BigBite Analysis

E/p drop and BB Pre-Shower Cuts

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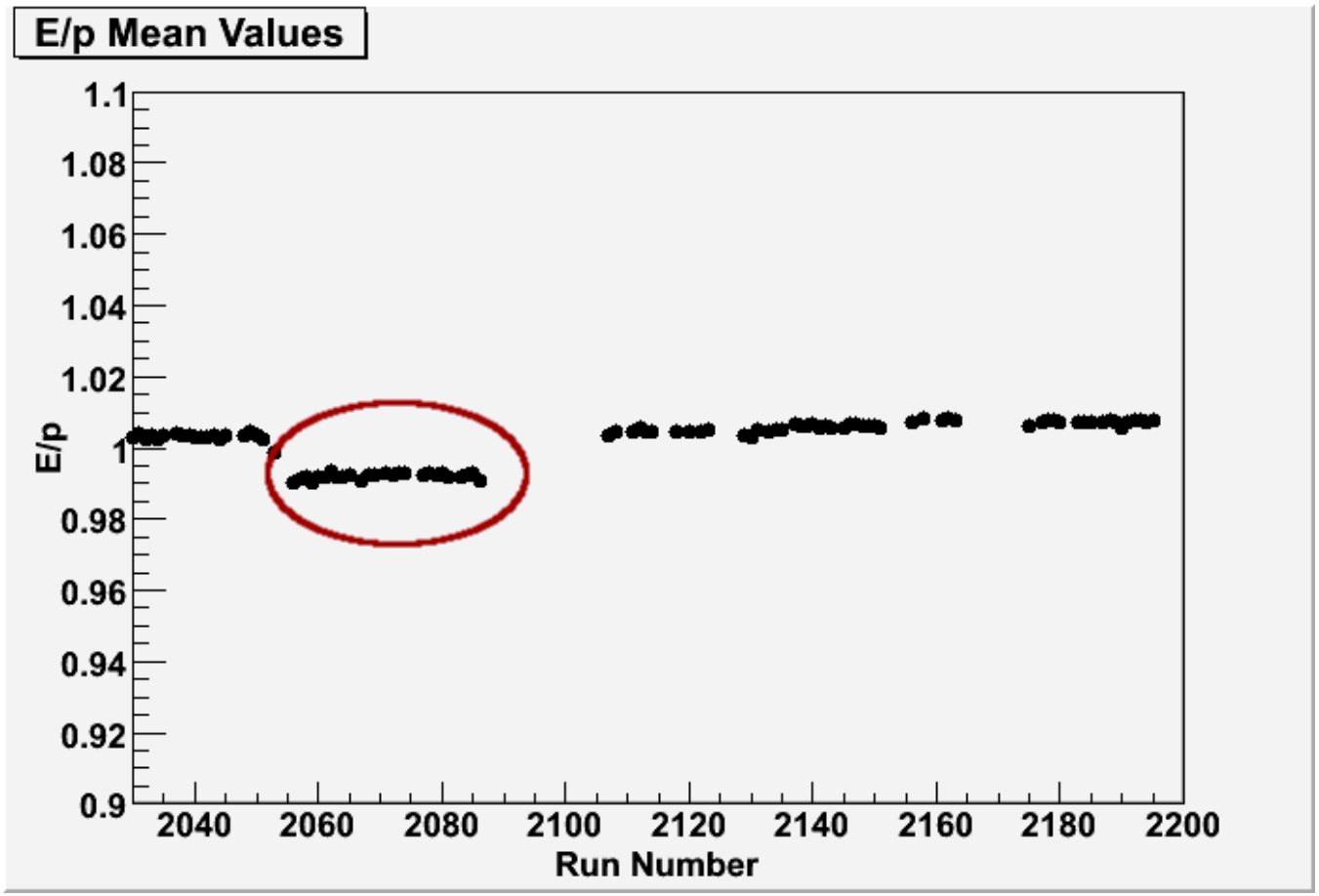
Outline

1. E/p
2. Pre-Shower Cuts
   - PID
   - Contamination
3. What's Next

E/p Stability

Low E/p region happens during MCC Vacuum Problems, 1L04



PID Definition

- Electrons were selected in the Čerenkov using the following cuts:
  - Events fall +/- 25ns from TDC peak
  - Events have an ADC greater than 3 photo-electrons
  - Events have a track passing through Čerenkov mirror location
- Pions were selected in the Čerenkov using the following cuts:
  - Events have an ADC that did not fire
  - Events have a track passing through Čerenkov mirror location

RHRS Pre-Shower PID

T6 Pre-Shower PID Energy:

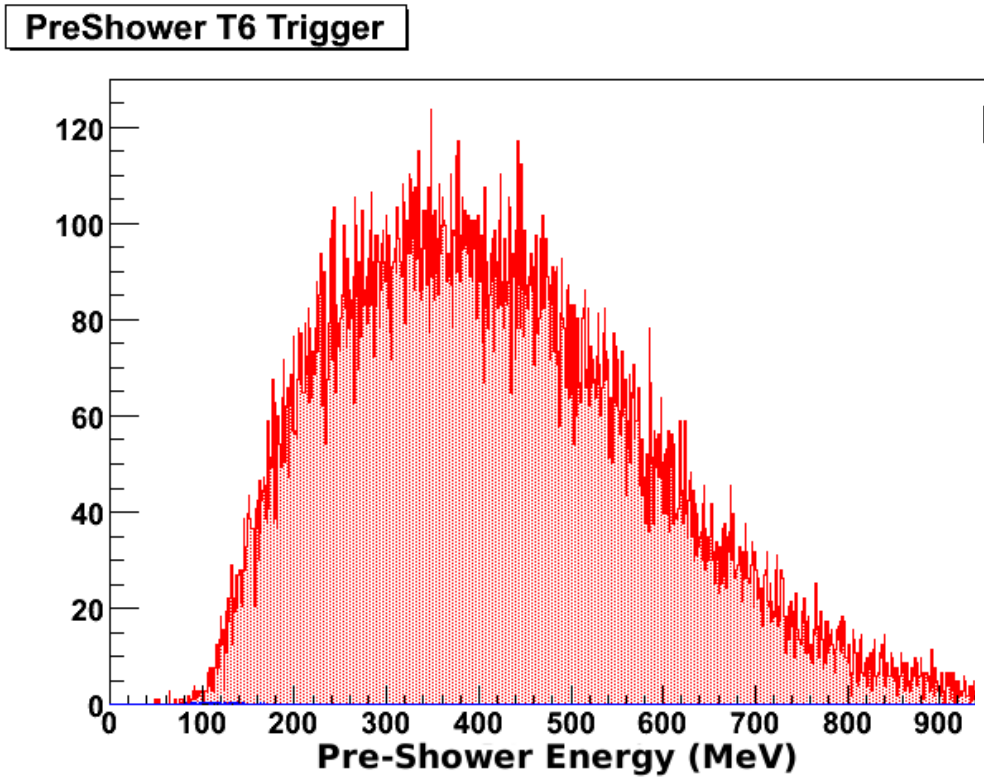


Figure: 4-pass T6 electron(red) and pion(blue) pre-shower energy. These plots are normalized to total events, (red events + blue events)

T6 Pre-Shower PID Energy (Zoomed in):

