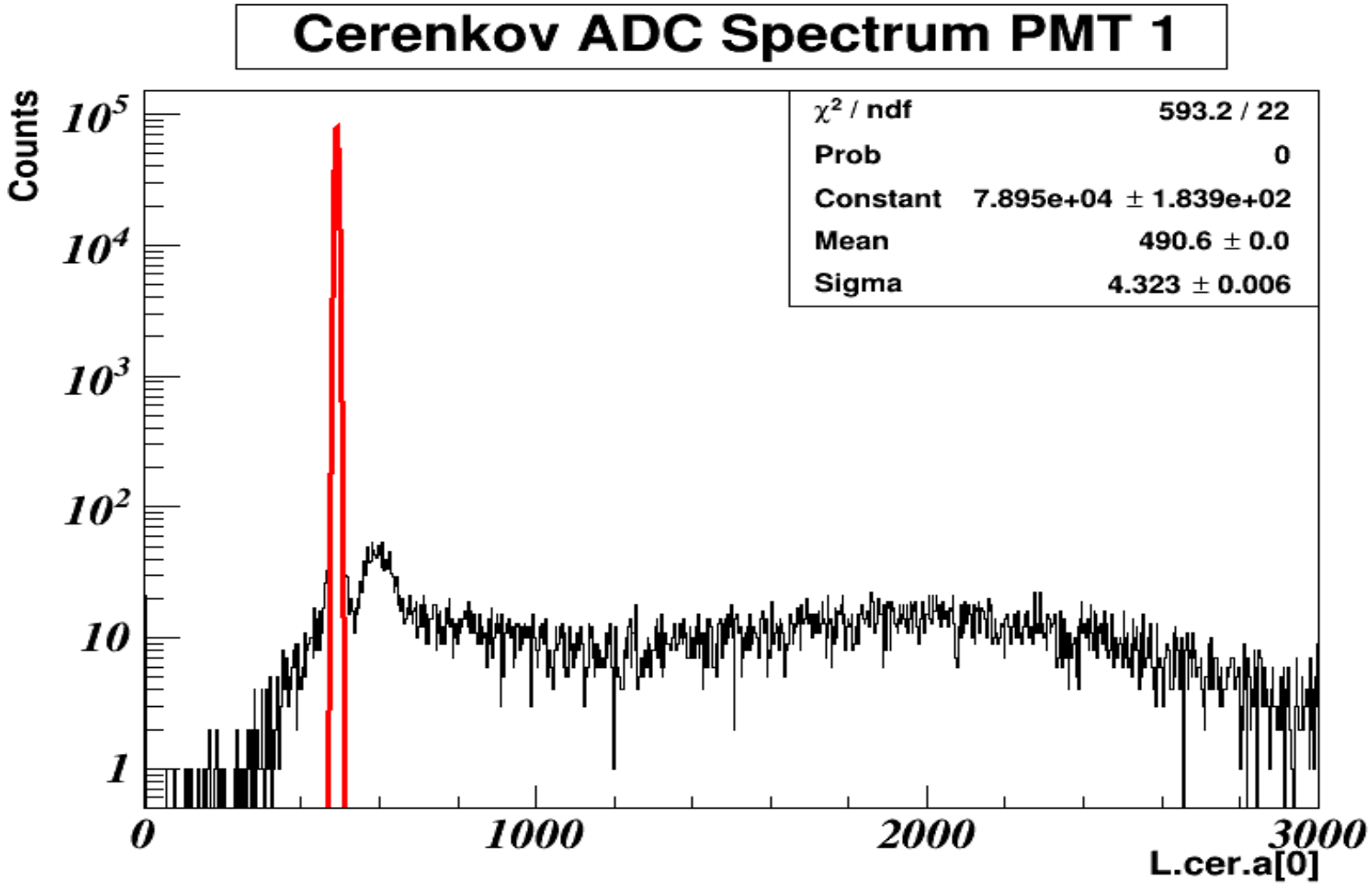
PID Study

Hongxia Dai

Apr 11, 2017

Cerenkov Calibration(Left Arm)

