G_E^n Analysis
BB Scintillator Calibration Status

Ameya Kolarkar

University of Kentucky

July 12, 2006

Outline

Outline

Analysis Overview

Immediate Tasks and Goals

- Bs ADC: Pedestals, Gains (Note: Bs $\equiv$ BigBite Scintillator)
- Bs timing calibration
- Check y-position from timing against that from the shower detector
- Bs timing check versus RF timing

Outline

Pedestal Determination

Algorithm

To identify the pedestal:

1. Look at the B.s.la[ ] and B.s.ra[ ] histograms to identify the pedestal to use in the analysis.
2. Make histograms with a range from 10 to 800, 2 or 4 ADC channels per bin and a cut that $B.s._{ra[\,]}^{la[\,]} > 0$. Then:
   1. If the histogram contains entries for more that 90% of the "events" in the tree, that channel had pedestal suppression turned ON.
      - Then, find the minimum channel that is occupied, and save the value of the 'pedestal' as 10 ADC channels below that point. (*Bob Michael's pedestal-finding routine*)
   2. ELSE if pedestal suppression is OFF, find the bin with the maximum occupation.

Pedestal Determination

Algorithm

To identify the pedestal:

1. Look at the B.s.la[ ] and B.s.ra[ ] histograms to identify the pedestal to use in the analysis.
2. Make histograms with a range from 10 to 800, 2 or 4 ADC channels per bin and a cut that $B.s._{ra[\,]}^{la[\,]} > 0$. Then:
   1. If the histogram contains entries for more that 90% of the "events" in the tree, that channel had pedestal suppression turned ON.
      - Then, find the minimum channel that is occupied, and save the value of the 'pedestal' as 10 ADC channels below that point. (*Bob Michael's pedestal-finding routine*)
   2. ELSE if pedestal suppression is OFF, find the bin with the maximum occupation.

Pedestal Determination

Algorithm

To identify the pedestal:

1. Look at the B.s.la[ ] and B.s.ra[ ] histograms to identify the pedestal to use in the analysis.
2. Make histograms with a range from 10 to 800, 2 or 4 ADC channels per bin and a cut that $B.s._{ra[\,]}^{la[\,]} > 0$. Then:
    1. If the histogram contains entries for more that 90% of the "events" in the tree, that channel had pedestal suppression turned ON.
        - Then, find the minimum channel that is occupied, and save the value of the 'pedestal' as 10 ADC channels below that point. (*Bob Michael's pedestal-finding routine*)
    2. ELSE if pedestal suppression is OFF, find the bin with the maximum occupation.

Pedestal Values

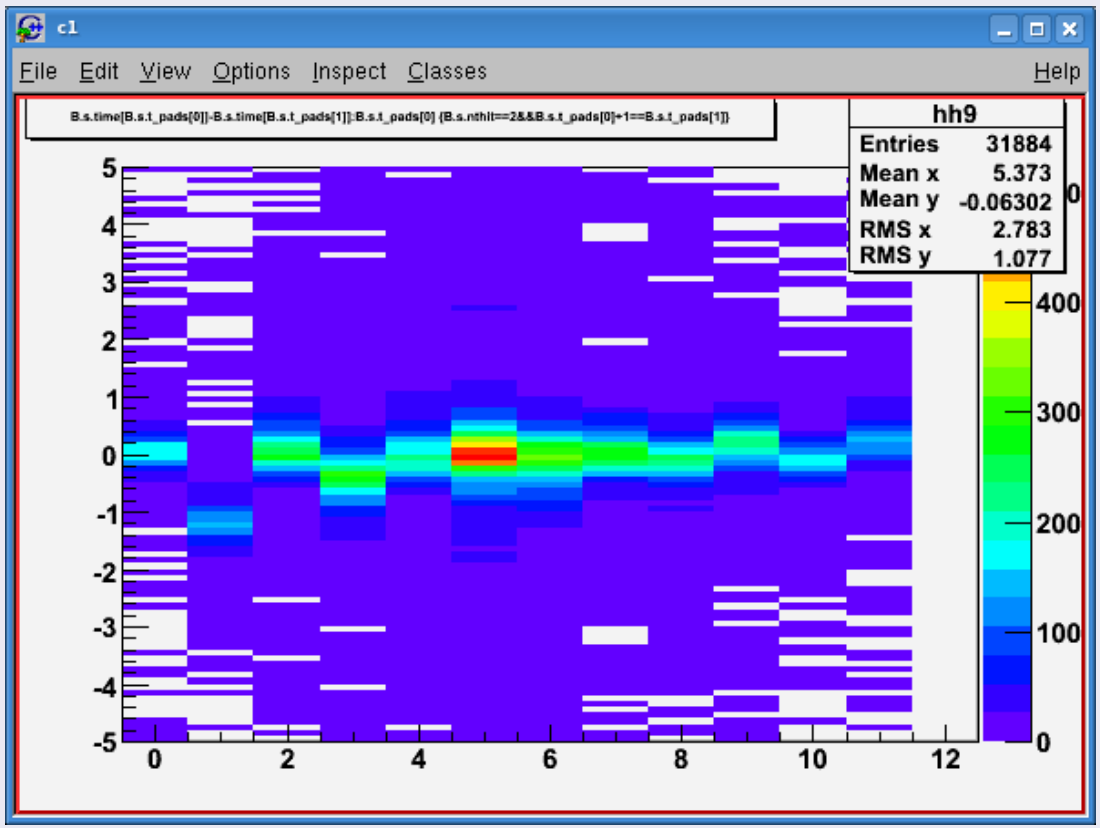
paddle	left PMT	right PMT
0	572	598
1	518	542
2	490	530
3	478	552
4	612	658
5	618	736
6	644	698
7	672	702
8	600	530
9	584	550
10	564	518
11	508	516
12	688	690

Outline

So far ...

