Coin H2 Analysis for d_2^n

BB Čerenkov Efficency

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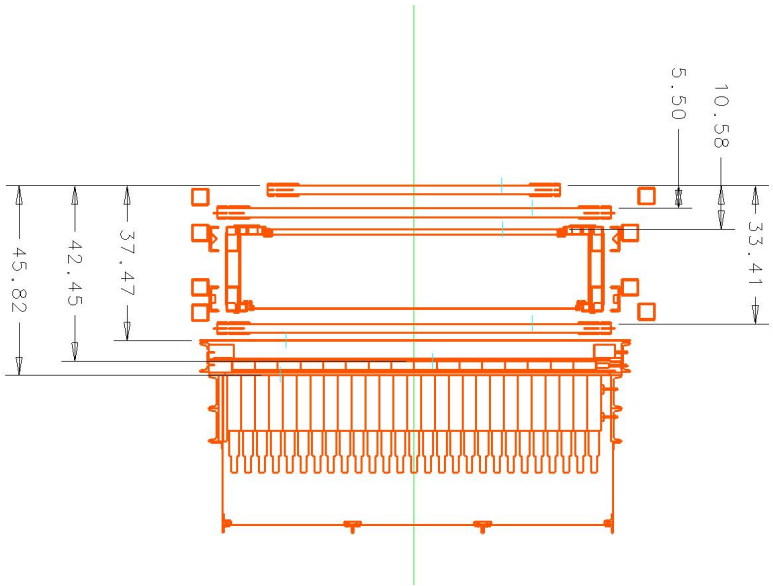
Outline

PreShower Location

- Last meeting add distribution in the BigBite total energy vs preshower plot
- Looked into and preshower location differed from transversity
- Using the survey report and the image below found at http://hallaweb.jlab.org/experiment/transversity/wikifile/BBedetectorSide.jpg verified transversity preshower position of 0.97m