- Align pedestal to 0



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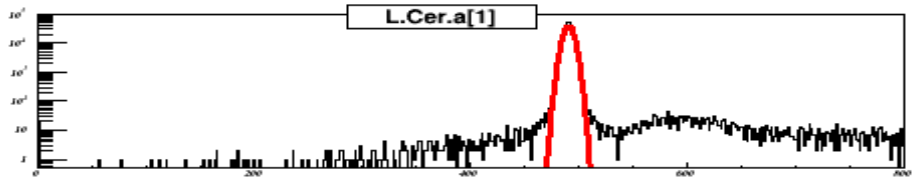
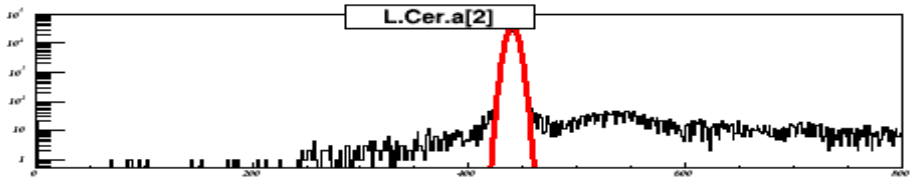
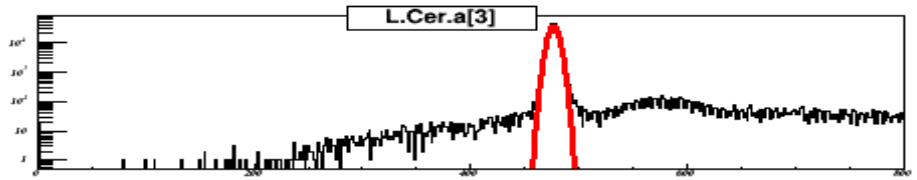
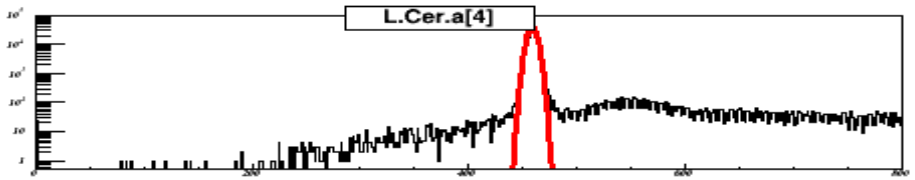
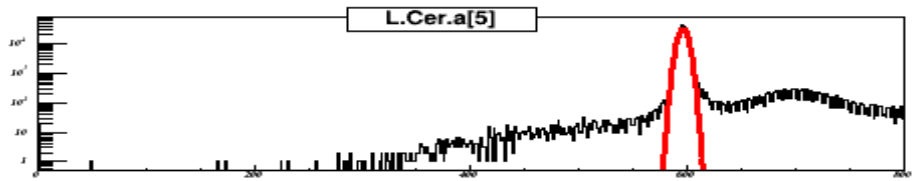
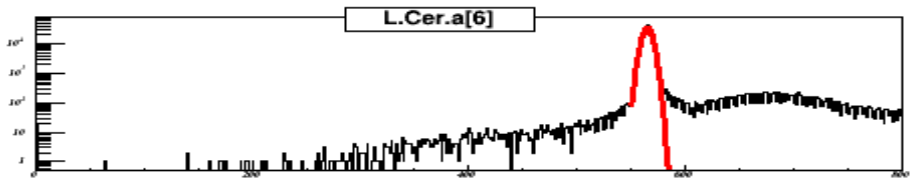


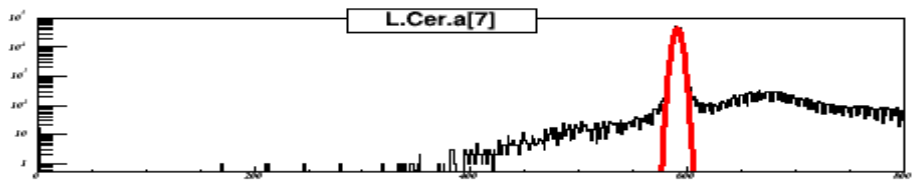


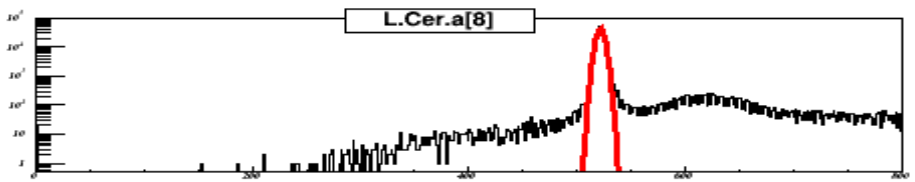


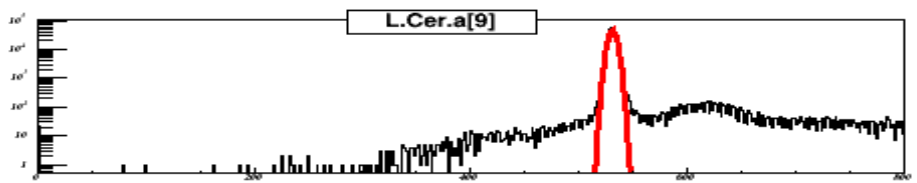


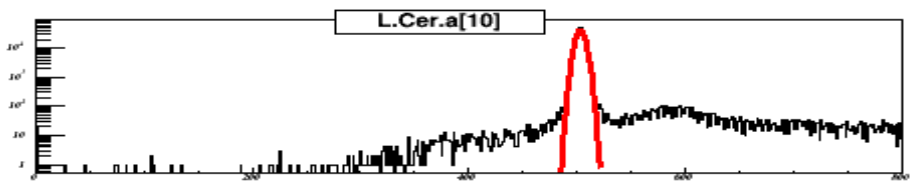












Cerenkov Calibration(Left Arm)

