

BigBite Analysis

BB Čerenkov Efficiency, Transversity BB Total Shower

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Outline

1 BigBite Čerenkov 4-pass Efficiency

- Cuts
- Efficiencies

2 PreShower Cut Study

3 Transversity Total Shower Library

4 PreShower/Shower Sums

5 What's Next

Čerenkov Efficiency Cuts

- $BB.optics.charge == -1$
- $BB.tr.n == 1$
- $BB.optics.vzflag == 1$

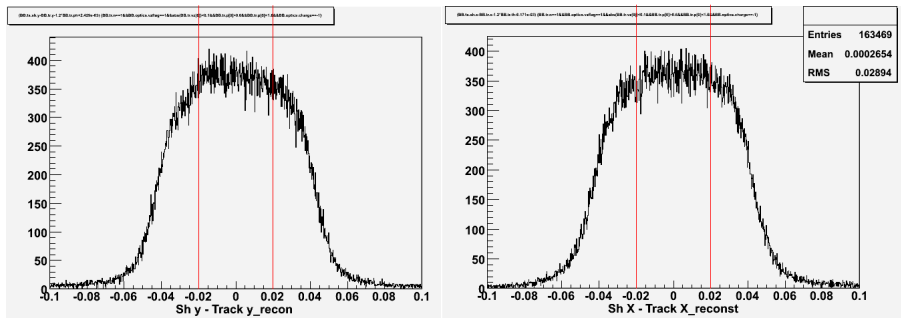
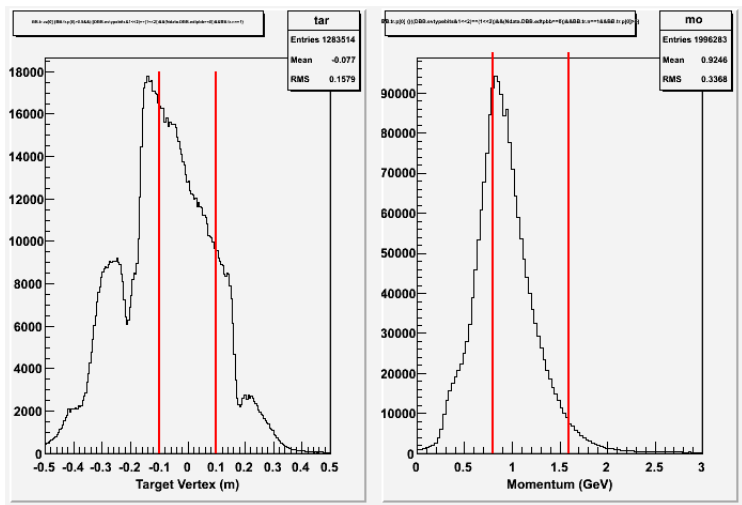


Figure: Track Match Cut (reconstructed track - shower cluster position)

Target Vertex/ Momentum



Electron Cut

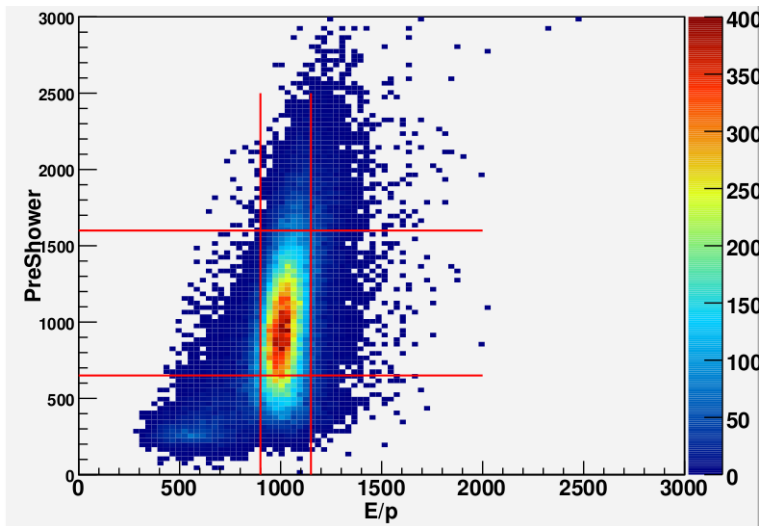


Figure: Electron sample selected

Čerenkov RHRS-Side Efficiencies

- included cuts:
 - Tracks projected onto Čerenkov mirrors (mirror cuts)
 - Tracks projected onto shower with Čerenkov mirror cuts
- For fewer Statistics