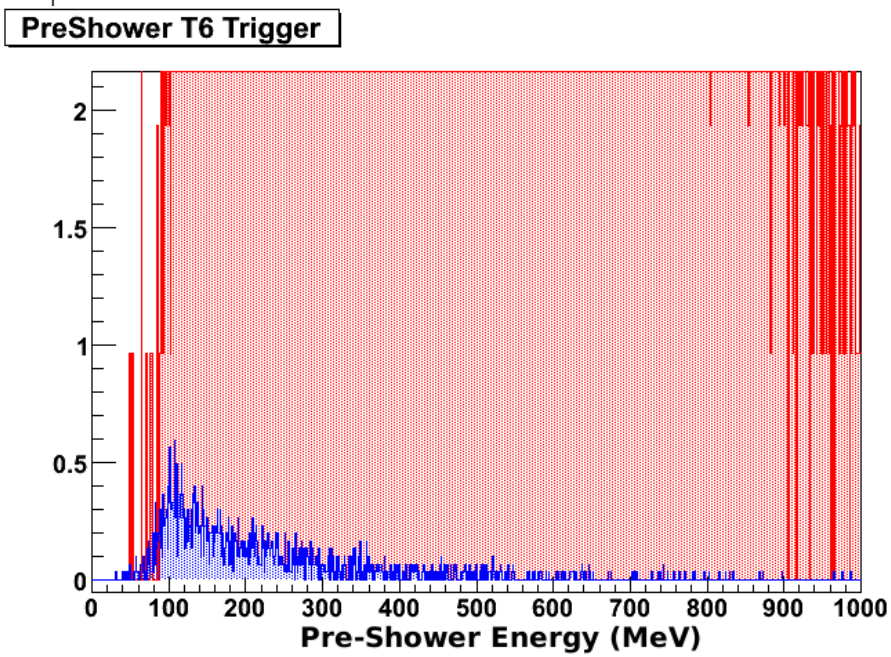


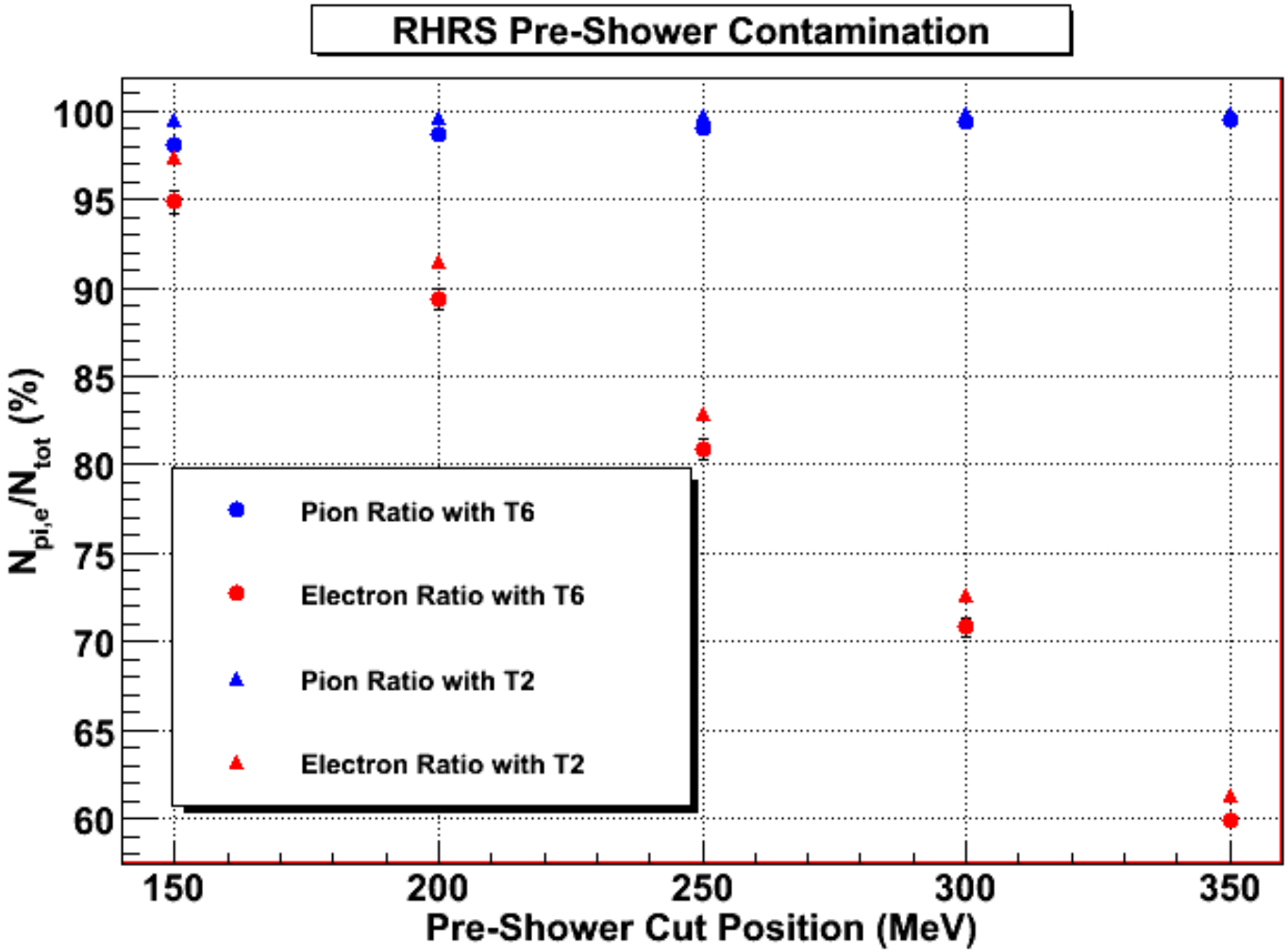
Figure: 4-pass T6 electron(red) and pion(blue) pre-shower energy. Zoomed in to see pion energy. These plots are normalized to total events, (red events + blue events)

Defining Contamination

- pion rejection efficiency $= 1 - \frac{N_\pi}{N_{tot}}$
- electron efficiency $= \frac{N_e}{N_{tot}}$
- $N_{tot} = N_\pi + N_e$ (blue events + red events)
- N_π pion (blue) events that pass the pre-shower cut
- N_e electron (red) events that pass the pre-shower cut

RHRS Contamination in Pre-Shower

Pre-shower cut of 250 MeV seems to be the best



For Next week

- Finish Pre-Shower cut study for beam line side
- Do a similar study for E/p cut