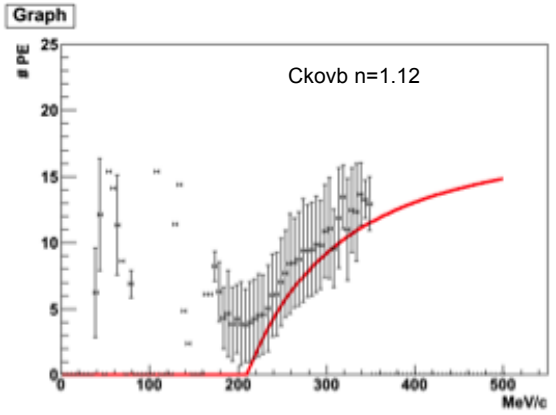
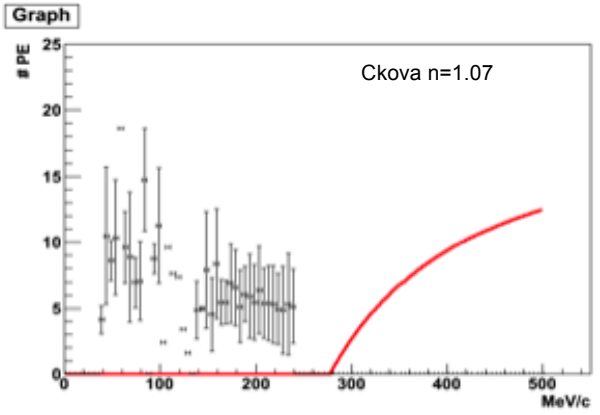
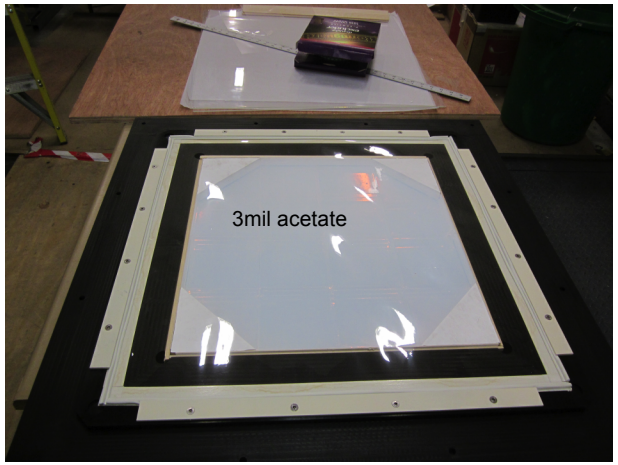
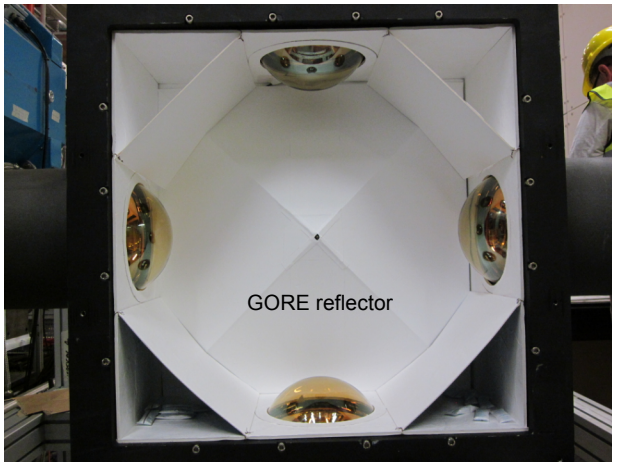
CKOV Report for CM33

- Light below threshold observed in CKOVa,b.
- June 2011 1) replaced 2mm Schott Glass window with 5mil Acetate.
  2) replace Tyvek with GORE Reflector Panels in CKOVb.
- Dec 2011 Special run to study changes.





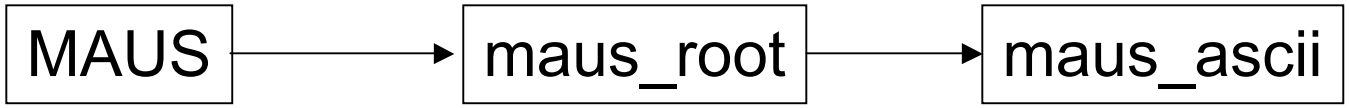




December runs under study (yes Fortran opens!)