- Check the pedestal values in DataBase

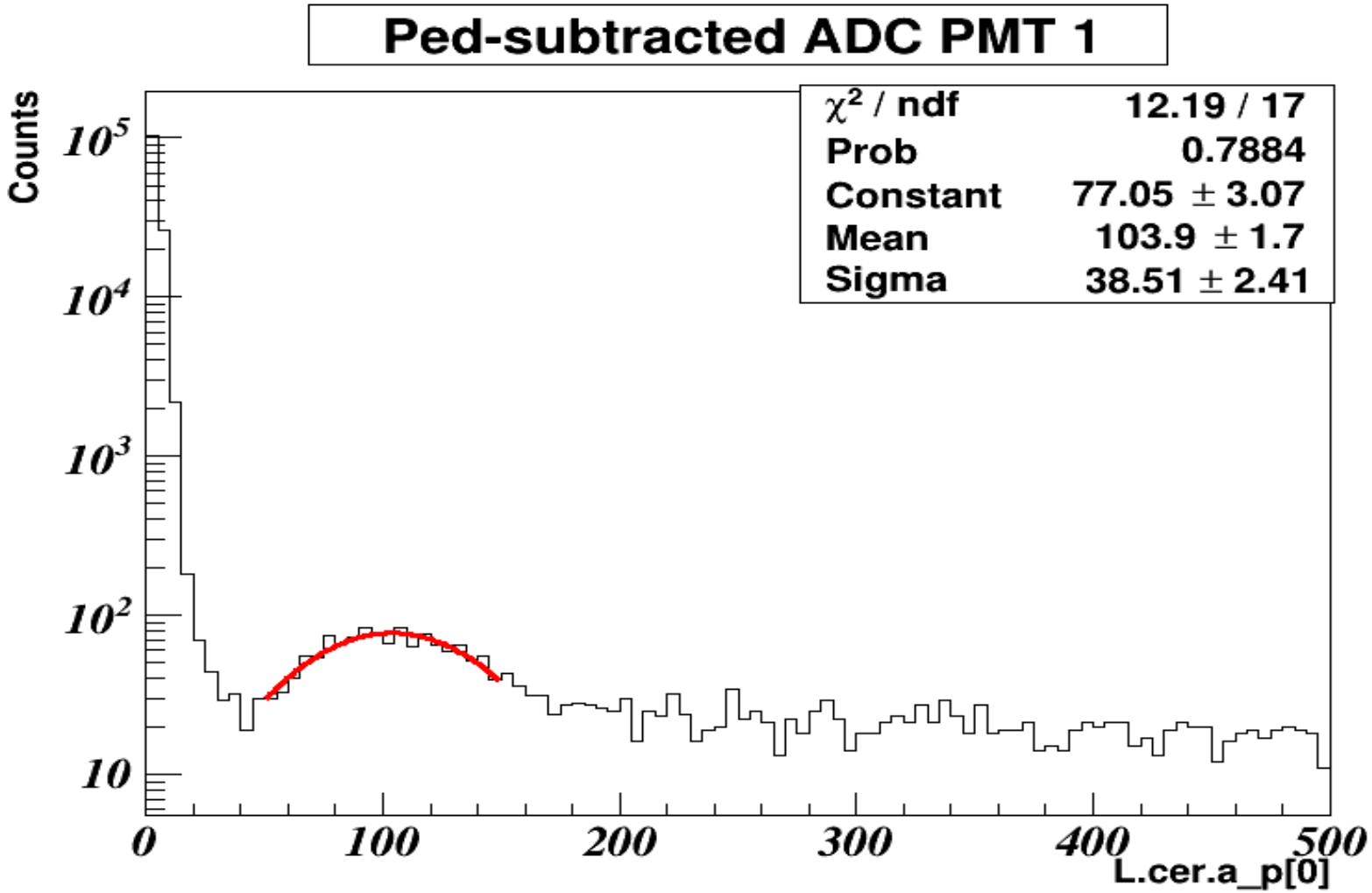
PMT	1	2	3	4	5
Ped Value	489.4	439.3	475.8	457.5	594.7
PMT	**6**	**7**	**8**	**9**	**10**
Ped Value	563.6	589.4	520.8	529.7	501.6

- New pedestal values

PMT	1	2	3	4	5
Ped Value	490.6	440.5	476.8	458.9	596.1
PMT	**6**	**7**	**8**	**9**	**10**
Ped Value	565.0	591.0	521.8	531.1	503.4

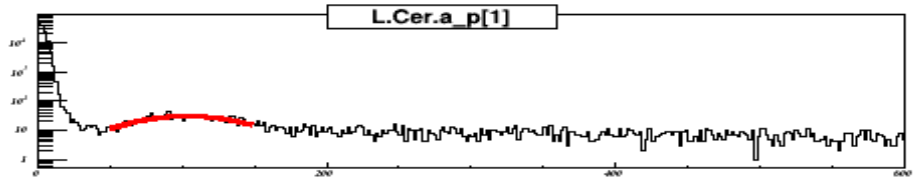
Cerenkov Calibration(Left Arm)

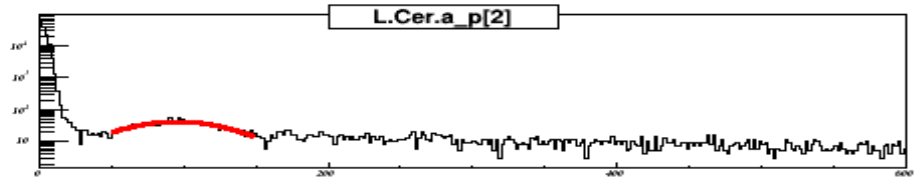
- Align Single Photon Electron Peak to 100

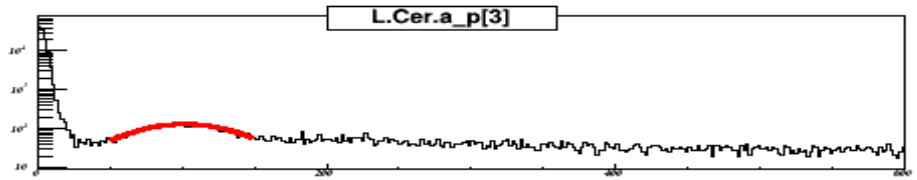


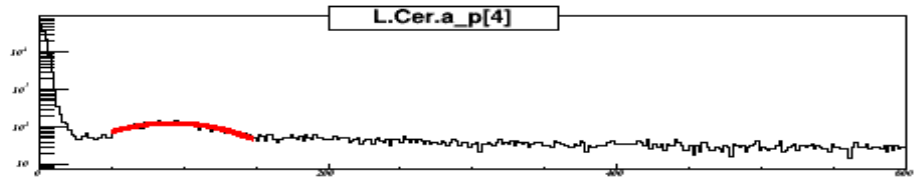
Cerenkov Calibration(Left Arm)

