



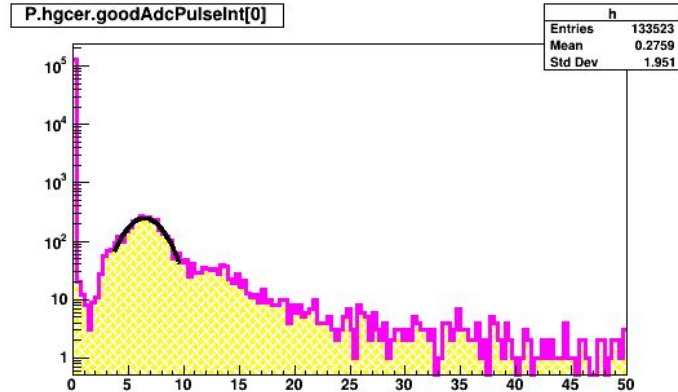
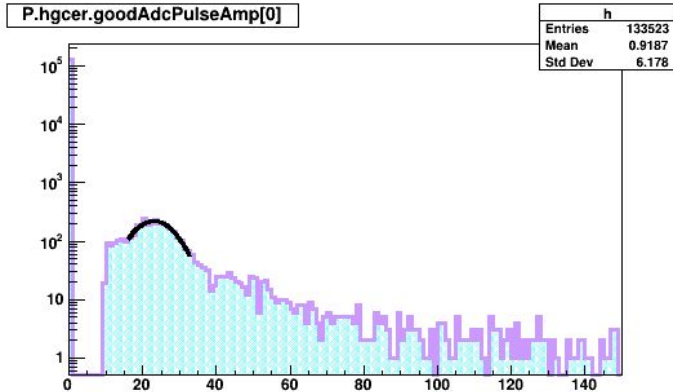
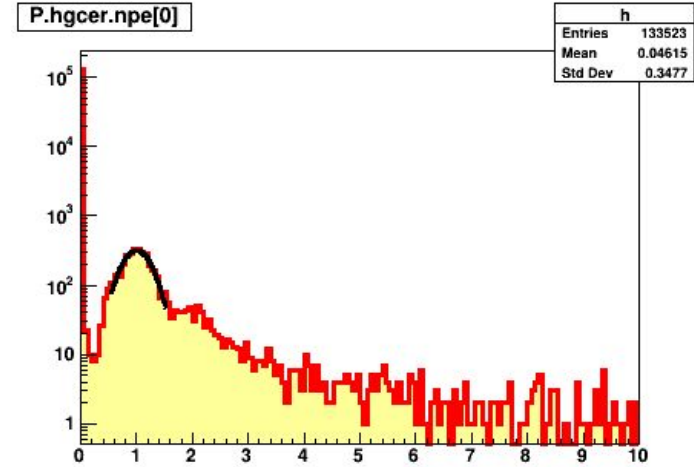
Kaon LT Status Update

December 10th, 2019

Richard Trotta

SHMS HG Cherenkov

- Calibration coefficients:
 - **Fall 2018:** hcer_adc_to_npe =
 - 1./6.26, 1./7.3, 1./5.85, 1./6.98
 - **Spring 2018:** hcer_adc_to_npe =
 - 1./5.92, 1./6.67, 1./5.28, 1./6.83



SHMS Calorimeter

- Been going through SHMS calibrations, but have been getting errors on most runs
- It has not always been the same error, there are two main ones
 - ***** Break ***** segmentation violation
 - Error related to DC
- Still need to figure out the issues with these

```
Read 131 matrix element terms
*** WARNING!!! Rounded pdc_tdcrefcut to nearest integer
Plane Name List: 1u1 1u2 1x1 1x2 1v1 1v2 2v1 2x2 2x1 2u2 2u1
Drift Chambers: 12 planes in 2 chambers
Created Drift Chamber 1, Ch1
Created Drift Chamber 2, Ch2
DC tdc ref time cut = -15000
InitHitList: THcRawDCHit RefTimeCuts: -15000 0
Defining pdc_tdcref_miss and pdc_adcref_miss
Plane counts: 107 107 79 79 107 107 107 107 107 79 79 107 107
Error in <THcDriftChamberPlane("Pdc.1u1");Init>: Exception <THcParmList::LoadParmValues>; Could not find 'pdriftbins' in database! caught in ReadDatabase. Module not initialized. Check database or call expert.
Error in <THcDriftChamberPlane("Pdc.1u1");Init>: Error when reading file db_Pdc.dat
Error in <THcHallCSpectrometer("P");Init>: While initializing apparatus P ("SHMS") got error 2 from detector dc ("Drift Chambers")
*** WARNING!!! Rounded phodo_tdcrefcut to nearest integer
*** WARNING!!! Rounded phodo_adcrefcut to nearest integer
Plane Name List : 1x 1y 2x 2y
Created Scintillator Plane 1x, Hodoscope Plane 1x
Created Scintillator Plane 1y, Hodoscope Plane 1y
Created Scintillator Plane 2x, Hodoscope Plane 2x
Created Scintillator Plane 2y, Hodoscope Plane 2y
Hodo tdc ref time cut = -4000 -5500
InitHitList: THcRawHodoHit RefTimeCuts: -4000 -5500
Defining pscin_tdcref_miss and pscin_adcref_miss
USING 2 NSEC WINDOW FOR FP_NO_TRACK CALCULATIONS.
fRatio_xfp_to_xfp= 0.0018
Defining phgcer_tdcref_miss and phgcer_adcref_miss
Created Cherenkov detector Phgcer with 4 PMTs
*** WARNING!!! Rounded phgcer_adcrefcut to nearest integer
InitHitList: THcCherenkovHit RefTimeCuts: 0 -5500
Defining paero_tdcref_miss and paero_adcref_miss
Created aerogel detector Paero with 7 PMT pairs
*** WARNING!!! Rounded paero_adcrefcut to nearest integer
InitHitList: THcAerogelHit RefTimeCuts: 0 -5500
```