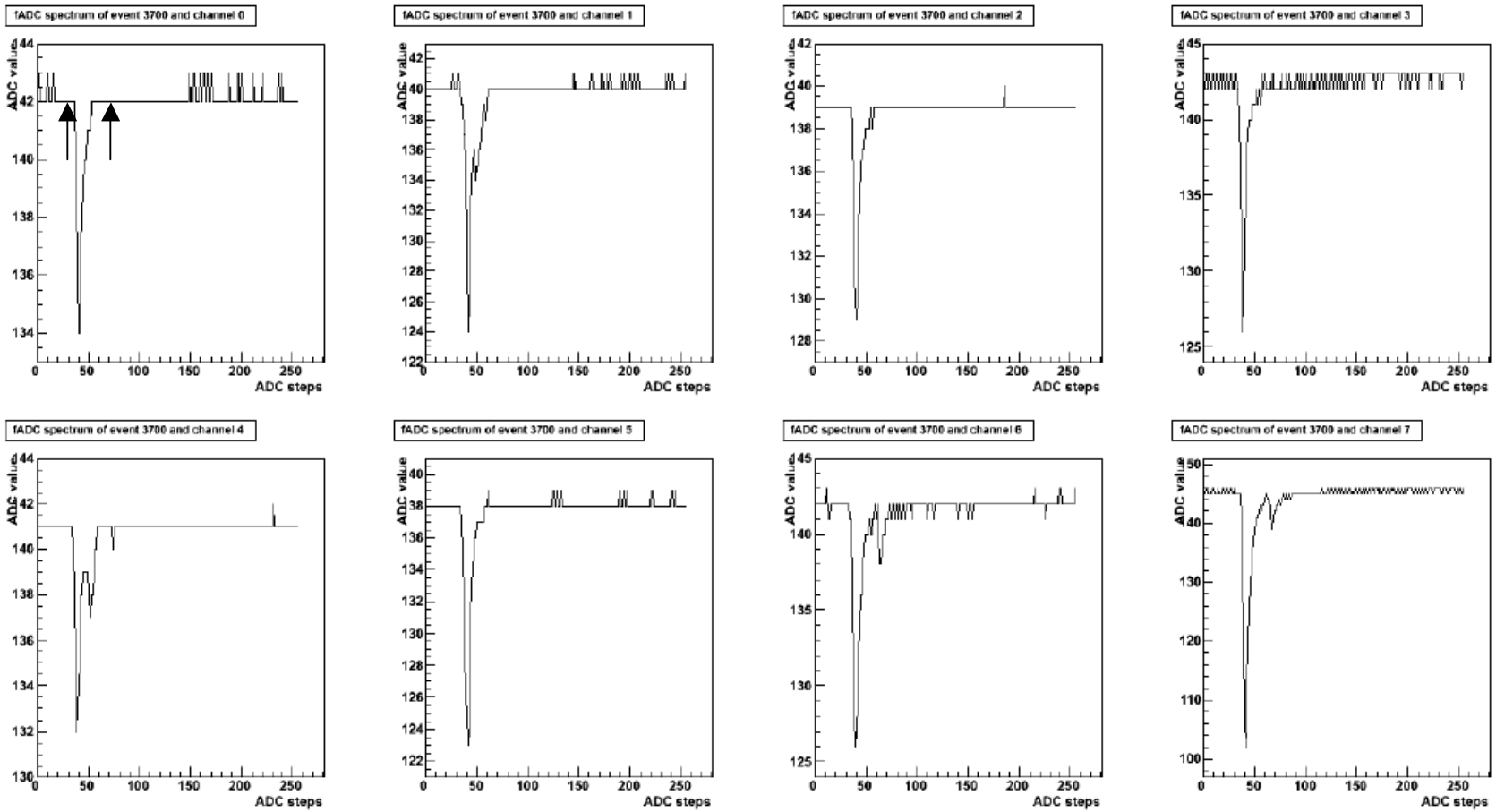
Undergrad Neetish Pradhan - MAUS/Python/C++ code development

```
      Open (unit=10, file='03262more.txt', status='old')  !  p=148   pions    2723 pulses
c     Open (unit=10, file='03263more.txt', status='old')  !  p=148   pions    1327 pulses

c     Open (unit=10, file='03380more.txt', status='old')  !  p=222   pions    ~1000 pulses

c     Open (unit=10, file='03401more.txt', status='old')  !  p=237   pi/mu    543 pulses
c     Open (unit=10, file='03406more.txt', status='old')  !  p=237  pi/mu   53 pulses

c     Open (unit=10, file='03419more.txt', status='old')  !  p=188   pi/mu    3263 pulses
c     Open (unit=10, file='03420more.txt', status='old')  !  p=188   pi/mu    488 pulses

c     Open (unit=10, file='03423more.txt', status='old')  !  p=343   pi/mu    279 pulses
c     Open (unit=10, file='03424more.txt', status='old')  !  p=343   pi/mu    233 pulses

c     Open (unit=10, file='03492more.txt', status='old')  !  p = 148 positrons  4099 pulses

c     Open (unit=10, file='03508more.txt', status='old')  !  p=237   pi/mu    88 pulses
```