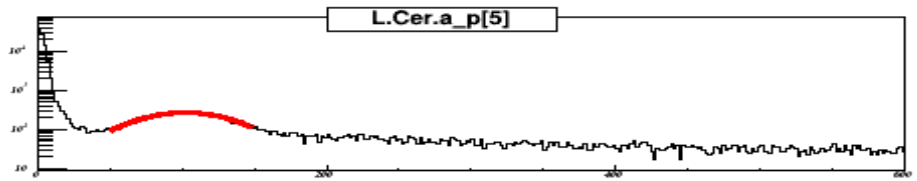
- Align Single Photon Electron Peak to 100

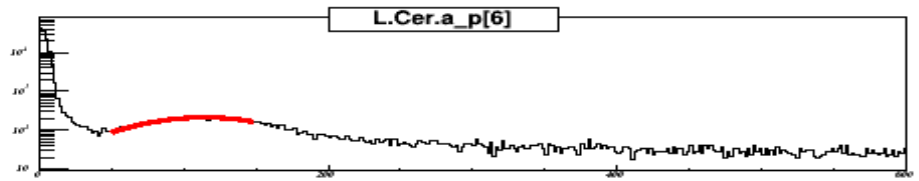


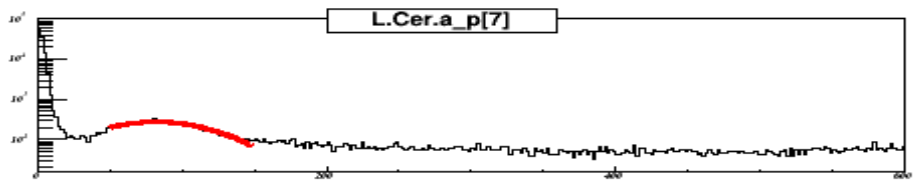


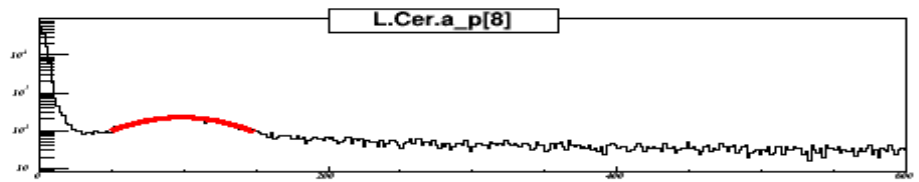


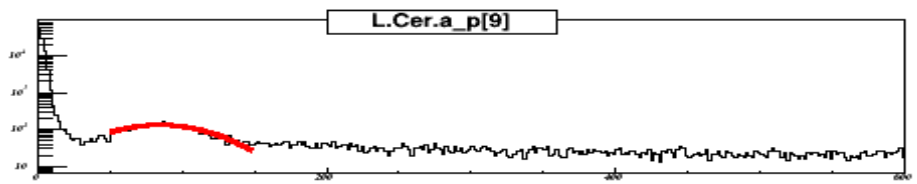


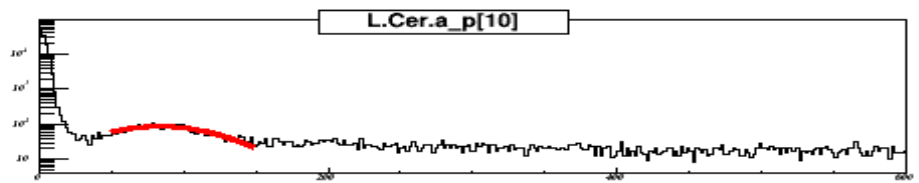












Cerenkov Calibration(Left Arm)

- $C_i = \frac{100}{M_i^{SPE} - M_i^{PED}}$
- Amplitude transformation coefficients in DB

