

BigBite Analysis

E/p drop, BB E/p and Pre-Shower Cuts, BB Čerenkov ADC Stability

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1 Stability

- E/p
- Čerenkov Mean ADC Value

2 PID Cuts

- Definition
- Pre-Shower Results
- E/p Results
- Energy PID Cut

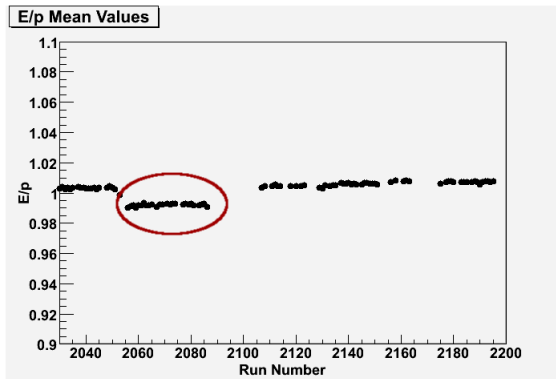
3 What's Next

E/p Stability

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

No energy or HV difference seen before drop to drop

Energy increased 3 MeV and BB HV changed from E/p dropped region back to good E/p region



4-Pass RHRs-Side ADCs

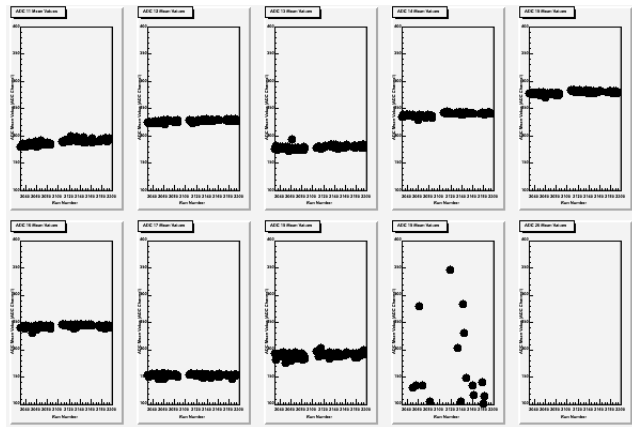


Figure: 4pass ^3He , $15\mu\text{A}$ RHRs-Side mean ADC stability.

4-Pass Beam-Side ADCs

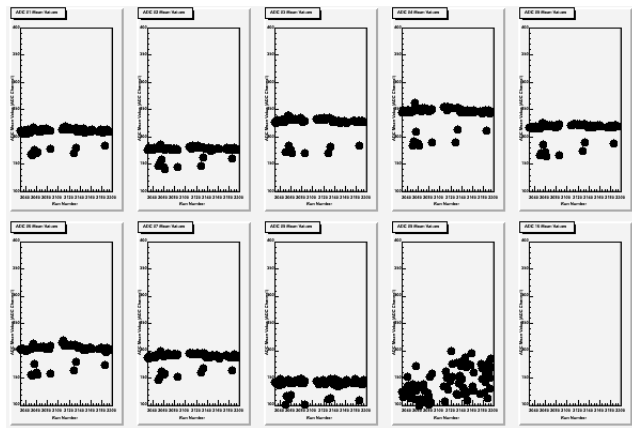


Figure: 4pass ^3He , $15\mu\text{A}$ Beam-Side mean ADC stability.

ADC Pedestal Shifts

run **2051** (bad run)

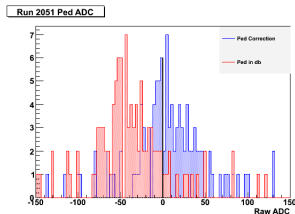


Figure: Red histogram was current corrected ADC pedestal in DB. Blue histogram is newly corrected pedestal just added to DB (see 01/07/2011 talk).

run **2053** (good run)

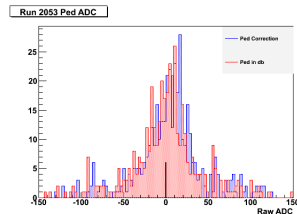


Figure: Red histogram was current corrected ADC pedestal in DB. Blue histogram is newly corrected pedestal just added to DB (see 01/07/2011 talk).

