Hall C User Howto

Experiment: HKS

HKS and Enge geometry parameter file locations?

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Abstract

This is a document to explain how to define geometry parameter for HKS and Enge in E01-011 (HKS) experiment.

1 File structure

We assume you have already checked-out the run analysis code (see Ref. [1] in detail). The following two directories are under `/group/hks/e01011soft` on CVS.

```
e01011src
e01011-replay
```

You will find two directories `DBASE` and `PARAM` under `e01011-replay`. The two directories are need to seek when you want to find some parameters. If you want to know how program read variable from input file, you need to read the source codes in `e01011src` or read Ref. [2].

The input file for `engine-replay` is `REPLAY.PARM`, where `engine-replay` is a analysis code for E01-011 experiment. `engine-replay` will be compiled when you follow steps described in Ref. [1]. `REPLAY.PARM` has many lines. To know geometry parameters, what you need to find is:

```
;INPUT FILES.
  g_ctp_database_filename =   'DBASE/e01011.database'
```

The variable `g_ctp_database_filename` tell a file name for detector parameters, e.g., detector geometry, ADC channel gains, and pedestals. The file has like the following lines.

```
50000-99999
g_ctp_parm_filename   = 'DBASE/e01011.param.50000'
g_decode_map_filename = 'MAPS/e01011.map.50000'
g_ctp_kinematics_filename ='DBASE/e01011.kinematics'
```

You will see many similar lines in the file. Because `g_ctp_database_filename` is designed to set the parameters for many run numbers. In the above example, the line `50000-99999` is a valid range of run number for the following three lines. The three variables `g_ctp_parm_filename`, `g_decode_map_filename`, and `g_ctp_kinematics_filename` has some information for the data analysis, Note that the run number is set by a variable `grun` for `engine-replay`, not from file name or from inside of the file. Therefore, you can set any run number for any input file.

The detector geometry (also, the other information) is assigned in `g_ctp_parm_filename`.

```
;  This file contains the HKS and ENGE parameters
;  needed for all the analysis

begin parm kinematics
#include "PARAM/general.param.50000"
#include "PARAM/gscalers.param"
end parm kinematics

begin parm enge_parameters
#include "PARAM/edeadwires.param"
#include "PARAM/ehodo.param.6003"
#include "PARAM/edriftmap.param.1192"
#include "PARAM/edc.param.1192"
```

```
#include "PARAM/edriftcoeff.param.1205"
end parm enge_parameters

begin parm hks_parameters
#include "PARAM/hdc.param"
#include "PARAM/hdriftmap.param"
#include "PARAM/hhodo.param.6001"
#include "PARAM/haer.param.50000"
#include "PARAM/hwat.param.50000"
end parm hks_parameters

begin parm coin_parameters
#include "PARAM/coin.param"
end parm coin_parameters
```

Note that the lines may not be the same as a file in CVS.

Due to a historical reason (I guess), the geometry information are stored in two kind of files. One is `*.param` and the other is `*.pos`. If you see a number following `param.` or `pos.`, it may be a run number to explain start run number for the setting. However, you can set any kind of file name here. It means that you can test parameter files with changing of file name which you want.

The geometries variable of Aerogel Cherenkov Detectors and Water Cherenkov Detectors are written in the following files.

```
PARAM/haer.param.50000
PARAM/hwat.param.50000
```

In the above example. On the other hand, Drift Chamber and Hodoscope (Time-Of-Flight detector) geometries files are assigned in

```
PARAM/general.param.50000
```

You will find the following lines in the files in this case.

```
#include "PARAM/hdc.pos.50000"
#include "PARAM/edc.pos.1"
#include "PARAM/hhodo.pos.50000"
#include "PARAM/ehodo.pos"
```

The adobe four lines set detector parameter for HKS Drift Chambers, Enge Drift Chambers, HKS hodoscopes, and Enge hodoscopes.

2 Summary

The following is the step to find geometry setting.

- In `REPLAY.PARM`, check file name for `g_ctp_database_filename`, for example
  `g_ctp_database_filename = 'DBASE/e01011.database'`
- Find a line which shows a run period you want, like
  `xxxxx - XXXXX`
  where `xxxxx` is a start of run and `XXXXX` is an end of run of a period.
  The next line is set parameter file name, like
  `g_ctp_parm_filename = 'DBASE/e01011.param.50000'`
- In the file set be `g_ctp_parm_filename` has following lines.

  ```
  .
  #include "PARAM/general.param.*"
  .
  .
  #include "PARAM/haer.param.50000"
  #include "PARAM/hwat.param.50000"
  ```

  The Aerogel (`haer.param.*`) and Water Cherenkov (`hwat.param.*`) geometry files are assigned in this file.
- The Drift Chambers and Hodoscopes geometry files are set in `PARAM/general.param.*`, like

  ```
  #include "PARAM/hdc.pos.*"
  #include "PARAM/edc.pos.*"
  #include "PARAM/hhodo.pos.*"
  #include "PARAM/ehodo.pos.*"
  ```

References

[1] T. Miyoshi. Run analysis code in your directory. http://hallcweb.jlab.org/document/HKS/howtos/e01011ana/. HKS Expert Howto.

[2] Stephen A. Wood. The cebaf test package: A symbolic and dynamic test, histogram, and parameter package for on- and off-line particle physics data analysis. http://hallcweb.jlab.org/document/HKS/howtos/ctp_manual/. HKS Reference.