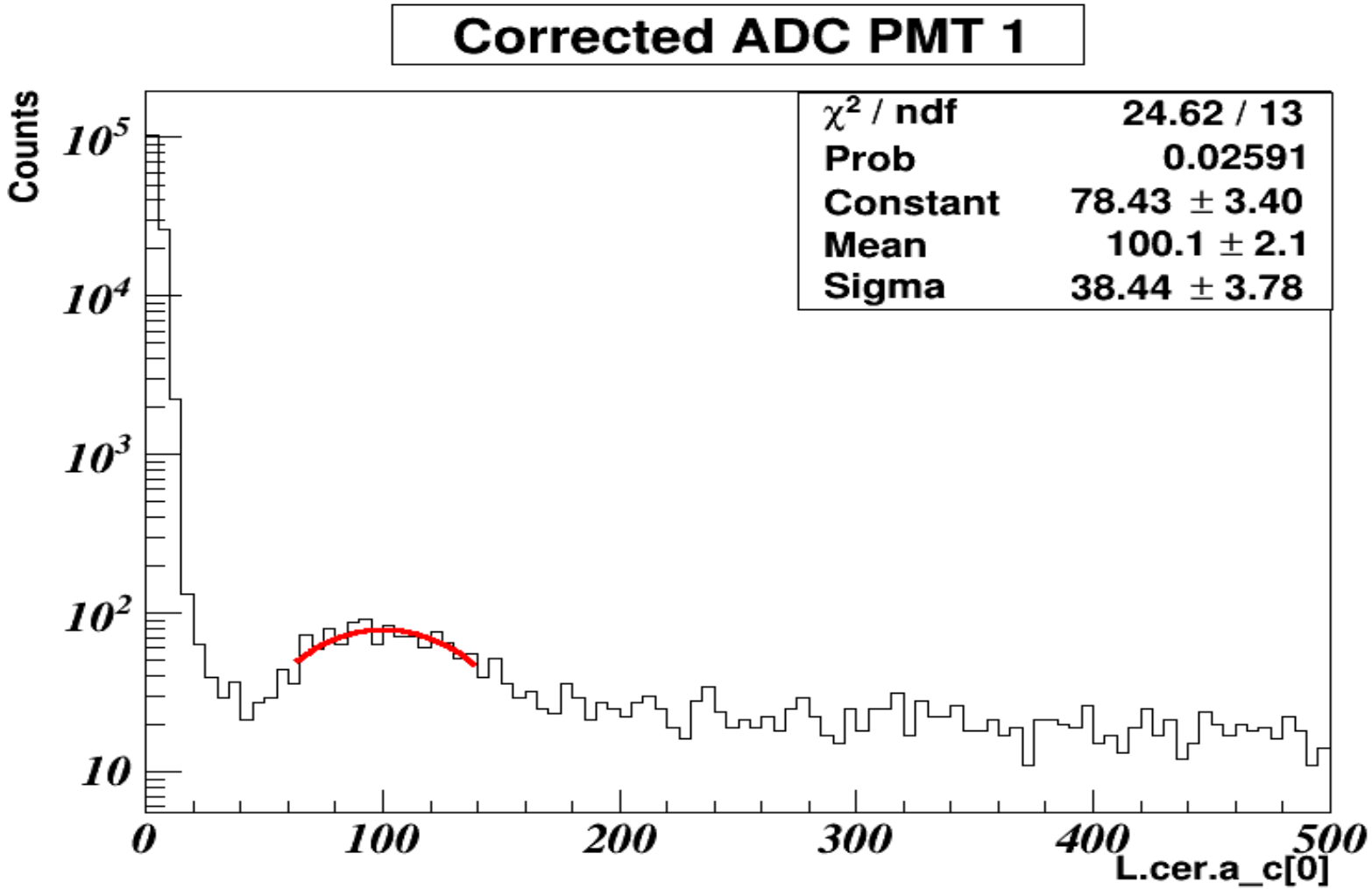
PMT	1	2	3	4	5
Coeff	1.023	1.112	1.052	1.092	1.001
PMT	**6**	**7**	**8**	**9**	**10**
Coeff	0.931	1.157	1.062	1.116	1.131

- New coefficients

PMT	1	2	3	4	5
Coeff	0.956	1.048	0.984	1.086	0.978
PMT	**6**	**7**	**8**	**9**	**10**
Coeff	0.875	1.219	1.105	1.180	1.196

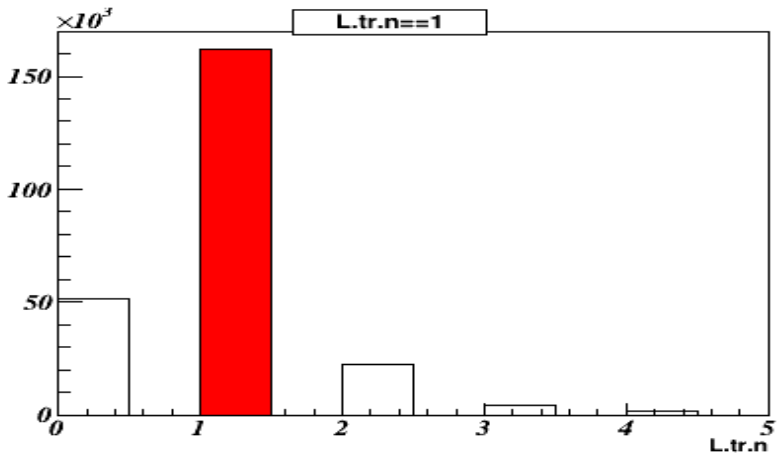
Cerenkov Calibration(Left Arm)