$$\epsilon_{RHRS} = 94.80 \pm 2.54\%$$

$$\epsilon_{beam} = 91.15 \pm 1.76\%$$

$$\epsilon_{total} = 92.58 \pm 1.48\%$$

- More Statistics

$$\epsilon_{RHRS} = 94.50 \pm 0.86\%$$

PreShower Cuts

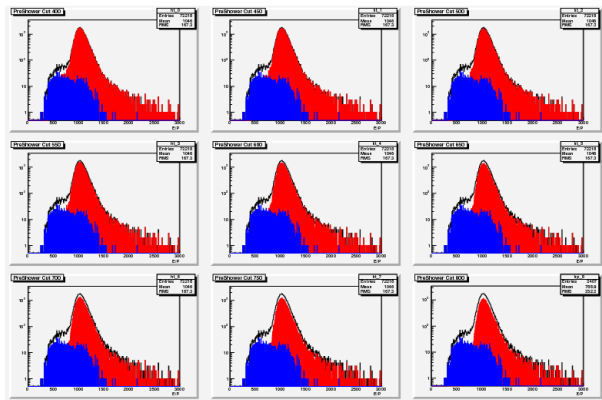
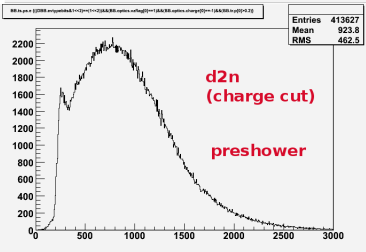
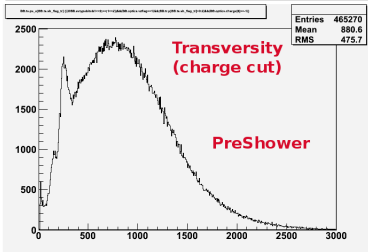
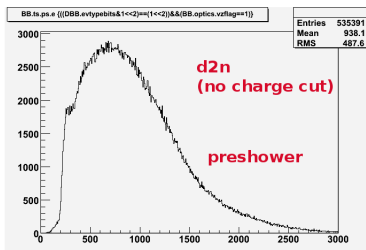
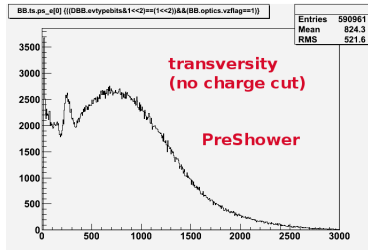


Figure: Pion E/p (blue) is set to $p_s < 400$, and vary electron(red) E/p

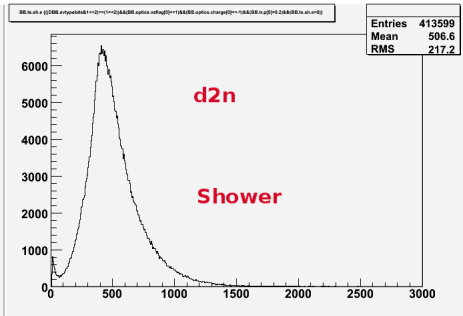
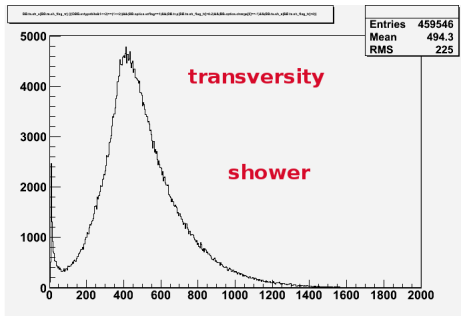
Transversity BigBite Total Shower

- Old Total Shower Class:
 - only saved largest cluster
 - no match of shower cluster to projected track
- Transversity Total Shower Class
 - Match track coordinates with shower cluster position
 - Match preshower cluster to the shower cluster position
 - Multiple clusters are save for the same event
- Only db.BB.ts.dat file needs to be altered
- It contains the max distance, $dx = 0.25$ and $dy = 0.4$, between the sh and ps clusters and E/p vs charge corrections