Energy Distribution

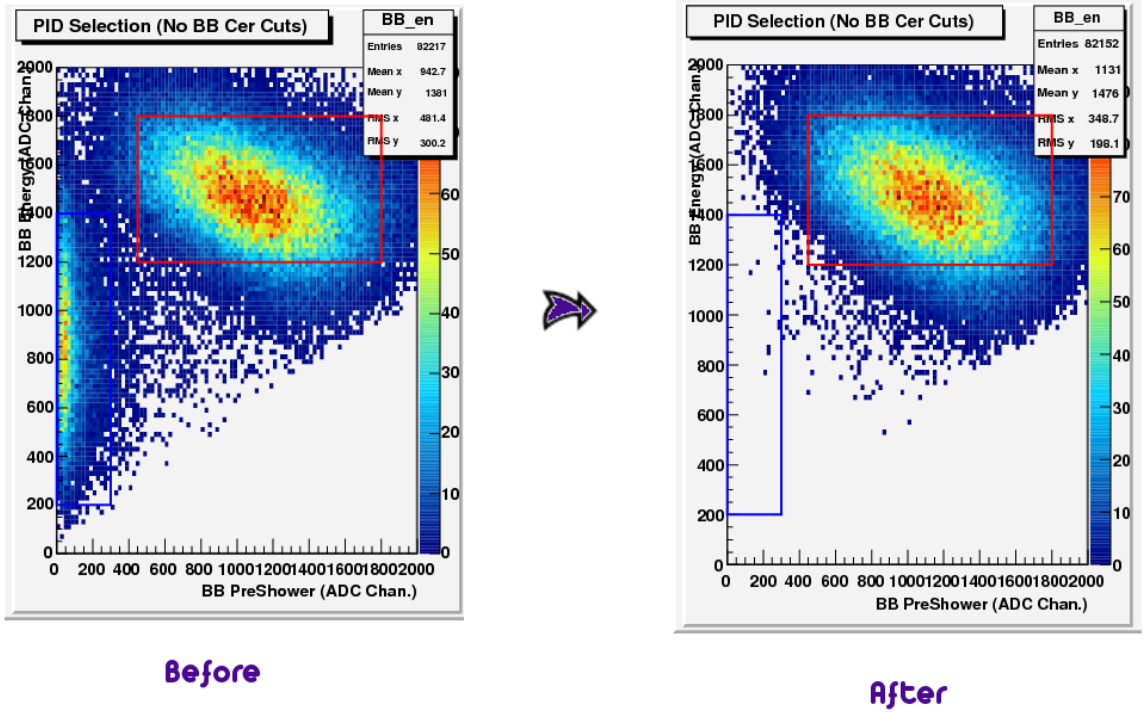


Figure: Total Energy vs preshower before(left) and after(right) preshower location fix.

H2 RHRS Čerenkov Efficency (1)

- For H2 elastic runs, beam line (small angle) side had some problems
  - Threshold set too low
  - v792 ADCs just can't handle the high rates
- Select just RHRS (large angle) side

ADC problem and RHRS Side Selection

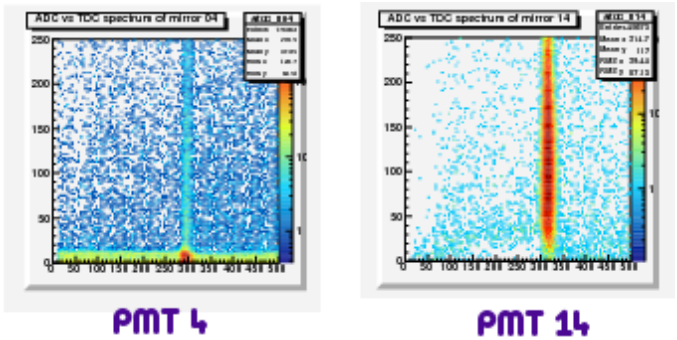


Figure: ADC (y-axis) vs TDC (x-axis) for PMTs 4 and 14

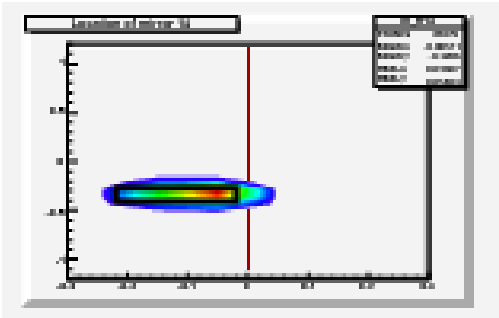


Figure: Mirror location of PMT 14. RHRS side $x < 0$

H2 RHRS Čerenkov Efficency (2)

- Using the same protons cuts described last meeting and a ...
- and the RHRS side cut and selecting a sample of 2D energy plot an e^- Čerenkov efficiency is $85.9 \pm 1.19\%$