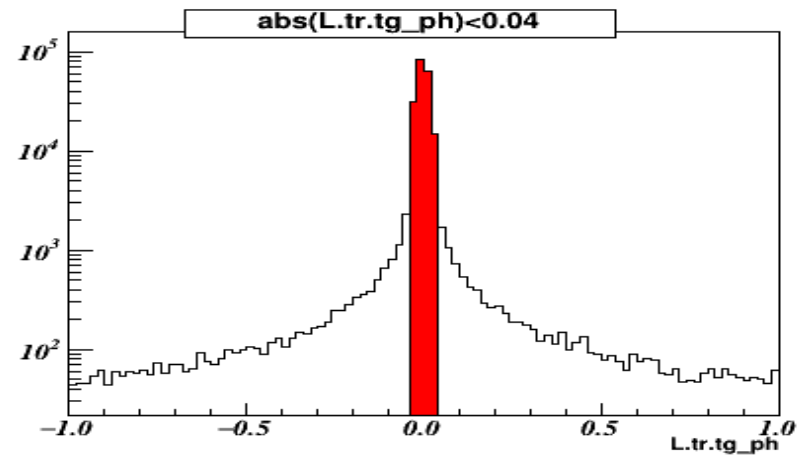
- Corrected ADC

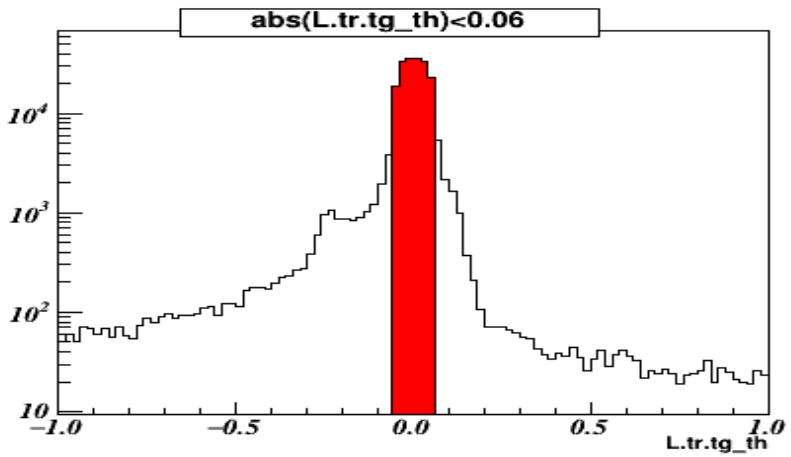


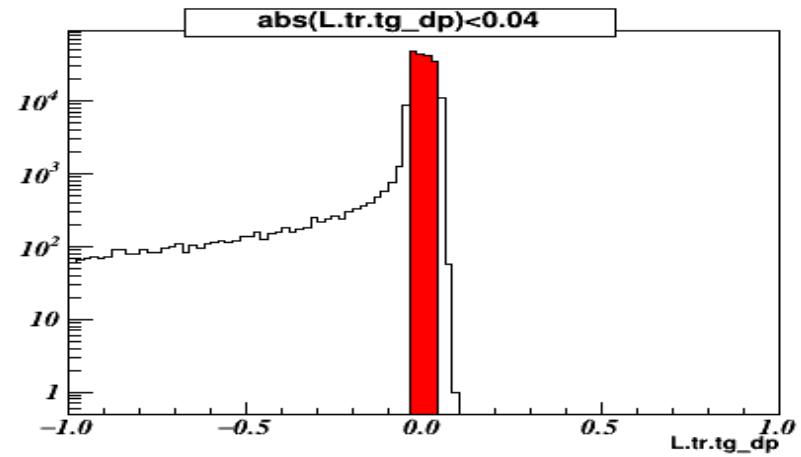
PID Study

- Run 811(Ar, Production, Kin2, 18uA, 60min)
  - Beam Energy=2.2GeV, Leftarm_p=1.716GeV, Leftarm_theta=20
- Good Events Cuts:
  - single trigger on the left (T3 = (S0&&S2) && (GC||PR) [LEFT])
  - track number ==1
  - Acceptance Cuts
    - abs(L.tr.tg_ph)<0.04
    - abs(L.tr.tg_th)<0.06
    - abs(L.tr.tg_dp)<0.04

