

Reaction Filter and DSelector

Hall D SRC/CT Weekly Meeting

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Pre-Reaction Filter

- Evio (from the experiment) -> hddm (reconstructed)

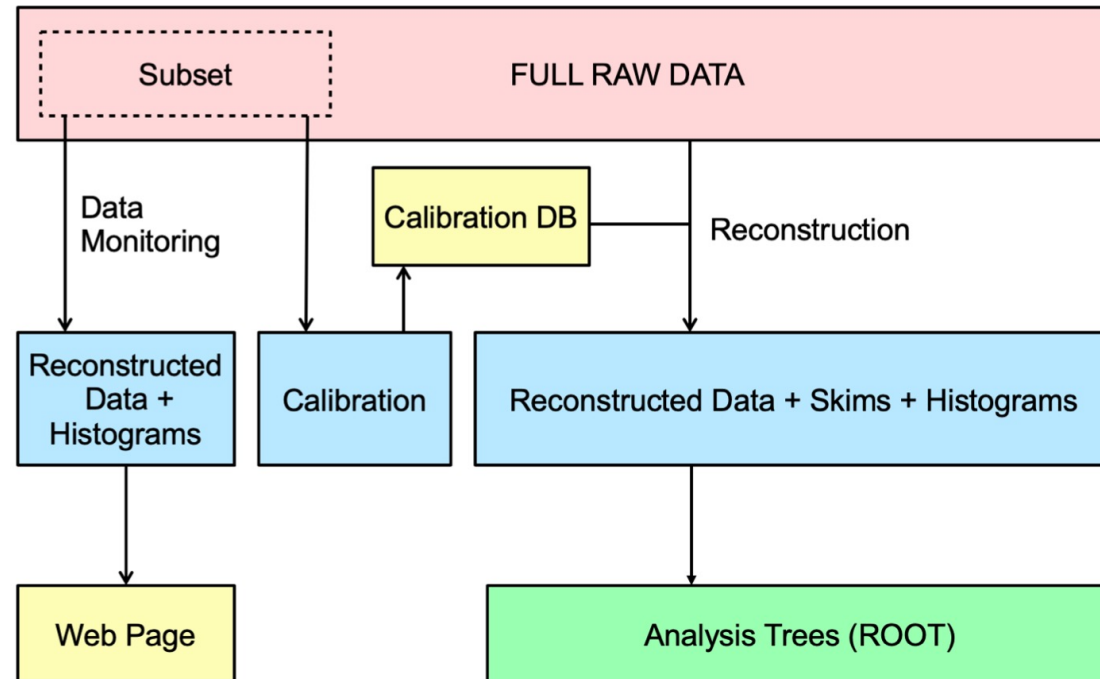


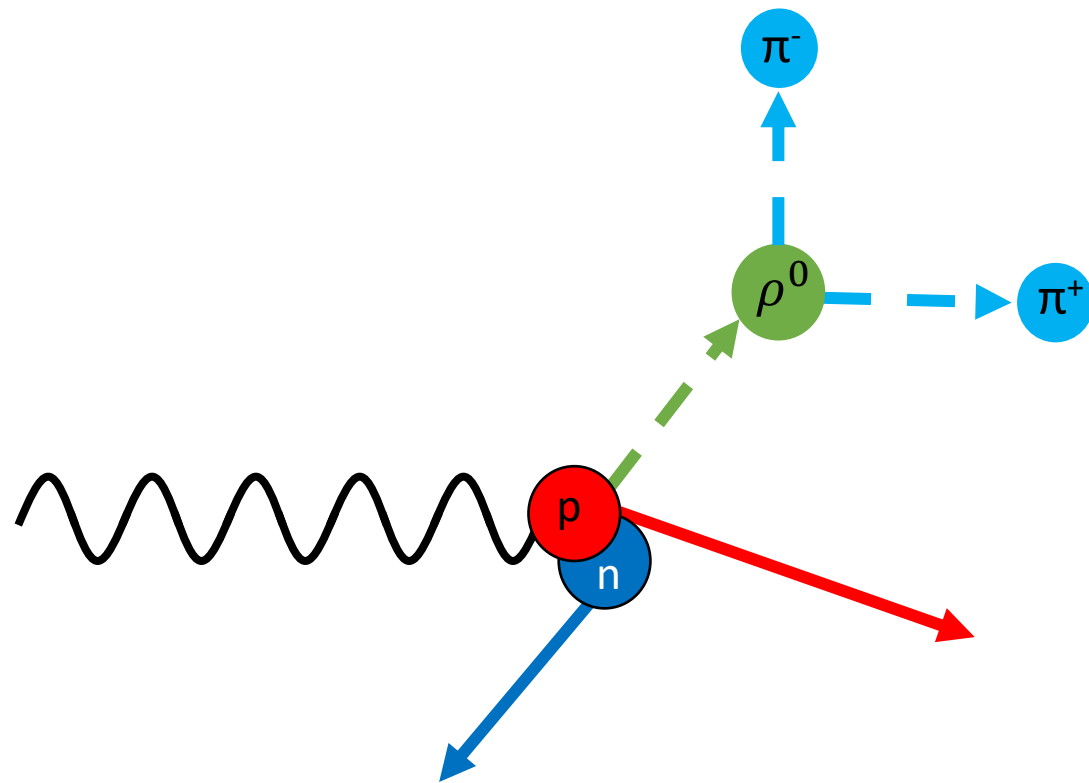
Figure 38: Production flowchart for GLUEX data, illustrating analysis steps.

Pre-Reaction Filter

- Evio (from the experiment) -> hddm (reconstructed)
- Know the reaction you want to run
- Helpful tools:
 - https://halldweb.jlab.org/wiki/index.php/SRC-CT_ReactionFilter
 - <https://halldweb.jlab.org/analysis/SubmitReaction.html>

For Example: Rho0 Channel on Deuterium

- $\gamma + d \rightarrow \rho^0 + p + m(n) \rightarrow \pi^+ + \pi^- + p + m(n)$



1_45__8_9_14_m13

1 : Gamma

45 : Deuteron

8: Pi +

9 : Pi -

14: proton

M13 : missing neutron

Reaction Filter

- Command:

```
hd_root /cache/hald/offline_monitoring/RunPeriod-2021-  
11/ver05/REST/090209/dana_rest_090209_002.hddm -  
PPLUGINS=ReactionFilter,monitoring_hists -  
PReaction1=1_45__8_9_14_m13 -PReaction1=Flags=F2_B5 -  
PANALYSIS:KINFIT_CONVERGENCE=0
```

Break down of command

- `hd_root`
 - Calls `hd_root`
- `/cache/halld/offline_monitoring/RunPeriod-2021-11/ver05/REST/090209/dana_rest_090209_002.hddm`
