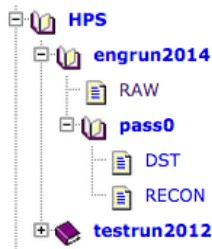
Usage/Interface

WebBrowser

<http://srs.slac.stanford.edu/DataCatalog/>

This has no search functionality [?](#)

Basically it is just useful for browsing and seeing the structure, a list of possible metadata, and a complete filelist. On the left of that webpage you can find HPS's datacatalog structure with hyperlinks:



Clicking on "DST", you should see a filecount, a list of the metadata assigned to all DSTs, and some links to get a filelist:

Folder /HPS/engrun2014/pass0 Group DST

| | |
|----------------|-----------------------|
| Created (UTC): | 29-Jan-2015 20:23:23 |
| Run Min: | 0 |
| Run Max: | 0 |
| Files: | 1479 (Unscanned 1479) |
| Events: | 0 |
| Size: | 0 B |
| Data Type: | TEST |

[List Files](#) . [Download Files](#) . [Dump file list \(JLAB\)](#)

Meta-data

| Name | Value | Type |
|--------------|--|--------|
| nPass | 0 | NUMBER |
| sCollections | TriggerBank,EcalReadoutHits,FADCGenericHits,EcalCalHits,EcalClusters,EcalClustersIC,RejectedHits,EcalClustersGTP | STRING |
| sDetector | HPS-EcalCommissioning | STRING |
| sRelease | /home/hps/hps-group/hps_soft/hps-java/hps-distribution-3.1-SNAPSHOT-20141225-bin.jar | STRING |
| sSteering | org.hps.steering.recon.EngineerInfRun2014EcalRecon.Icsim | STRING |

Clicking on "RAW" --> List Files --> And selecting one file will show a list of metadata assigned to that file:

Meta-data

| Name | Value | Type |
|------------------------------|-------|--------|
| nBeamCurrent | 150 | NUMBER |
| nChicaneOffset | -25 | NUMBER |
| nECALFADC_MASK | 0 | NUMBER |
| nECALFADC_MODE | 7 | NUMBER |
| nECALFADC_NPEAK | 3 | NUMBER |
| nECALFADC_NSA | 100 | NUMBER |
| nECALFADC_NSB | 20 | NUMBER |
| nECALFADC_THRESH | 12 | NUMBER |
| nECALFADC_W_OFFSET | 3008 | NUMBER |
| nECALFADC_W_WIDTH | 200 | NUMBER |
| nFileNumber | 42 | NUMBER |
| nGTP_CLUSTER_PULSE_THRESHOLD | 100 | NUMBER |
| nNevents | 195 | NUMBER |
| nRun | 3444 | NUMBER |
| nSSP_BLOCK_LEVEL | 40 | NUMBER |
| nSSP_HPS_COSMIC_EN | 0 | NUMBER |

Command-Line

This provides for searching on any of the available metadata.



Access Limitation

Currently, this is only accessible from SLAC computers. So a SLAC account is required just to read the data catalog. This is unacceptable.

```
ssh hpscat@rhel6-64d.slac.stanford.edu
```

```
FIND = ~srs/datacat/prod/datacat-hps find --show-non-ok-locations
```

An example search to list the locations of RAW (EVIO) files at JLab that satisfy some beam-current and chicane-setting requirements:

```
$FIND --site JLAB --filter 'nChicaneOffset>-25 && nBeamCurrent==50' --display sDescription --group RAW /HPS/engrun2014
```

And its output:

```
/mss/hallb/hps/data/hps_003451.evio.0 Loose Singles , background study , nominal chicane -7%
/mss/hallb/hps/data/hps_003451.evio.1 Loose Singles , background study , nominal chicane -7%
/mss/hallb/hps/data/hps_003451.evio.2 Loose Singles , background study , nominal chicane -7%
/mss/hallb/hps/data/hps_003451.evio.3 Loose Singles , background study , nominal chicane -7%
/mss/hallb/hps/data/hps_003454.evio.0 Loose Singles , background study , nominal chicane -15%
```

Since the full raw metadata is only set for the raw EVIO files, we have a wrapper script to make it easier to search for reconstructed files based on raw metadata. It just does 2 queries: one on the raw files to build a run list, and a second to get the reconstructed files for those runs.

Variable Naming Conventions

Metadata variables have the following conventions:

Strings start with 's'.

Numbers, which can be integers or decimals, start with 'n'.

Timestamps start with 't'.

2014 Engineering Run Metadata

(* means NOT YET, will be set on the next pass)

Offline

```
sRelease  
sSteering  
sDetector  
nPass  
sCollections
```

General

These come from the raw EVIO file (either parsed from its name, or directly from bank contents).

```
nRun  
nFileNumber  
nEvents  
tRunStart*  
tRunEnd*  
nEventMin* (for one file only)  
nEventMax* (for one file only)
```

These come only from the run spreadsheet or logbook. In case no values were recorded, nothing is assigned (e.g. beam current/positions, which we may want to get from EPICS database later anyway.).

```
sDescription (all available comments)  
sTarget ("none" if no target)  
nBeamCurrent (nA)  
nBeamX (mm)  
nBeamY (mm)  
nBeamEnergy* (GeV)  
nChicaneOffset (% relative to nominal)
```

ECal

FADC

```
nECALFADC_MODE (1,3,7)=(raw,pulse,high-res)  
nECALFADC_NPEAK (1,2,3)  
nECALFADC_NSA (ns)  
nECALFADC_NSB (ns)  
nECALFADC_THRESH (ADC)  
nECALFADC_W_OFFSET (ns)  
nECALFADC_W_WIDTH (ns)  
nECALFADC_MASK (0,1,2)=(none,medium-angle,large-angle) (trigger mask implemented via zeroing gains)
```

DAQ

These are quantities that could be extracted from a DAQ configuration bank in the EVIO file. If not available (e.g. before the bank was implemented or overlooked variables were added), they come from the run spreadsheet or logbooks. Naming conventions match that used by the DAQ (unless there was a usability reason to do otherwise).