Updates to Redmine

Analysis Tasks ↑

Fall 2018/Spring 2019 Run	Completed
Calibrations	Ongoing
Efficiencies and offsets	Ongoing
First iteration of cross section	On deck
Fine tuning cross section iteration	To Do
Form factor extraction	To Do

This is a summary page with the progress of the KaonLT experiment. Above is a quick outline of our current progress. Below are tasks assigned to members of the group. Anyone who is part of the group may contribute to a task with suggestions and/or updates on progress. Please contact the assignee on a task-by-task basis for any queries. Anyone with general questions can contact Richard Trotta (trotta@cua.edu).

Analysis Tasks
Ongoing [Calibrations] [Efficiencies and offsets]
Timing windows and reference times
Calorimeter
Aerogel
HGCer
HMS Cer
HMS DC
SHMS DC
Hodoscope
Efficiencies
On deck
Luminosity
Elastics
First iteration of cross section
Completed

Efficiencies ↑

Tracking	To Do
Trigger	To Do
PID	HMS cer To Do
	HMS cal To Do
	SHMS aero To Do
	SHMS cer To Do
	SHMS cal To Do
CPU LT	To Do
Electronic LT	To Do
COIN time	To Do
Missing Mass	To Do

Updates to Redmine

Efficiencies and offsets

« Previous | 2 of 19 | Next »

Added by [Richard Trotta](#) 8 days ago. Updated 8 days ago.

Status: In Progress
Priority: Normal
Assignee: [Richard Trotta](#)
Category: -
Target version: -

Start date: 12/01/2019
Due date:
% Done:  0%

Subtasks

Add

Task #512: Tracking efficiency	New		
Task #513: Trigger efficiency	New		
Task #514: PID efficiency	In Progress	Richard Trotta	
▶ Task #517: HMS cherenkov efficiency	New		
▶ Task #518: HMS calorimeter efficiency	New		
▶ Task #519: SHMS aerogel efficiency	New		
▶ Task #520: SHMS cherenkov efficiency	New		
▶ Task #521: SHMS calorimeter efficiency	New		
Task #515: CPU and electronic live time	New		
Task #516: COIN time and missing mass efficiency	New		

PID Scripts

Task #511: Efficiencies and offsets

« Previous | 1 of 19 | Next »

PID efficiency

Added by [Richard Trotta](#) 8 days ago. Updated 8 days ago.

Status:	In Progress	Start date:	12/01/2019
Priority:	Normal	Due date:	
Assignee:	Richard Trotta	% Done:	<div style="width: 0%;"></div> 0%
Category:	-		
Target version:	-		

Description

 Quote

PID (software) efficiencies...

- For a check, have to first create a clean sample of the particle of interest
 - e.g. kaons for the aerogel cut efficiency
 - To create clean sample for checking aerogel, **cannot** use aerogel itself. Must use Cherenkov or something else.
- For the study, make cuts to create the clean sample very tight (much stricter than normal)
 - Then take the ratio of events with the aerogel cuts required in the analysis
 - e.g. $NPE > 1$ and without
 - The results are the PID efficiency
- It is good to check the efficiency stability over all runs

Subtasks

Add

Task #517: HMS cherenkov efficiency	New	<div style="width: 0%;"></div>
Task #518: HMS calorimeter efficiency	New	<div style="width: 0%;"></div>
Task #519: SHMS aerogel efficiency	New	<div style="width: 0%;"></div>
Task #520: SHMS cherenkov efficiency	New	<div style="width: 0%;"></div>
Task #521: SHMS calorimeter efficiency	New	<div style="width: 0%;"></div>