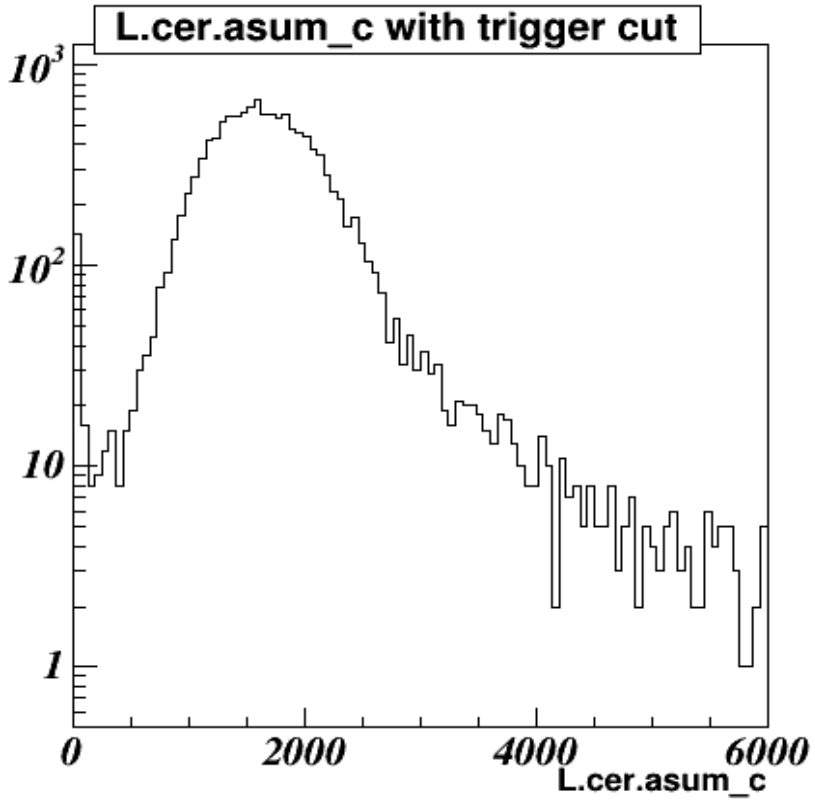

L.tr.n==1
×10³
150
100
50
0
0
1
2
3
4
5
L.tr.n

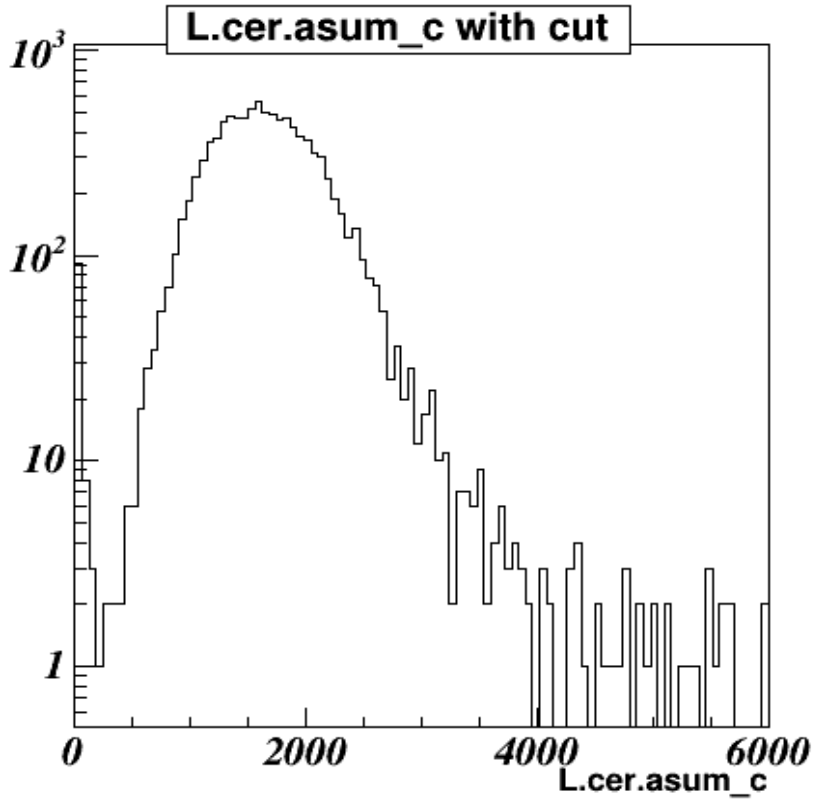

abs(L.tr.tg_ph)<0.04
10⁵
10⁴
10³
10²
−1.0
−0.5
0.0
0.5
1.0
L.tr.tg_ph


abs(L.tr.tg_th)<0.06
10⁴
10³
10²
10
−1.0
−0.5
0.0
0.5
1.0
L.tr.tg_th

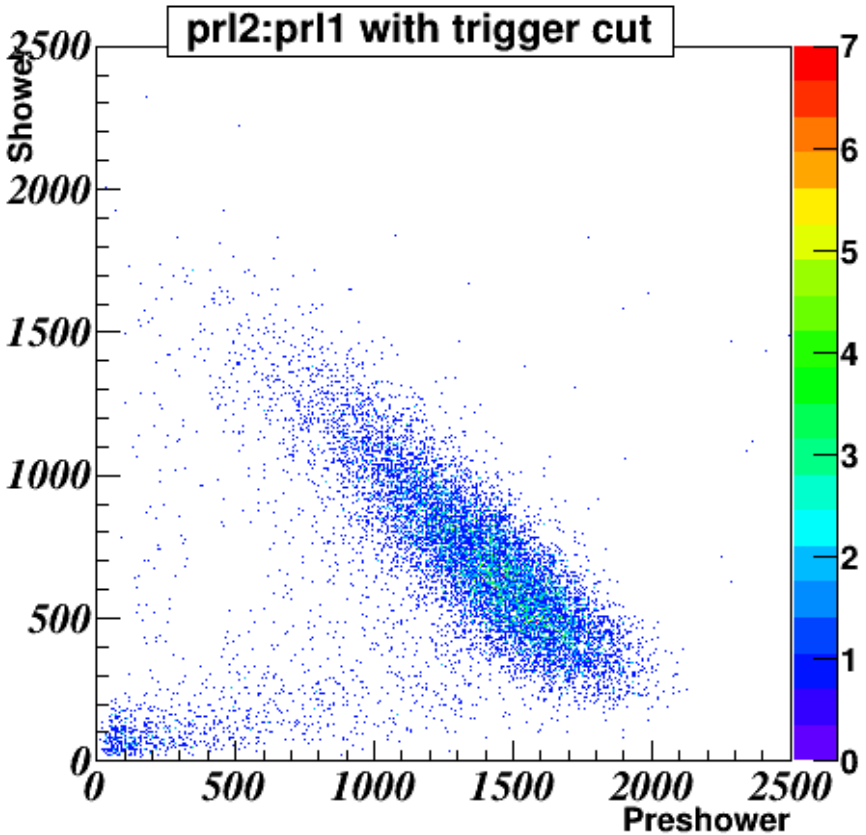

abs(L.tr.tg_dp)<0.04