SSP

```
nSSP_W_OFFSET (ns)
nSSP_W_WIDTH (samples)
nSSP_BLOCK_LEVEL (1,40)=(non-blocking/blocking)
nSSP_HPS_LATENCY (?)
```

GTP

Clustering algorithm parameters.

```
nGTP_CLUSTER_PULSE_THRESHOLD (MeV, seed(!) energy)
sGTP_CLUSTER_PULSE_COIN ('N M')=(Numbers of 4ns samples before/after seed')
```

Trigger

Variables suffixed with "EN" represent whether that trigger or cut was enabled: (0,1)=(no,yes)

Cosmic, LED, Pulser

```
nSSP_HPS_COSMIC_EN
nSSP_HPS_COSMIC_TIMECOINCIDENCE (ns)
nSSP_HPS_LED_EN
nSSP_HPS_PULSER (Hz)
nSSP_HPS_PULSER_EN
```

Beam

There are 2 SINGLES and 2 PAIRS triggers, labelled 0 and 1 (represent by "#" below).

Prescaling

Actual prescale factor is 2^N .

```
nTI_INPUT_PRESCALE_SINGLES_# N
nTI_INPUT_PRESCALE_PAIRS_# N
```

Singles

```
nSSP_HPS_SINGLES_#_EN
nSSP_HPS_SINGLES_EMAX_#_EN
nSSP_HPS_SINGLES_EMIN_#_EN
nSSP_HPS_SINGLES_NMIN_#_EN
nSSP_HPS_SINGLES_NMIN_# (minimum number of hits)
nSSP_HPS_SINGLES_EMAX_# (MeV)
nSSP_HPS_SINGLES_EMIN_# (MeV)
```

Pairs

```
nSSP_HPS_PAIRS_#_EN
nSSP_HPS_PAIRS_NMIN_# (minimum number of hits per cluster)
nSSP_HPS_PAIRS_EMAX_# (MeV)
nSSP_HPS_PAIRS_EMIN_# (MeV)
nSSP_HPS_PAIRS_SUMMAX_MIN_#_EN
nSSP_HPS_PAIRS_DIFFMAX_#_EN
nSSP_HPS_PAIRS_ENERGYDIST_#_EN
nSSP_HPS_PAIRS_COPLANARITY_#_EN
nSSP_HPS_PAIRS_TIMECOINCIDENCE_# (Number of 4ns samples)
nSSP_HPS_PAIRS_DIFFMAX_# (MeV)
nSSP_HPS_PAIRS_SUMMAX_MIN_#_HI (MeV)
nSSP_HPS_PAIRS_SUMMAX_MIN_#_LO (MeV)
nSSP_HPS_PAIRS_ENERGYDIST_#_OFFSET (MeV)
nSSP_HPS_PAIRS_ENERGYDIST_#_SLOPE (MeV/mm)
nSSP_HPS_PAIRS_COPLANARITY_# (deg)
nSSP_HPS_PAIRS_CLUSTERDELAY_# (ns)
```

OLD List of Metadata Variables

Run and Event Meta Data

tRunStart - run start time

tRunEnd - run end time

tEventStart - earliest event time

tEventEnd - latest event time

nRun - single run number which can be set on all individual files (except for StdHep events)

nEventMin - minimum event number

nEventMax - maximum event number

sRunStatus - run status which could be GOOD, BAD or UNKNOWN (for instance)

nEvents - number of events in the run

Physics Event Information

sCollections - list of data collections separated by commas

sDetectorName - name of the lcsim detector model

Beam and Conditions

nBeamEnergy - beam energy in GeV

nBeamCurrent - beam current in nA

nBeamSpotSizeA - major axis

nBeamSpotSizeB - minor axis

nBeamSpotSizePhi - major axis angle w.r.t. x-axis

nMagnetCurrent - (multiple?)

System Status

sSvtOpen - SVT was open or closed

sSvtStatus - status of the SVT (GOOD/BAD/OFF/UNKNOWN)

sEcalStatus - status of the ECAL

sTriggerStatus - status/configuration of the trigger

sTargetStatus - IN/OUT

Raw EVIO Data

sFileNumber - sequential number of the file in the run

LCIO Recon

sReconPass - the recon pass OR the catalog's built-in Version on each file could be used for this

sReconVersion - the Maven tag of HPS Java used to generate the file e.g. "1.2.3"

sRawDataPath - the path to the corresponding raw EVIO data file in the catalog used to generate this file

ROOT DST

sDstMakerVersion - the version of the DST Maker used to create the file; can be read from TClass->GetClassVersion() in ROOT which corresponds to a git tag

sReconDataset - dataset path in the catalog of the corresponding LCIO recon file used to generate this DST file

sCuts - list of cuts used to produce the DST (if any)

StdHep

sEventType - trident, A-prime, backgrounds, etc.

nEventMass - mass of event

nCoupling - A-prime coupling strength

nBeamEnergy - energy of beam

LCIO Simulated Output

sPhysicsLists - name of Geant4 physics list used to generate

sSlicVersion - the SLIC version

sGeantVersion - the Geant4 version

sRandomSeed - random seed used to generate events or 0 if none was explicitly given