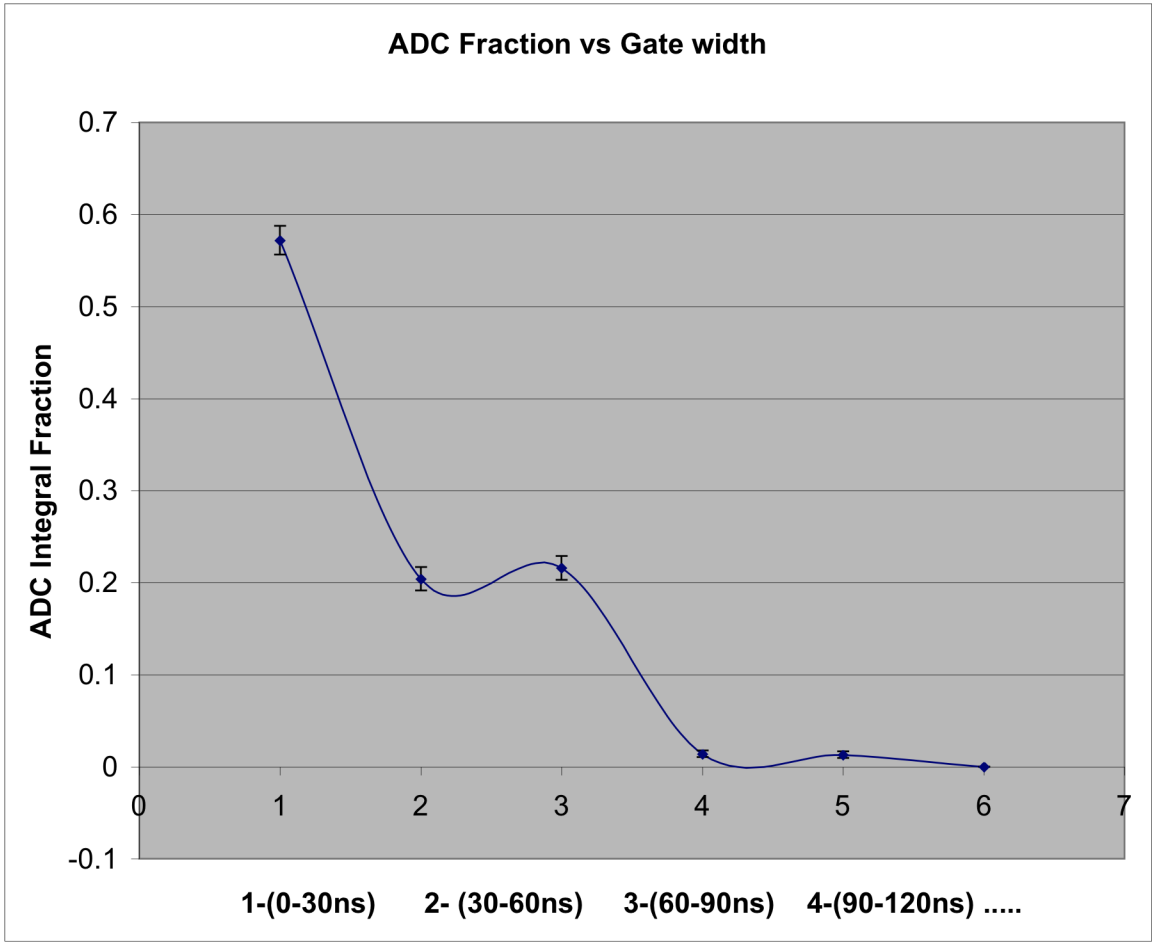
CKOV reco by Gene Kafka

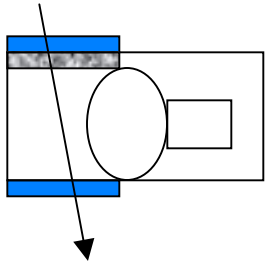
- Map_Py_Ckov (by Gene) integrates charge in prompt fadc peak (30-80cnts) ?
- Source of secondary pulsing unknown? Under study. +30cnts(60ns) after primary peak.



