Group meeting
September 6th, 2024

Instruction responsibilities

- Classes for Fall 2024:
  - PHY 331:
    - 1 lecture
    - Need to grade homework
  - PHY 361:
    - 1 lecture
    - Need to graded homework
  - Met with Princess Colin to discuss individualized instruction project (quantum computers)

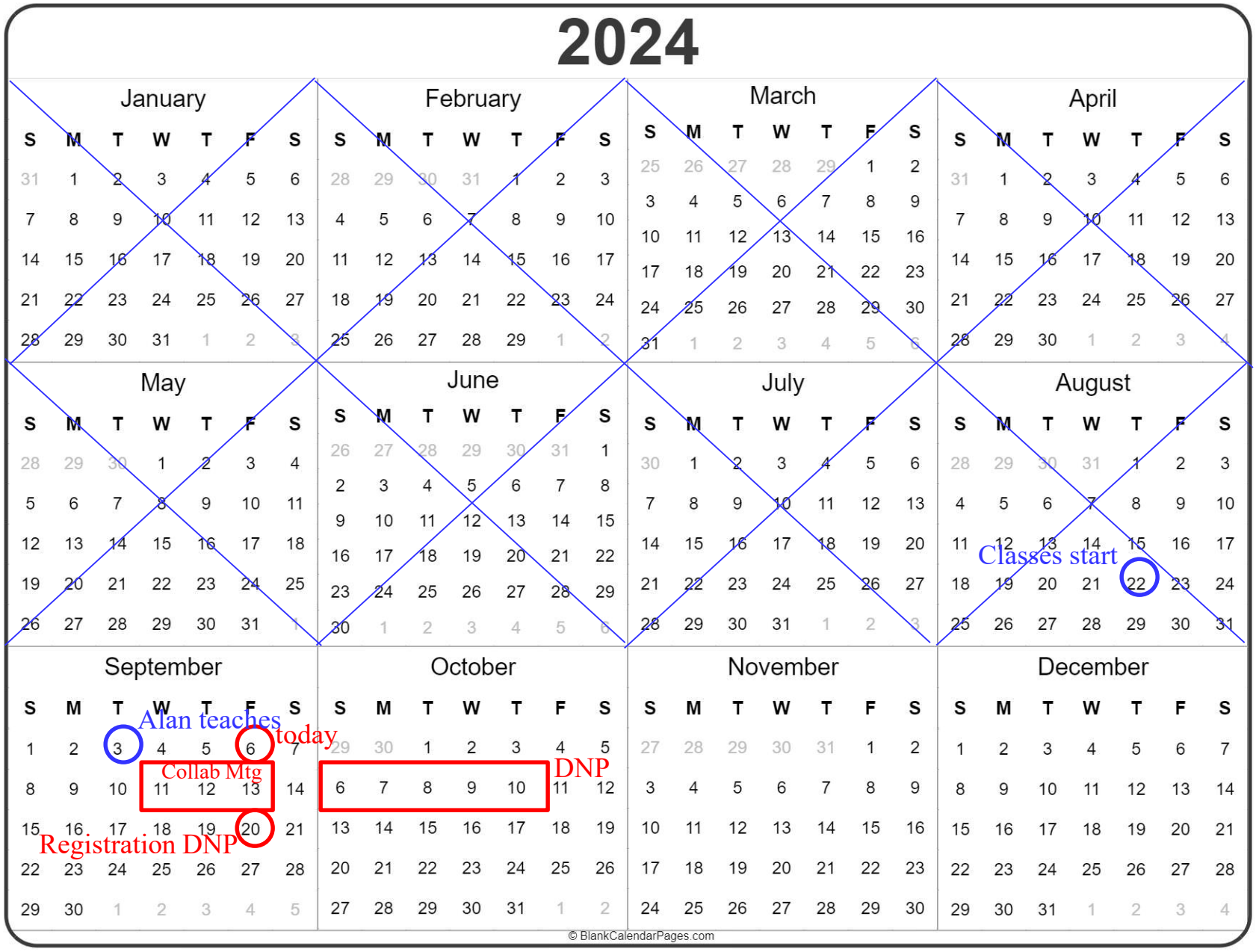
Service responsibilities

- Committee:
  - GlueX Compton Analysis Review Committee:
    - Have author response
    - Reviewed the response
    - Need to make formal writeup

