

Delta Correction in hcana

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Worked for Stephen:

```
1  ##comment out the following in .login: source
    /apps/root/6.18.04/setroot_CUE.csh
2  use root/6.18.04
3  git clone https://github.com/JeffersonLab/hcana
4  cd hcana
5  git checkout firmware_update
6  git submodule init
7  git submodule update
8  source setup.csh
9  scons -j8
```



Advice from Ole:

```
1  git clone https://github.com/JeffersonLab/hcana
2  module use /group/halla/modulefiles
3  module load root
4  module load analyzer
5  cmake -B hcana-build -S hcana -DHCANA_BUILTIN_PODD=OFF
      -DCMAKE_INSTALL_PREFIX=$HOME/apps/hcana
6  cmake --build hcana-build -- -j4
7  cmake --install hcana-build
```

I was eventually successful after using a combination of these methods.



hcana/src/THcHallCSpectrometer.cxx

```
1  if (fSatCorr == 2000) {
2      Double_t p0corr = 0.82825*fPcentral -1.223  ;
3      delta = delta + p0corr*xptar/100.;
4  }
```

Added:

```
1  //ACP: options for KaonLT 10.6 GeV
2  Double_t xpfp = track->GetTheta();
3  if (fSatCorr == 5) { //P_HMS=5.3
4      Double_t p0corr = 3.0 ;
5      (if xpfp>0)delta = delta + p0corr*xpfp/100.;
6  }
7  if (fSatCorr == 6) { //P_HMS=6.6
8      Double_t p0corr = -5.0 ;
9      (if xpfp<0)delta = delta + p0corr*xpfp/100.;
10 }
```



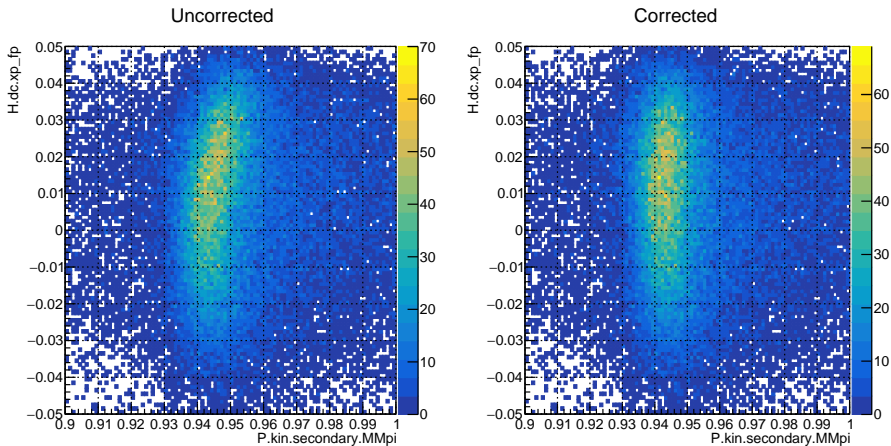
PARAM/HMS/GEN/KaonLT PARAM/hmsflags 10p6 GeV.param

```
1 ;saturation correction flag
2 ; hsatcorr = 2000 ;
3     ; a correction to hsdelta event by event
4     ; for a problem in setting Q3 current.
5     ; There was an unknown zero offset in the Q3 current.
6     ; The magnet setting code field00.f partially
7     ; fixes this problem. T. Horn in 2003 determined
8     ; the corrections to delta.
9     ; Data taken with fields set by field99.f or earlier
        should set to 1999.
10    ; Data taken with fields set by field00.f or later
        should set to 2000.
```

Added:

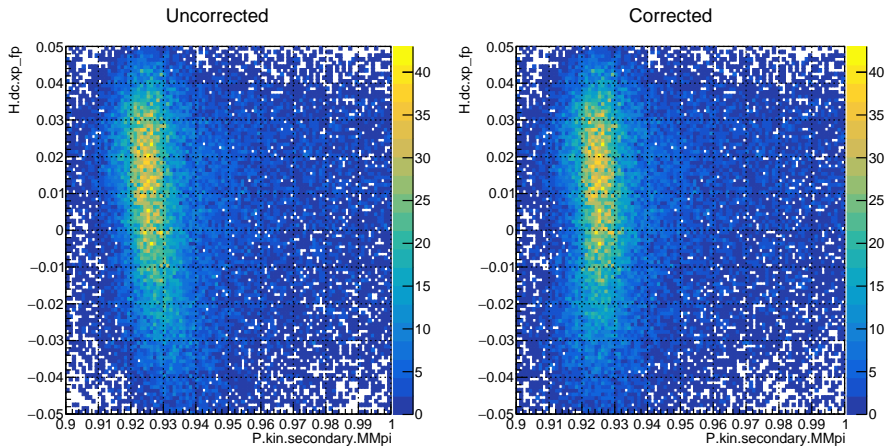
```
1 ; ACP: options for KaonLT 10.6 GeV
2 ; hsatcorr = 5 ; P_HMS=5.3
3 ; hsatcorr = 6 ; P_HMS=6.5
```

Delta Correction in hcana (1)