10⁴
10³
10²
10
1
−1.0
−0.5
0.0
0.5
1.0
L.tr.tg_dp

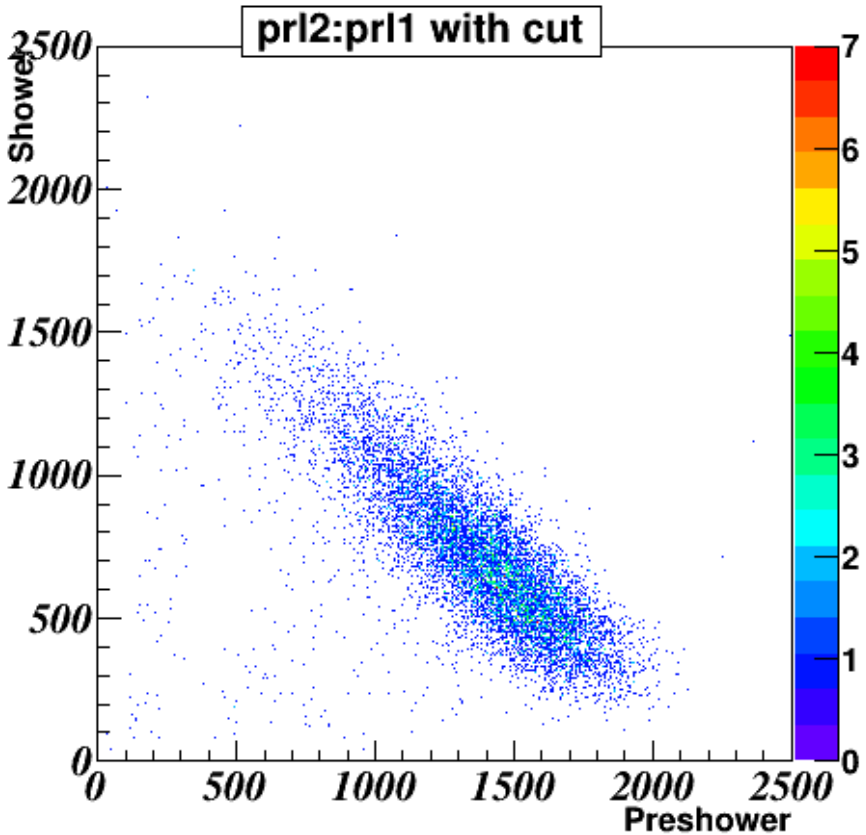
Cerenkov ADC Sum



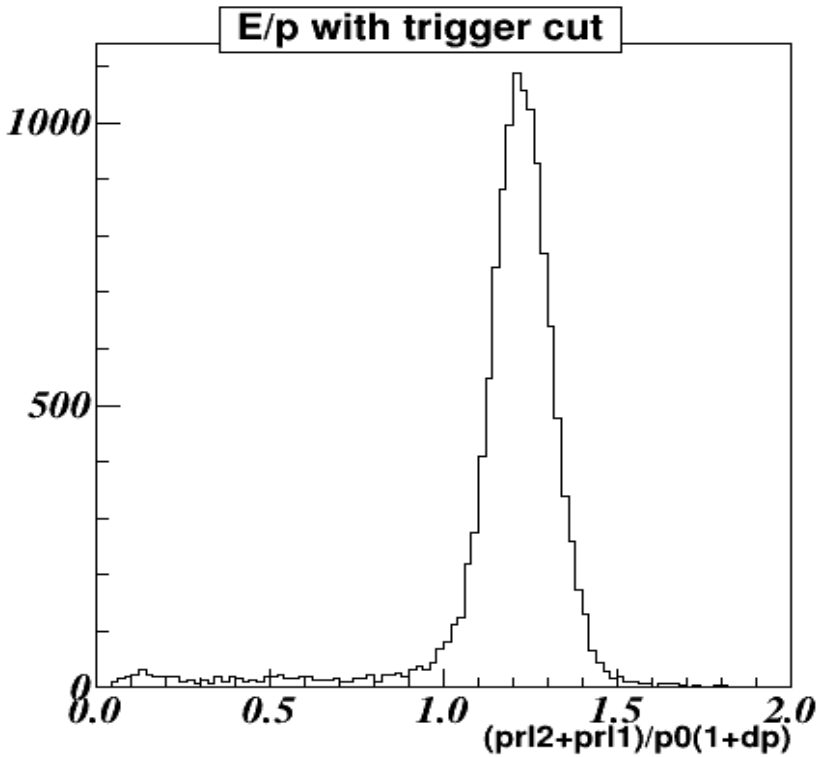


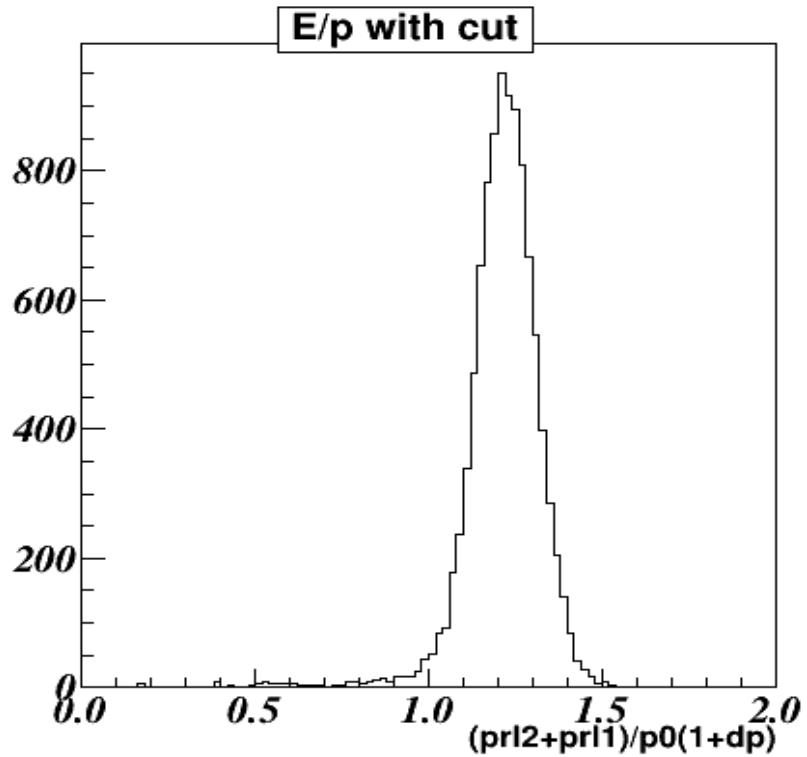
Shower vs. Preshower





Total energy deposit in Preshower and shower(E/p)





Conclusion

- No pion contamination in these runs