Group responsibilities

- Need to build out NAS that has been collecting dust.
  - Need to order hard drives
- Need to figure out the standing of the groups finances

Timelines


2024
January
February
March
April
May
June
July
August
September
October
November
December
Alan teaches
today
Collab Mtg
DNP
Registration DNP
Classes start
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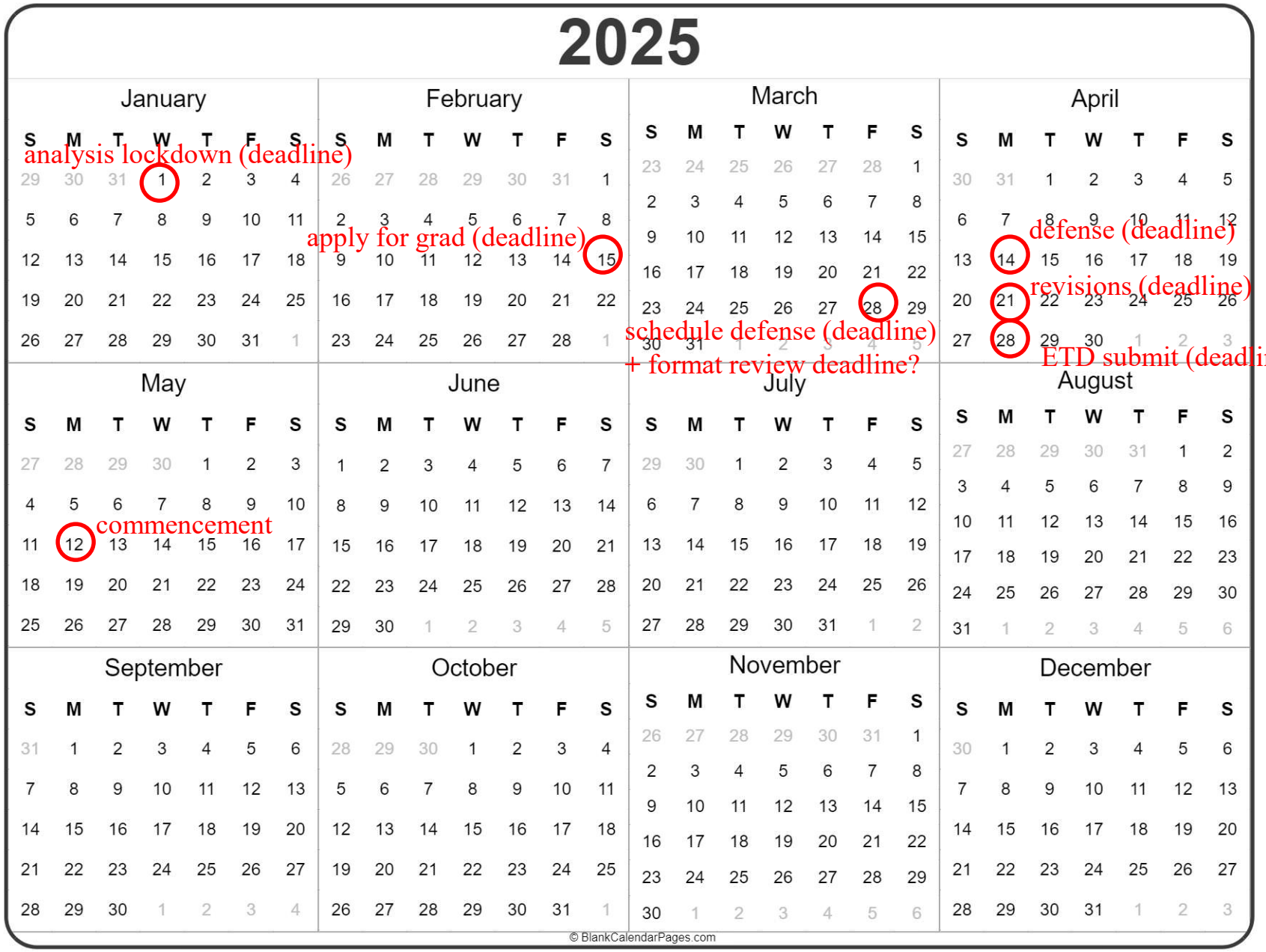