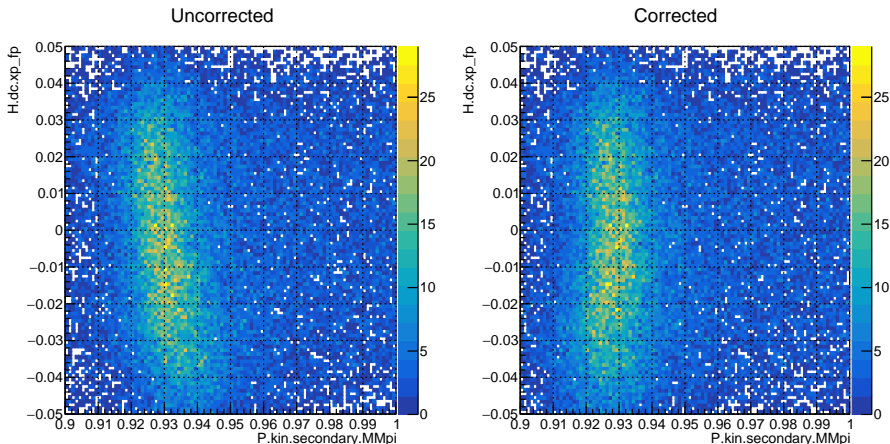
$P_{HMS}=6.590$ ($Q^2=3$, $W=2.32$), run 4873
if ($hsxpf > 0$): $hsdelta+ = 3.0 * hsxpf$

Delta Correction in hcana (2)



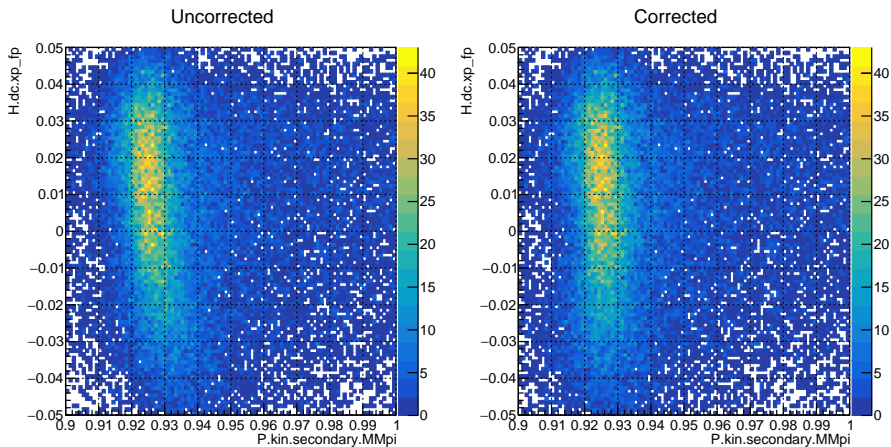
$P_{HMS}=5.2920$ ($Q^2=2.1$, $W=2.95$), run 4914
if (hsxpfp<0): hsdelta=-5.0*hsxpfp

Delta Correction in hcana (3)



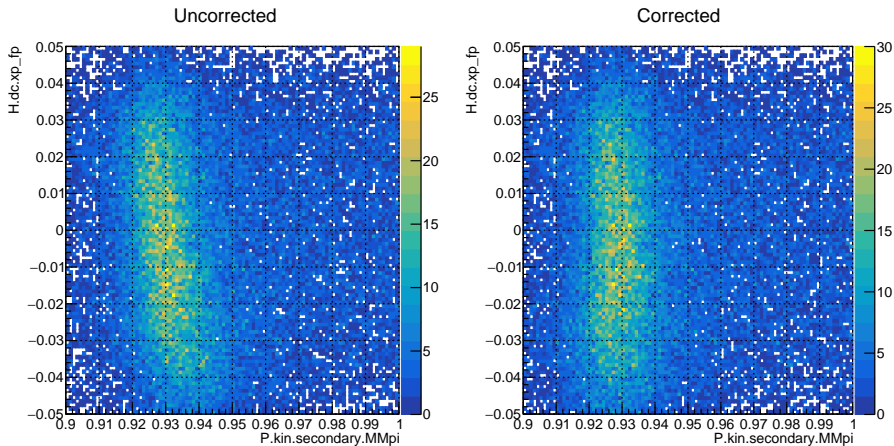
$P_{HMS}=5.2920$ ($Q^2=2.1$, $W=2.95$), run 4937
if (hsxpfp<0): hsdelta=-5.0*hsxpfp

Delta Correction in hcana (4)



$P_{HMS}=5.2920$ ($Q^2=2.1$, $W=2.95$), run 4914
if (hsxpfp<0): hsdelta=-4.0*hsxpfp

Delta Correction in hcana (5)



$P_{HMS}=5.2920$ ($Q^2=2.1$, $W=2.95$), run 4937
if (hsxpfp<0): hsdelta=-4.0*hsxpfp



- Using correction factors of +3.0 for $P_{HMS}=6.590$, -4.0 for $P_{HMS}=5.2920$
- Batch jobs running now for the two final asymmetry settings
- Determined final values of kinematics, asymmetry for first three settings
- Would like to set up meeting to discuss how to quote errors in the paper