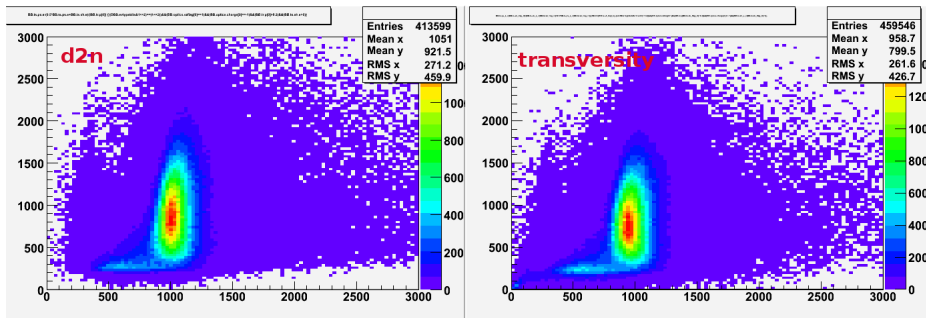
PreShower



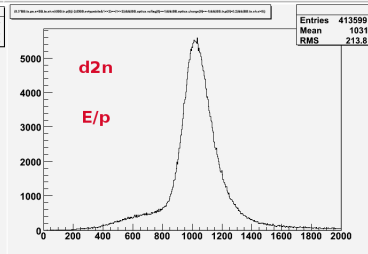
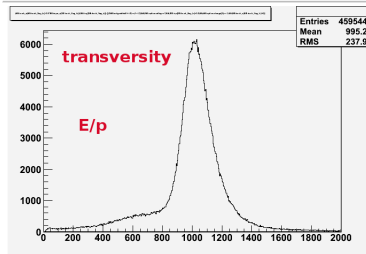
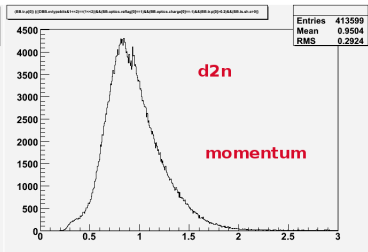
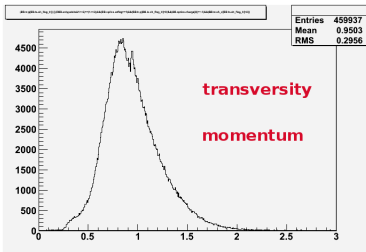
shower



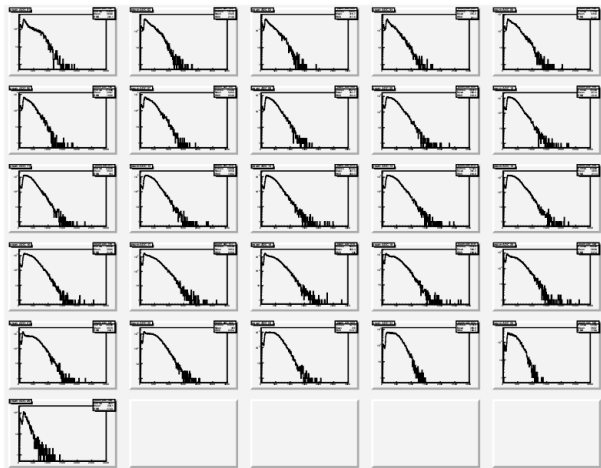
Ps vs E/p



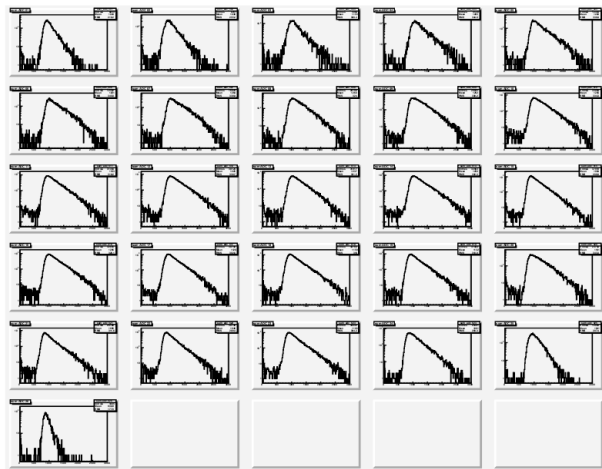
Momentum, E/p



PreShower Sums



Sums



To Do:

- Split of take over BB optics?