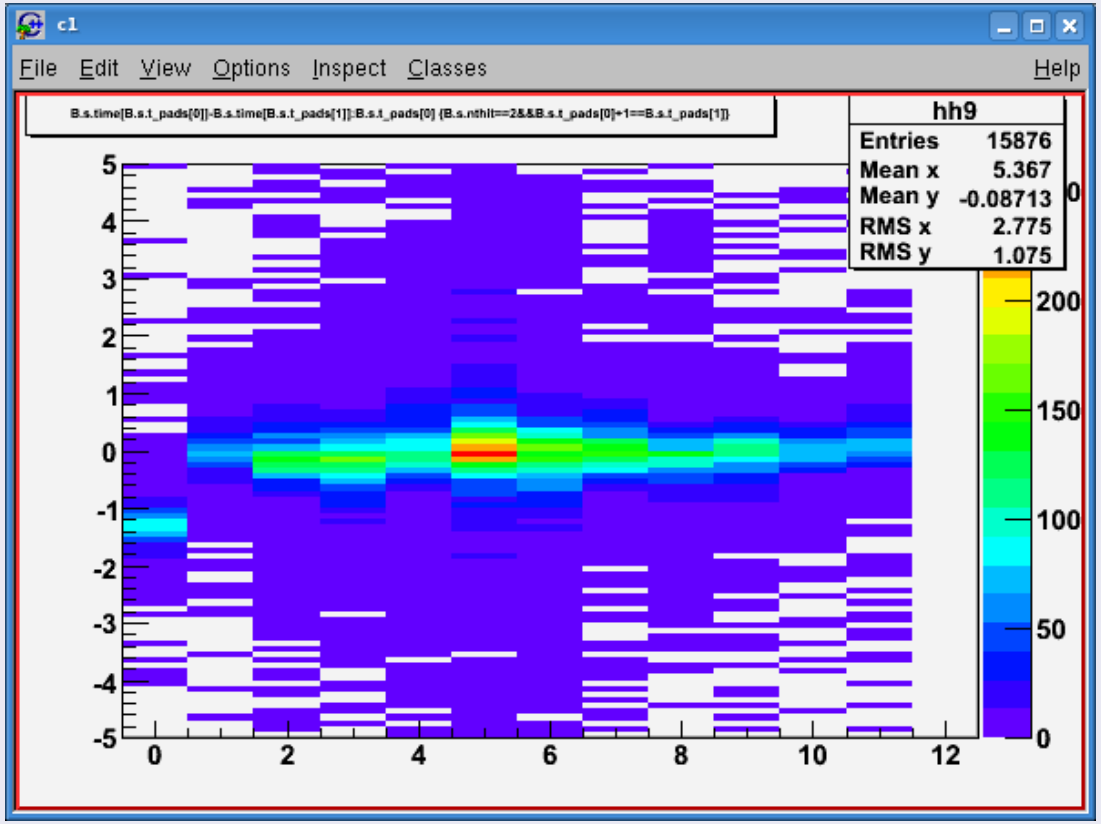
First Look

These include time-walk corrections.



New Look

These include time-walk corrections too.



The 1st paddle has now been fixed too.

Scint. Calib. To Do

To be done before the next meeting

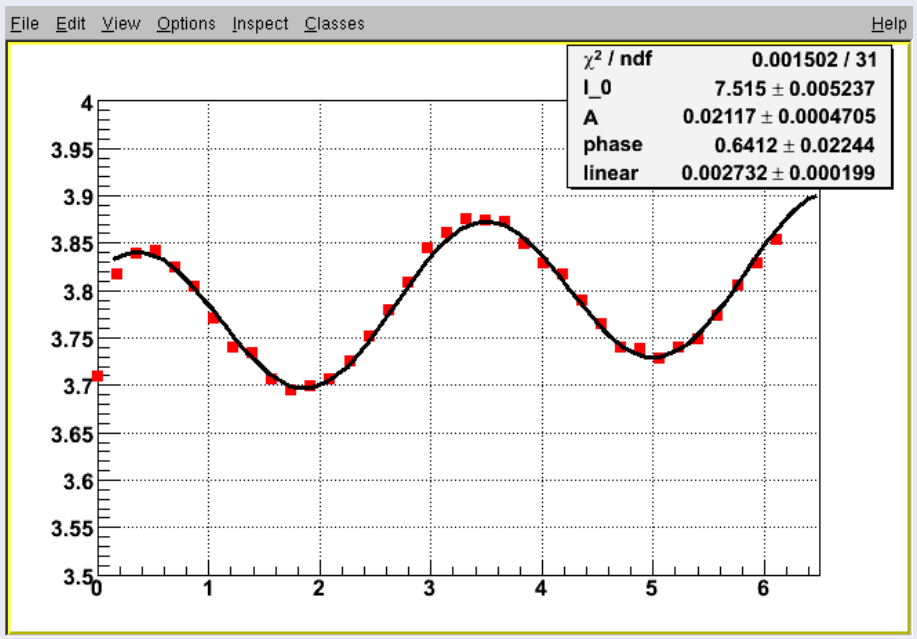
1. Tweak the database a little further (?)
2. Work on the *y*-position and RF timing
3. Finish off all the automation scripts
4. ...

Outline

Laser Polarization - *Not important for G_E^n analysis*

Laser Beam Degree of Circular Polarization

- $Fit = \frac{I_0}{2}[1 + A\cos(2x + \phi)]$



- Polarization = 99.98%

Timelines

- Plan to finish by the next G_E^n meeting (2 weeks?)
- Shall begin some target analysis by then