2025
January
February
March
April
May
June
July
August
September
October
November
December
analysis lockdown (deadline)
apply for grad (deadline)
defense (deadline)
revisions (deadline)
schedule defense (deadline)
+ format review deadline?
ETD submit (deadline)
commencement
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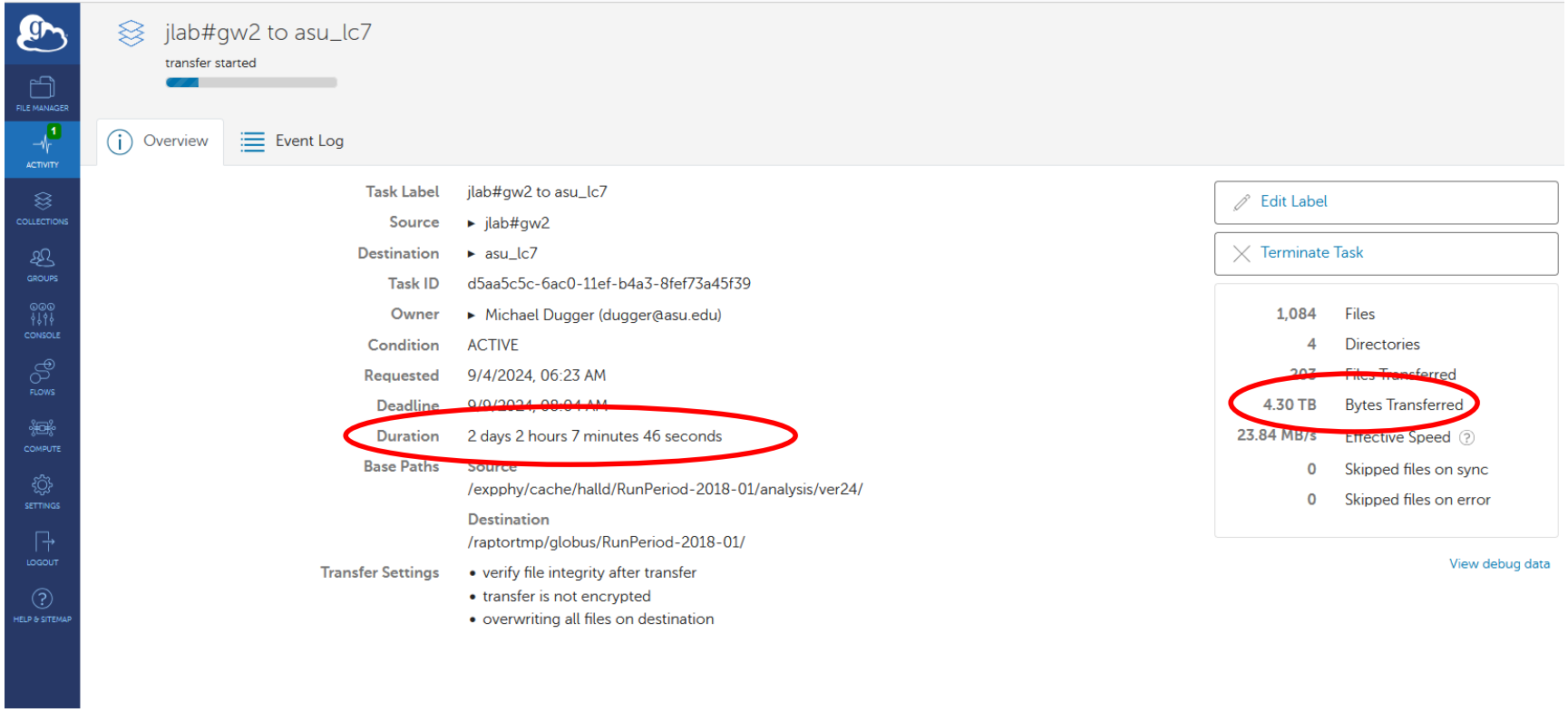
$\Xi^* \rightarrow \Xi\pi^0$ update