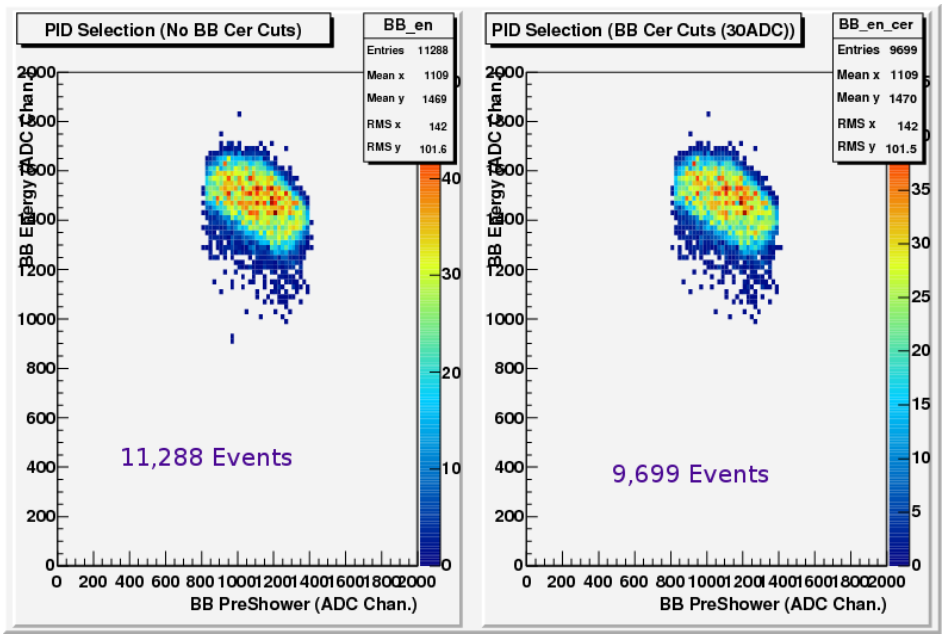


Figure: Total Energy vs preshower

Selecting Mirror 14

- Efficency may not be as good as can be because of sample selection
- To select a better sample a cut was made on the mirror location of PMT 14 in the Čerenkov plane and shower plane

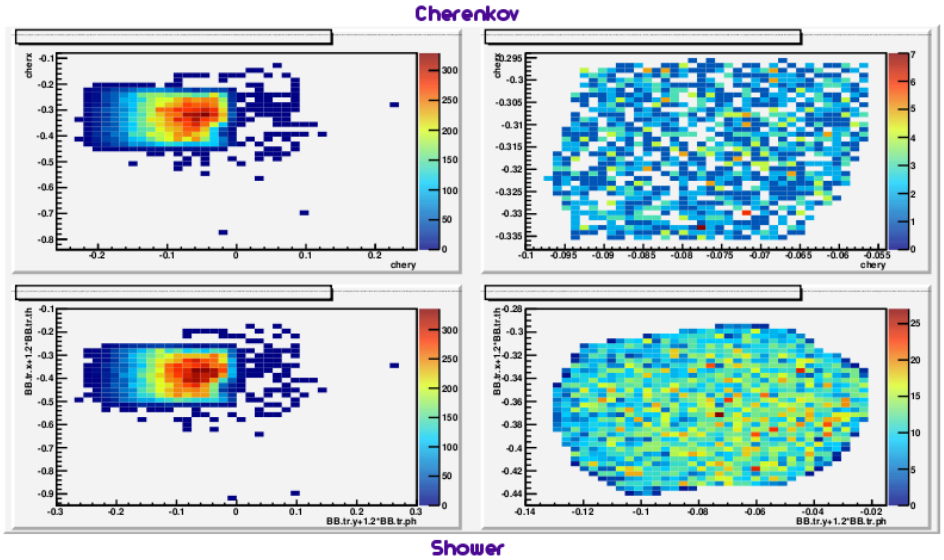
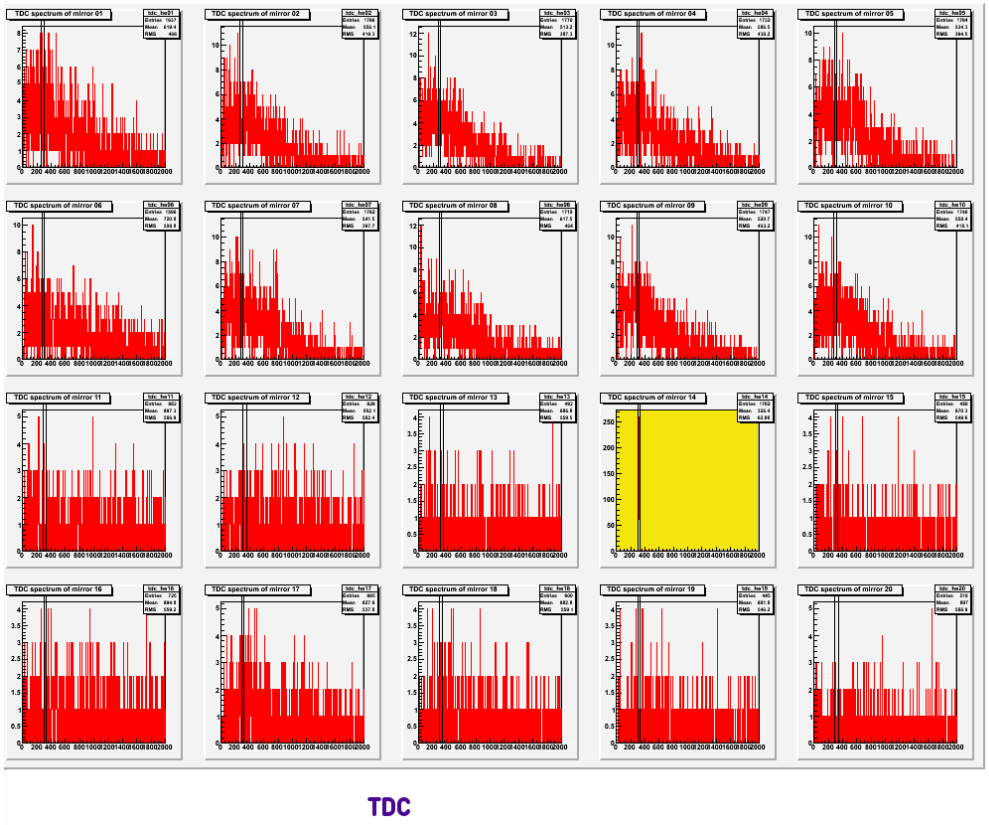