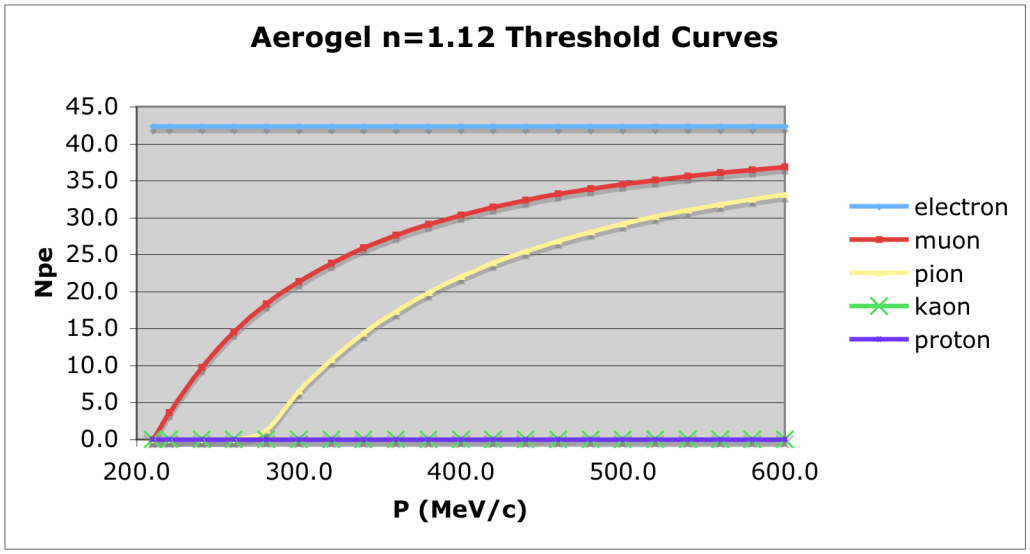
CKOV - fADC Timing Study

- A Ckov 8” pmt + aerogel panel set up to collect light from cosmic muons.
- Tube in close proximity to aerogel so late photon bouncing eliminated.
- Signals sent in to a 2249 Camac ADC w integration gate (0-30ns) (30-60ns)……
- Excess signal picked up 60-90ns! Potentially a sign of after-pulsing in the aged pmt.