- Finally have 2018-01 files for reaction with K^+ switched with π^+
  - Need to run CL comparison between the reactions

$KK\pi$ update

- Downloading 2018-01 files for reaction with K^+ switched with π^+ and for K^- switched with π^-
- Have about 1/3 of the files

$KK\pi$ update


jlab#gw2 to asu_lc7
transfer started
FILE MANAGER
ACTIVITY
COLLECTIONS
GROUPS
CONSOLE
FLOWS
COMPUTE
SETTINGS
LOGOUT
HELP & SITEMAP
Overview
Event Log
Task Label jlab#gw2 to asu_lc7
Source ▸ jlab#gw2
Destination ▸ asu_lc7
Task ID d5aa5c5c-6ac0-11ef-b4a3-8fef73a45f39
Owner ▸ Michael Dugger (dugger@asu.edu)
Condition ACTIVE
Requested 9/4/2024, 06:23 AM
Deadline 9/9/2024, 08:04 AM
Duration 2 days 2 hours 7 minutes 46 seconds
Base Paths Source
/expphy/cache/halld/RunPeriod-2018-01/analysis/ver24/
Destination
/raptortmp/globus/RunPeriod-2018-01/
Transfer Settings
• verify file integrity after transfer
• transfer is not encrypted
• overwriting all files on destination
Edit Label
Terminate Task
1,084 Files
4 Directories
207 Files Transferred
4.30 TB Bytes Transferred
23.84 MB/s Effective Speed
0 Skipped files on sync
0 Skipped files on error
View debug data

$KK\pi$ update

Comparison with Sasha Ostrovidov

$KK\pi$ update

Comparison with Sasha Ostrovidov

$KK\pi$ update

Comparison with Sasha Ostrovidov

Cuts

- Initially, all cut variables are = 0
- Tried to mimic most of the cuts in the code shared with me
- Cuts that I use will be circled in red on the next two slides except confidence level cut that is always in place
  - Confidence level required to always be > 10^{-4}