Figure: Geometry selection in Čerenkov and Shower

Čerenkov for pmt 14



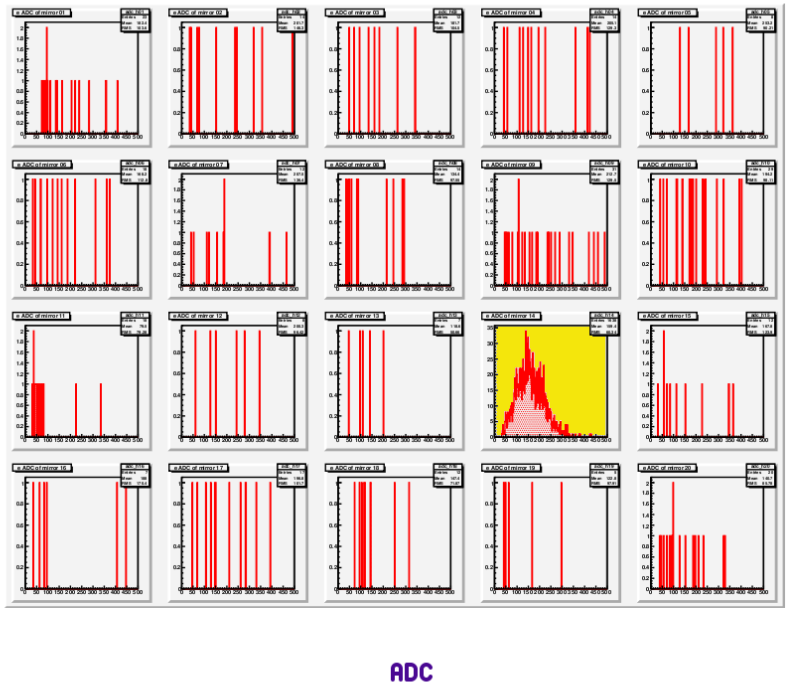


Figure: PMT signals for Čerenkov ADCs and TDCs

H2 Mirror Čerenkov Efficency

- The electron efficiency is now $\frac{1638}{1797} = 91.15 \pm 3.11\%$
- Could make the geometrical selection tighter, but start to loose too many events
- Will compare to 4-pass running for next meeting

What's Next

- Try to finish THaCherenkov TDC mod for next week
- Look at 4-pass Čerenkov efficiencies for H2 comparisons