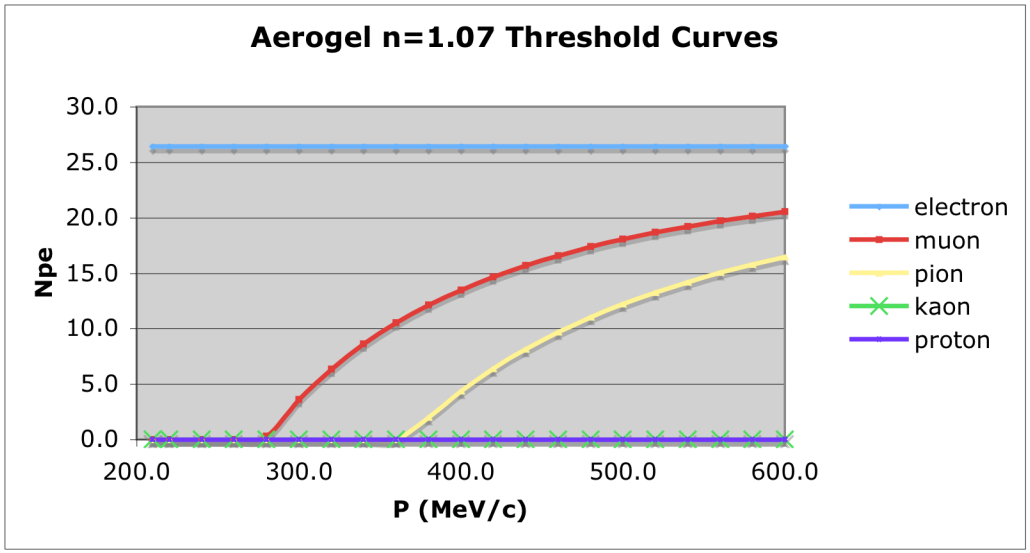


CKOV - Curves



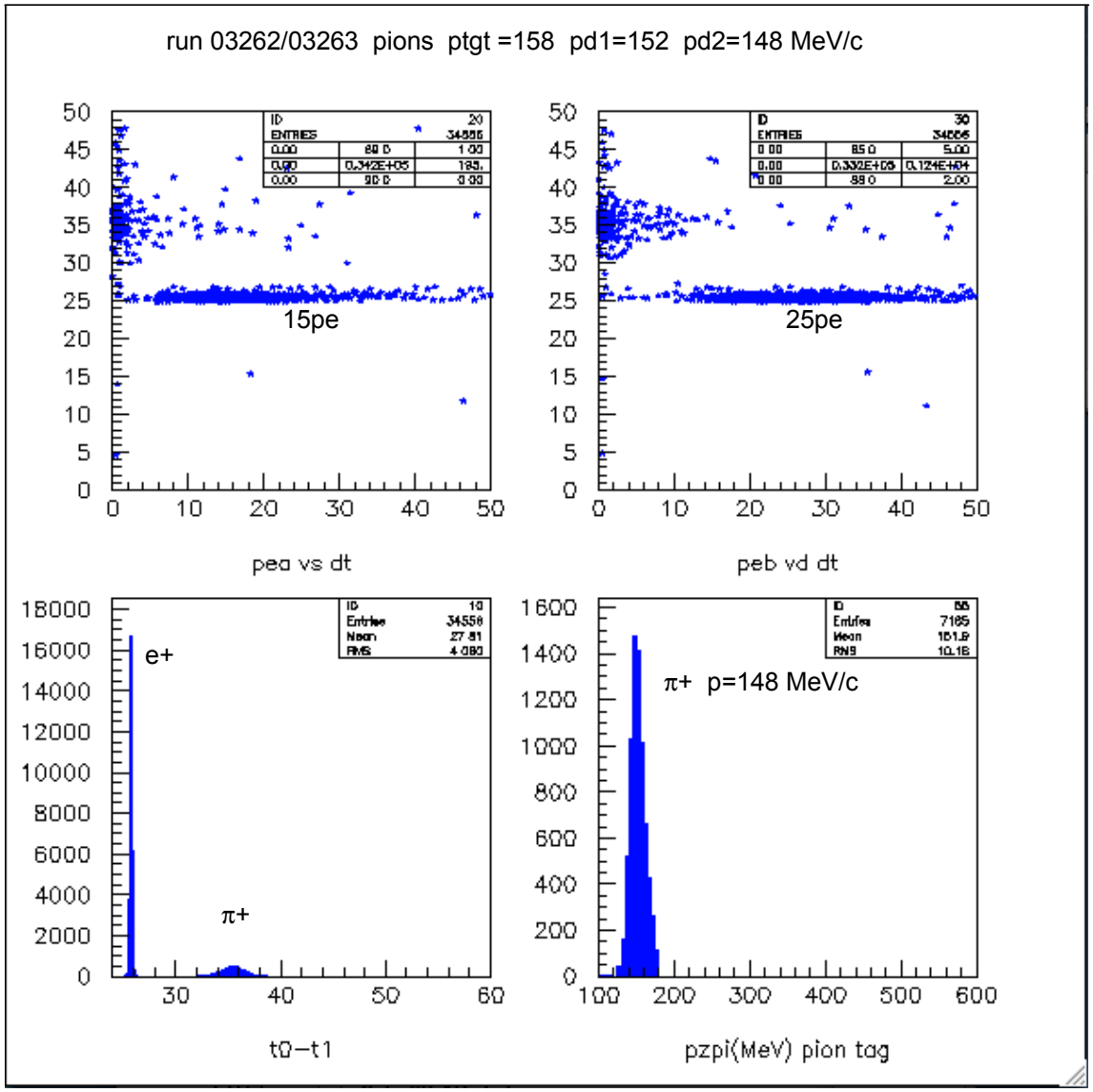
MOMENTUM THESHOLDS

pth_mu_b = 210.2 MeV
pth_pi_a = 278.5 MeV

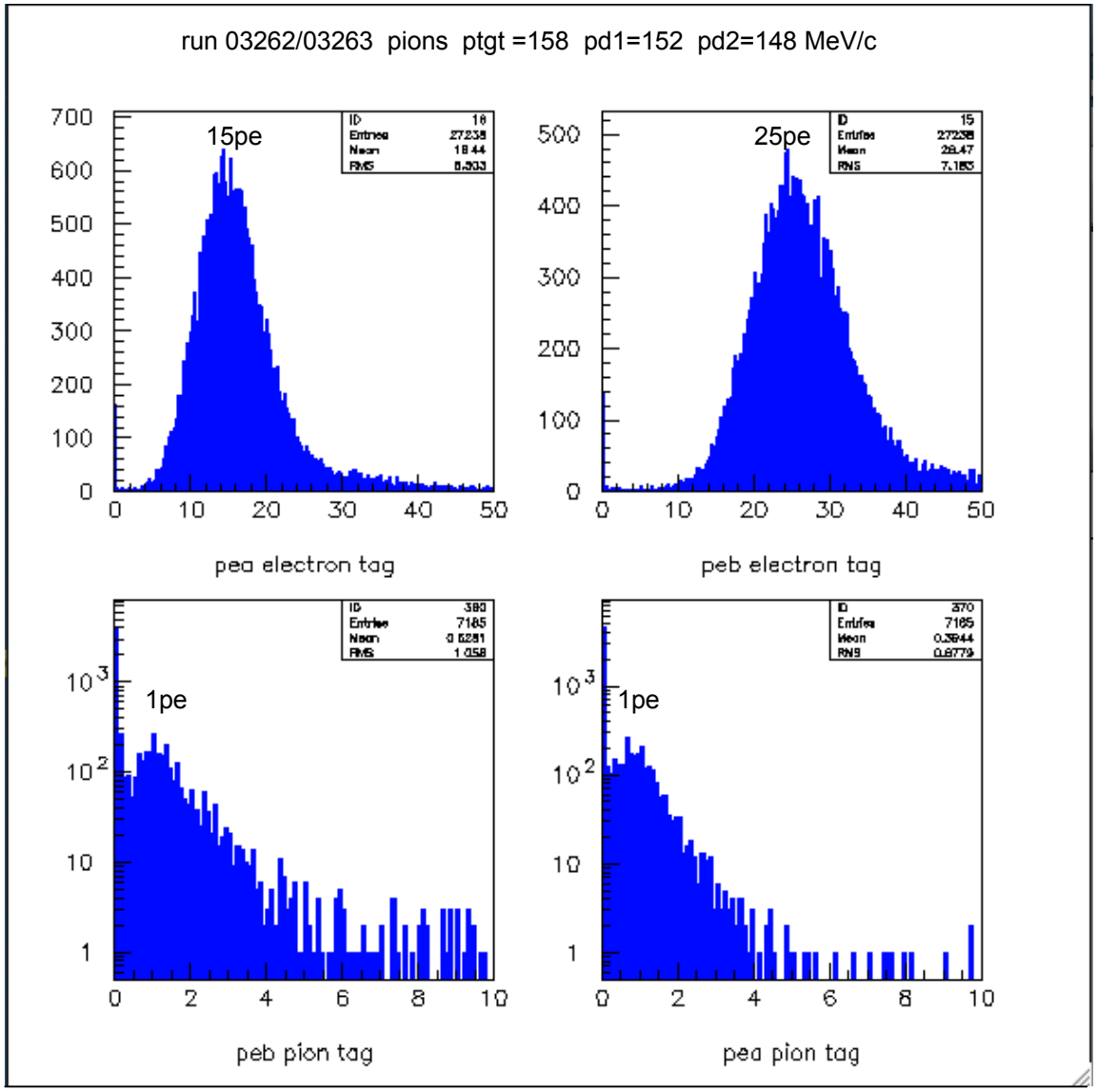


pth_mu_b = 275.6 MeV
pth_pi_a = 365.2 MeV

CKOV Studies - 148 MeV/c Positron/pion data