Cuts: part 1

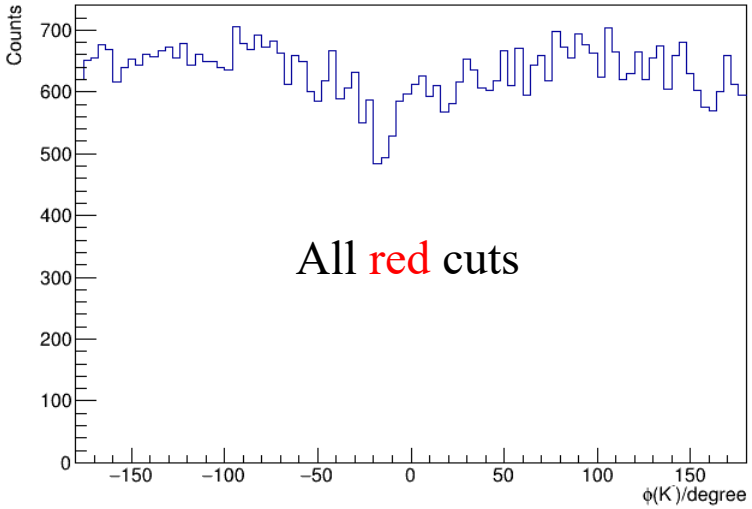
```
// vertex : Beam
double locBeamVertexZ = locBeamX4_Measured.Z();
double locBeamVertexR = locBeamX4_Measured.Perp();
if ((locBeamVertexZ < 51.0) || (locBeamVertexZ > 79.0) || (locBeamVertexR > 1.0)) cutV=1;
// vertex : Proton
double locProtonVertexZ = locProtonX4_Measured.Z();
double locProtonVertexR = locProtonX4_Measured.Perp();
if ((locProtonVertexZ < 51.0) || (locProtonVertexZ > 79.0) || (locProtonVertexR > 1.0)) cutVp=1;
// vertex : KPlus
double locKPlusVertexZ = locKPlusX4_Measured.Z();
double locKPlusVertexR = locKPlusX4_Measured.Perp();
if ((locKPlusVertexZ < 51.0) || (locKPlusVertexZ > 79.0) || (locKPlusVertexR > 1.0)) cutVkp = 1;
// vertex : KMinus
double locKMinusVertexZ = locKMinusX4_Measured.Z();
double locKMinusVertexR = locKMinusX4_Measured.Perp();
if ((locKMinusVertexZ < 51.0) || (locKMinusVertexZ > 79.0) || (locKMinusVertexR > 1.0)) cutVkm = 1;
// vertex : Photons
double locPhoton1VertexZ = locPhoton1X4_Measured.Z();
double locPhoton1VertexR = locPhoton1X4_Measured.Perp();
if ((locPhoton1VertexZ < 51.0) || (locPhoton1VertexZ > 79.0) || (locPhoton1VertexR > 1.0)) cutVpho1 = 1;
double locPhoton2VertexZ = locPhoton2X4_Measured.Z();
double locPhoton2VertexR = locPhoton2X4_Measured.Perp();
if ((locPhoton2VertexZ < 51.0) || (locPhoton2VertexZ > 79.0) || (locPhoton2VertexR > 1.0)) cutVpho2 = 1;
if (cutV == 1 || cutVp == 1 || cutVkp == 1 || cutVkm == 1 || cutVpho1 == 1 || cutVpho2 == 1) cutVall = 1;


/******************************************** Unused Energy Cut *********************************************/

if ( dComboWrapper->Get_Energy_UnusedShowers() > 0.05 ) cutUnE = 1;
```