PID Definition

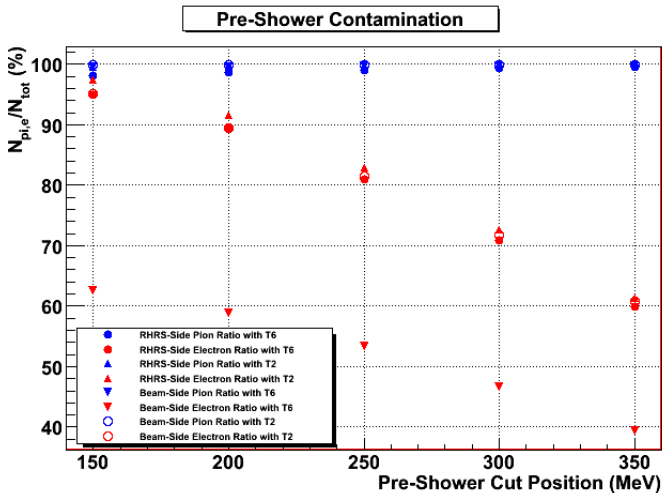
- **Electrons** were selected in the Čerenkov using the following cuts:
 - Events fall +/- 25ns from TDC peak
 - Events have an ADC greater than 3 photo-electrons
 - Events have a track passing through Čerenkov mirror location
- **Pions** were selected in the Čerenkov using the following cuts:
 - Events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

Efficiency Definition

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

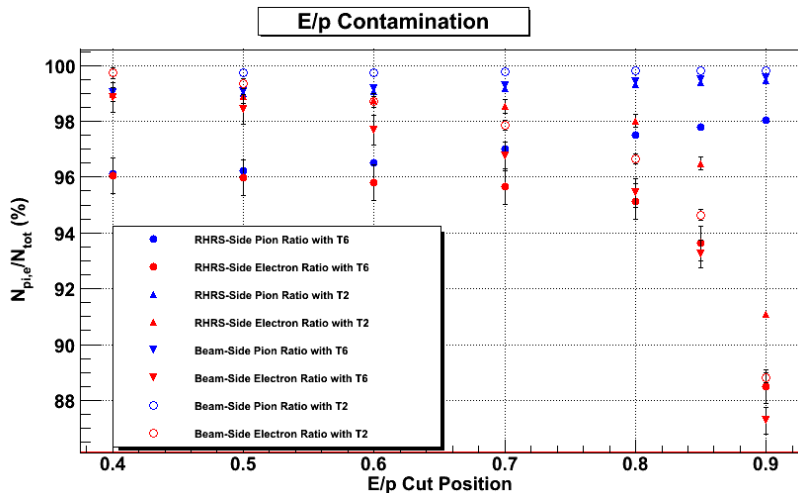
Pre-Shower Efficiencies

Pre-shower cut of 200 MeV seems to be the best



E/p Efficiencies

E/p cut of 0.8 seems to be the best



Energy PID Cut

Electron Energy Cut:

$0.5 * BB.ts.ps.e > 200$ &&

$Abs[(0.5 * BB.ts.ps.e + BB.ts.sh.e) / (1000.0 * skim.p[0]) - 1.0] < 0.2$

With out Čerenkov Cuts:

With Čerenkov Cuts:

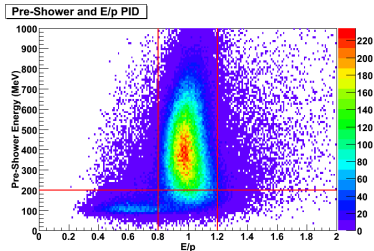


Figure: 4-pass run 2024 E/p and Pre-Shower electron PID cut with out Čerenkov cut

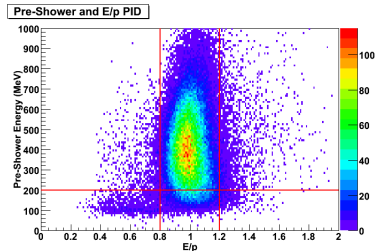


Figure: 4-pass run 2024 E/p and Pre-Shower electron PID cut with Čerenkov cut

For Next week

- Look at MWDC Stability over 4-pass runs
- Construct asymmetry code
- Begin looking at 1pass data quality