 - The exact `.hddm` file that I want to run over. Can be run over multiple files
- `-PPLUGINS=ReactionFilter,monitoring_hists`
 - Telling it to run using Reaction Filter and to also give us monitoring histograms
- `-PReaction1=1_45__8_9_14_m13`
 - Outlines the reaction (see slide 3)
- `-PReaction1=Flags=F2_B5`
 - F2 : The reaction comes from the same vertex
 - B5 : Asking for 5 beam bunches on either side of the incident photon peak
- `-PANALYSIS:KINFIT_CONVERGENCE=0`

Output:

- hd_root.root
- tree_gd_pippimprotmissn__F2_B5.root

DSelector

1. Make DSelector tree_gd_pippimprotmissn__F2_B5.root
gd_pippimprotmissn__F2_B5_Tree test

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Make DSelector

<the name of the root file produced from your ReactionFilter. Include the path if not in the same directory as where you're running DSelector.>

<The name of the tree in that root file, from the reaction filter. >

<The name you want the resulting root file to be named>

DSelector

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 1. Results:
 1. DSelector_test.C
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2. Make edits to DSelector_test.C for your reaction
3. Need a program that runs the resulting Dselector scripts over the ReactionFilter tree
 1. For me, makeTree_testTree.C

Output:

- Test.root