ASU

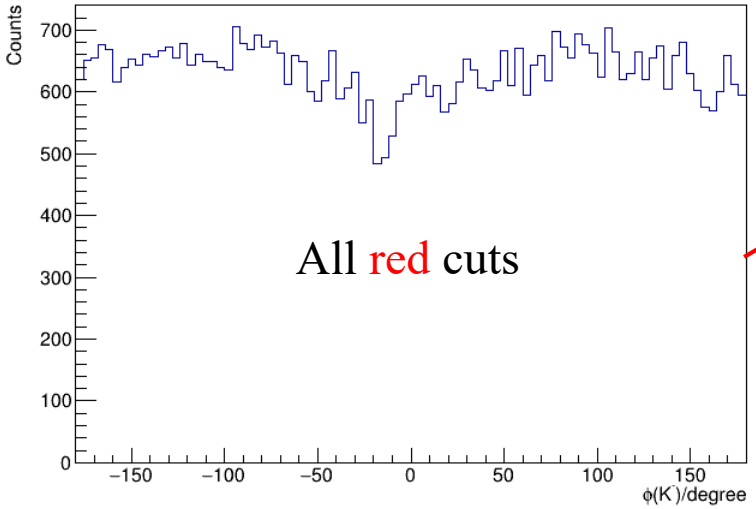
Cuts: part 2

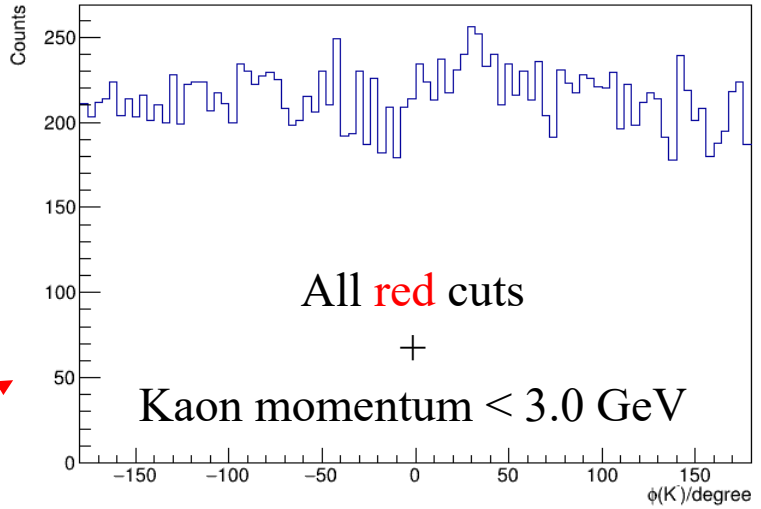
```
// theta
if ( (((locPhoton1P4_Measured.Theta()*180./TMath::Pi() < 12.0) && (locPhoton1P4_Measured.P() < 0.5)) ||
      ((locPhoton2P4_Measured.Theta()*180./TMath::Pi() < 12.0) && (locPhoton2P4_Measured.P() < 0.5))) ) cutTheta = 1;
//Mkk
if ((locKPlusP4_Measured+locKMinusP4_Measured).M() > 1.055) cutMkk = 1;
if ( (dKPlusWrapper->Get_Detector_System_Timing() != SYS_TOF) || (dKMinusWrapper->Get_Detector_System_Timing() != SYS_TOF) ) cutTOF = 1;

   /***************************************** DeltaT TOF *****************************************/
   // deltaT TOF : KPlus
   double locKPlusP = locKPlusP4_Measured.P();
   double locPropagatedRFTime_Kp = dComboWrapper->Get_RFTime_Measured() + (locKPlusX4_Measured.Z() - dComboWrapper->Get_TargetCenter().Z())/29.9792458;
   double locKPlusDeltaT = locKPlusX4_Measured.T() - locPropagatedRFTime_Kp;
   double locKPlusBeta_K = locKPlusP / sqrt(ParticleMass(KPlus)*ParticleMass(KPlus) + locKPlusP*locKPlusP);
   double locPiPlusBeta_K = locKPlusP / sqrt(ParticleMass(PiPlus)*ParticleMass(PiPlus) + locKPlusP*locKPlusP);
   // deltaT TOF : KMinus
   double locKMinusP = locKMinusP4_Measured.P();
   double locPropagatedRFTime_Km = dComboWrapper->Get_RFTime_Measured() + (locKMinusX4_Measured.Z() - dComboWrapper->Get_TargetCenter().Z())/29.9792458;
   double locKMinusDeltaT = locKMinusX4_Measured.T() - locPropagatedRFTime_Km;
   double locKMinusBeta_K = locKMinusP / sqrt(ParticleMass(KMinus)*ParticleMass(KMinus) + locKMinusP*locKMinusP);
   double locPiMinusBeta_K = locKMinusP / sqrt(ParticleMass(PiMinus)*ParticleMass(PiMinus) + locKMinusP*locKMinusP);

   // Strangeness Conservation Cut
   if ( (dKPlusWrapper->Get_Detector_System_Timing() == SYS_TOF) &&
        (locKPlusDeltaT < (5.42485/0.3)*(1./locPiPlusBeta_K-1./locKPlusBeta_K) + 0.2) &&
        (dKMinusWrapper->Get_Detector_System_Timing() == SYS_TOF) &&
        (locKMinusDeltaT < (5.42485/0.3)*(1./locPiMinusBeta_K-1./locKMinusBeta_K) + 0.2) ) cutStrange = 1;

   //MM
   if ( fabs(locMissingP4_Measured.M2()) > 0.02 ) cutMM = 1;

   /***************************************** Momentum Cut *****************************************/
   if ( locProtonP4_Measured.P() > 2.5 ) cutMo = 1;
```