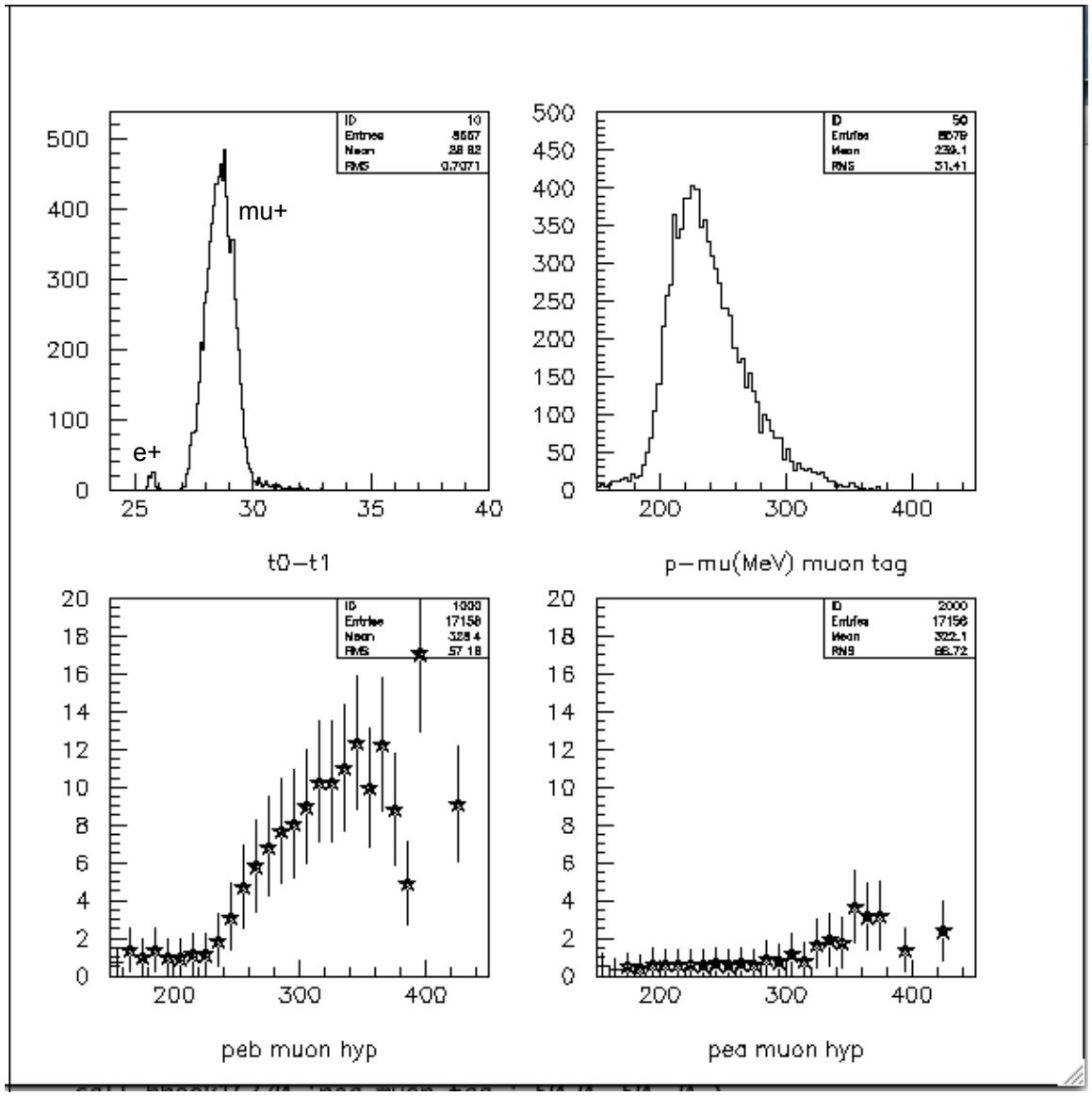


CKOV Studies - 148 MeV/c Positron/pion data



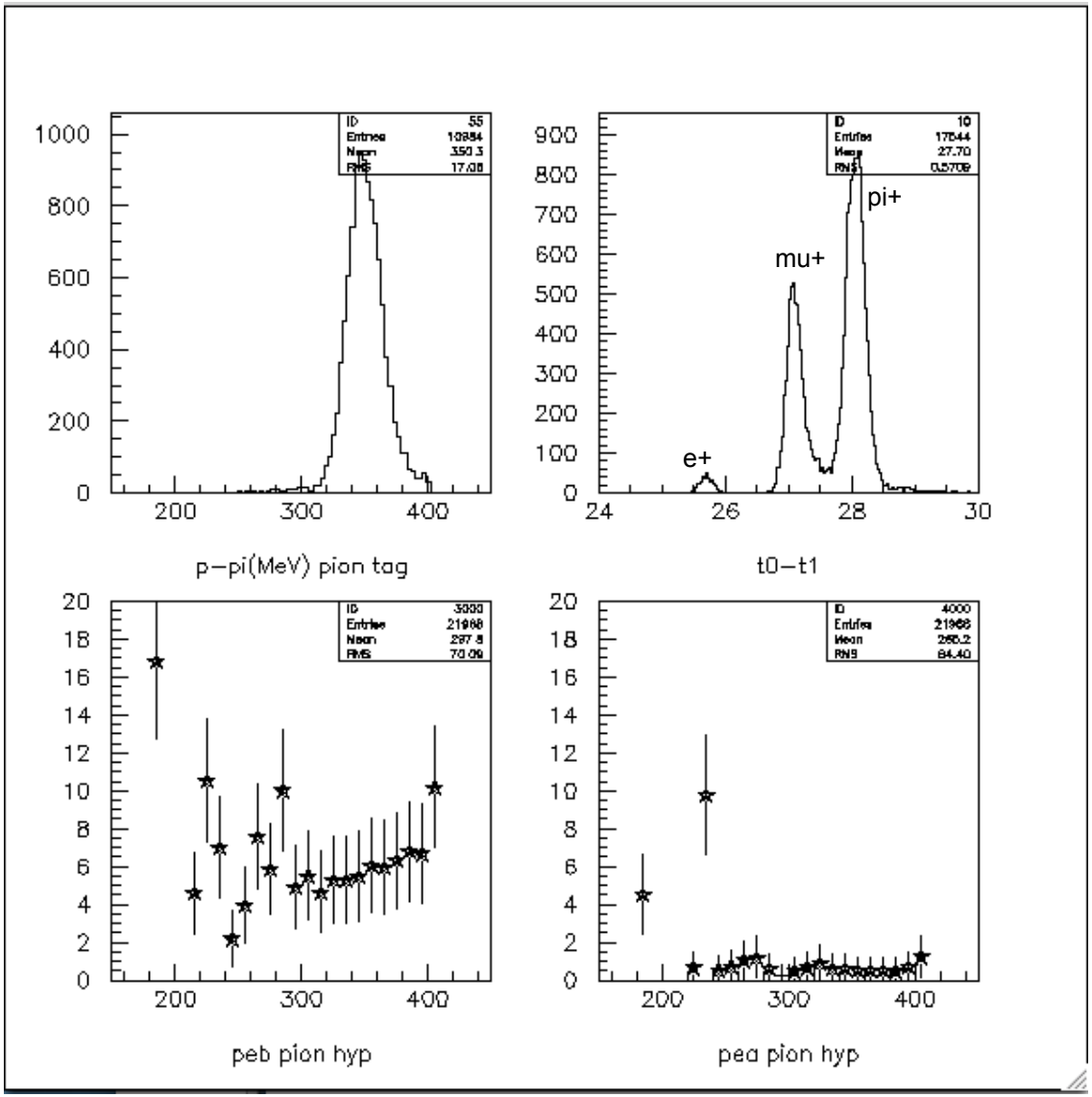
CKOV Studies - 237 MeV/c pi/mu data

run 03406/03407 pi/mu ptgt =408 pd1=405 pd2=237 MeV/c



CKOV Studies - 343 MeV/c pi/mu data

run 03423/03424 pi/mu ptgt =347 pd1=344 pd2=341 MeV/c



Summary

- December run has provided very useful data for evaluating ckovs.
- Acetate windows have reduced background light to ~1pe level.
- GORE reflector in Ckovb produces a factor of x2 in light yield.
- Ckova should be upgraded in the near future with GORE.
- Threshold turn-on curves qualitatively correct. Seem delayed by10% ? This is under study. The momentum calculation is very crude? Or some binning problem.
- Gene working on ckov multi-peak routines and event cleaning.
- Working on a CKOV pid id class.
- Maurizio mentioned a paper on pion contamination in the low energy beamline w with TOF/KL + Ckov?. Which runs?