$KK\pi$ with cuts

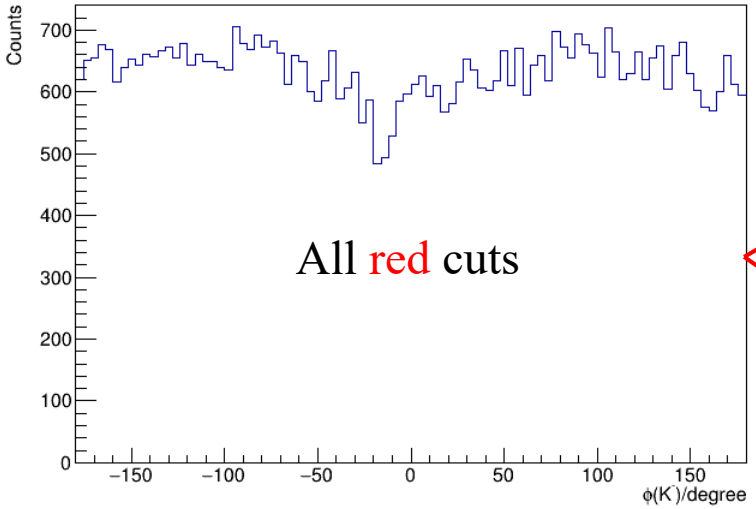


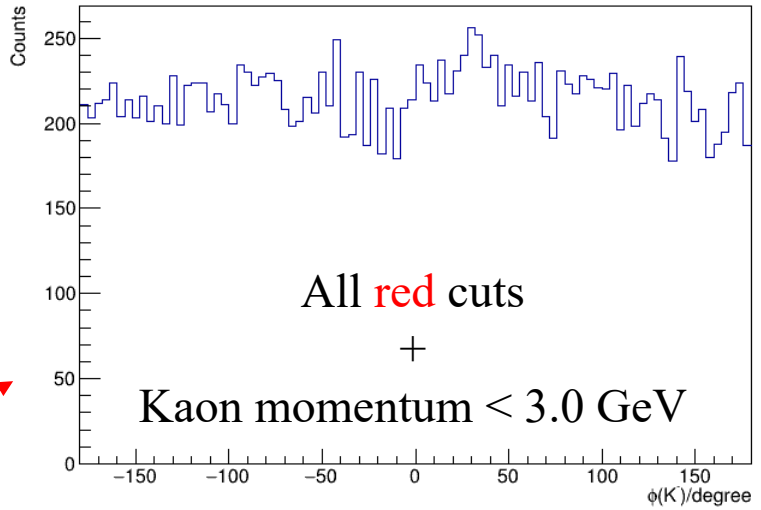
$KK\pi$ with cuts

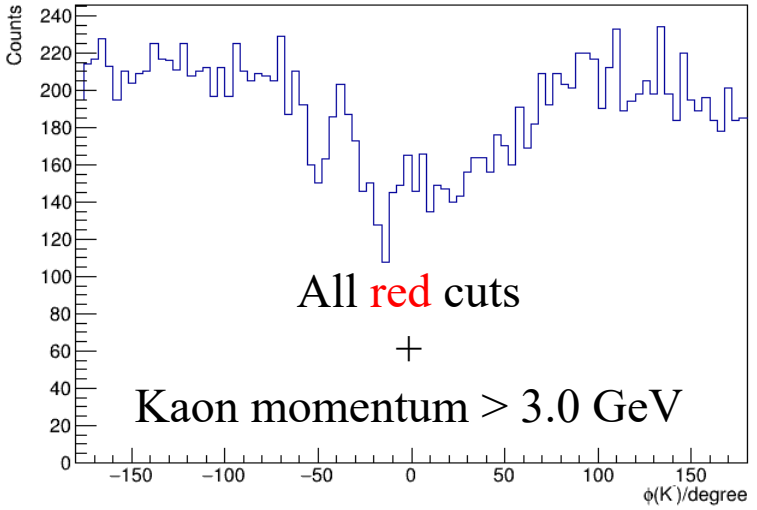




$KK\pi$ with cuts







Title