

Work Summary

Hongxia Dai

Apr 28, 2017

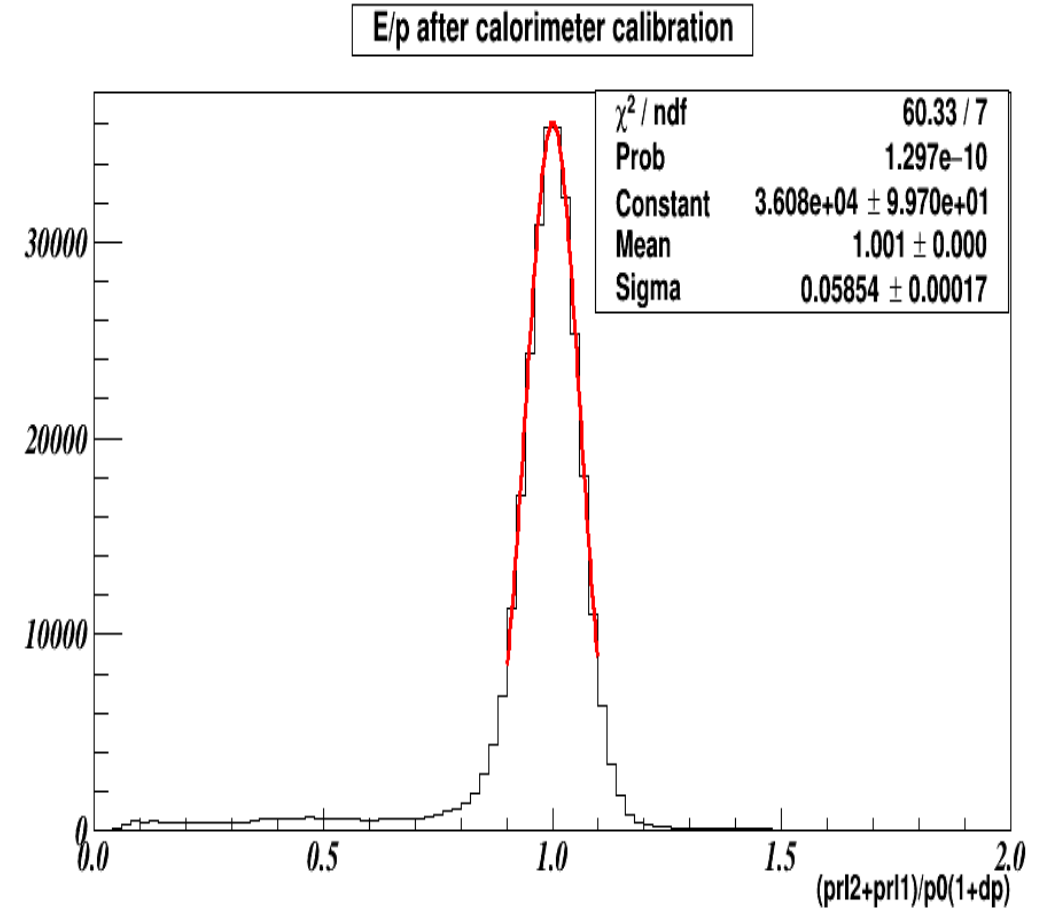
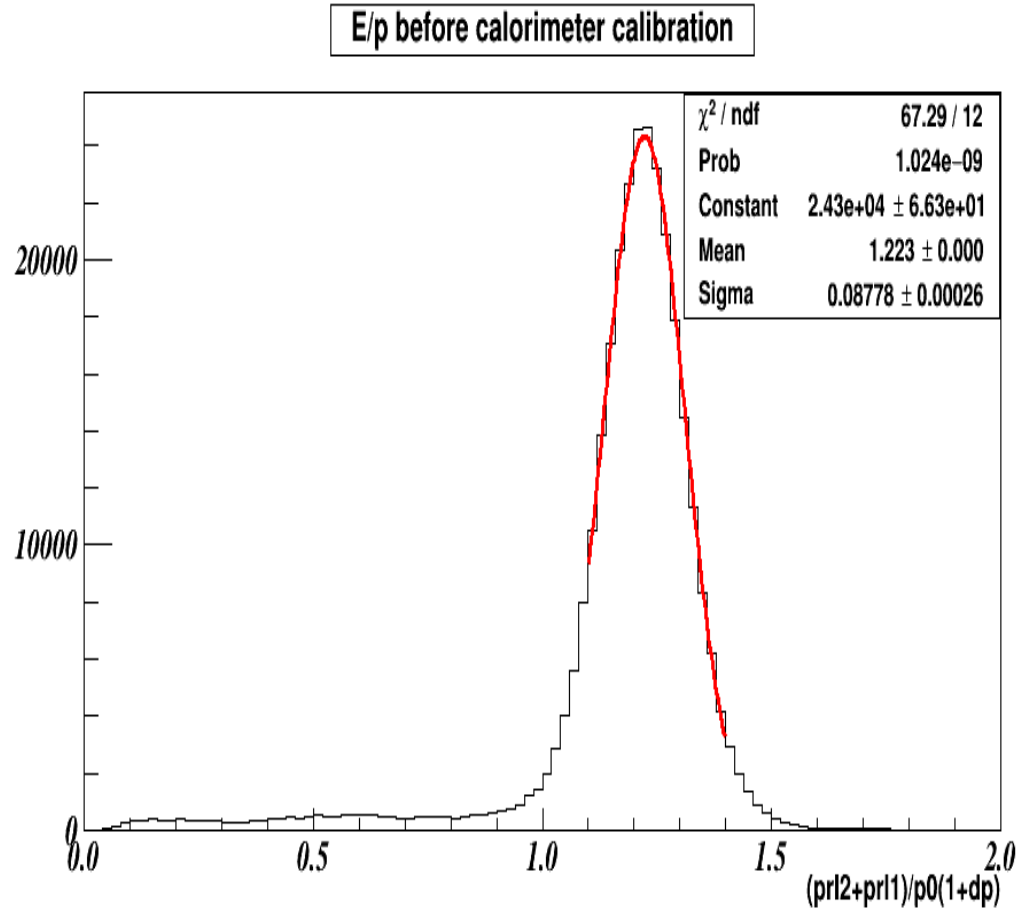
Outline

- Calorimeter Calibration (LHRS)
- VDC Efficiency (LHRS)
- Trigger Efficiency (LHRS)

Calorimeter Calibration

- Calorimeter
 - composed of 2 layers: PreShower(PS) and Shower(SH)
- E/p
 - The ratio of the energy sum deposited in PS and SH to the electron momentum
 - Should be centered at 1 after calibration
- Minimization Method
 - $$\chi^2 = \sum_{i=1}^N \left[\sum_j C_j * (ADC_j^i - Ped_j) + \sum_k C_k * (ADC_k^i - Ped_k) - P_{kin}^i \right]^2$$
 - i : i th event, j : j th block in PS, k : k th block in SH,
 - P_{kin}^i : electron momentum of the i th event

Results



Single track cut , trigger cut, acceptance cuts and PID cuts are applied

VDC Efficiency

- How to define VDC efficiency?

- fraction of good events with a successful track reconstruction

- $Eff = \frac{\# \text{ single track events}}{\# \text{ total sample events}}$

- Select good electrons

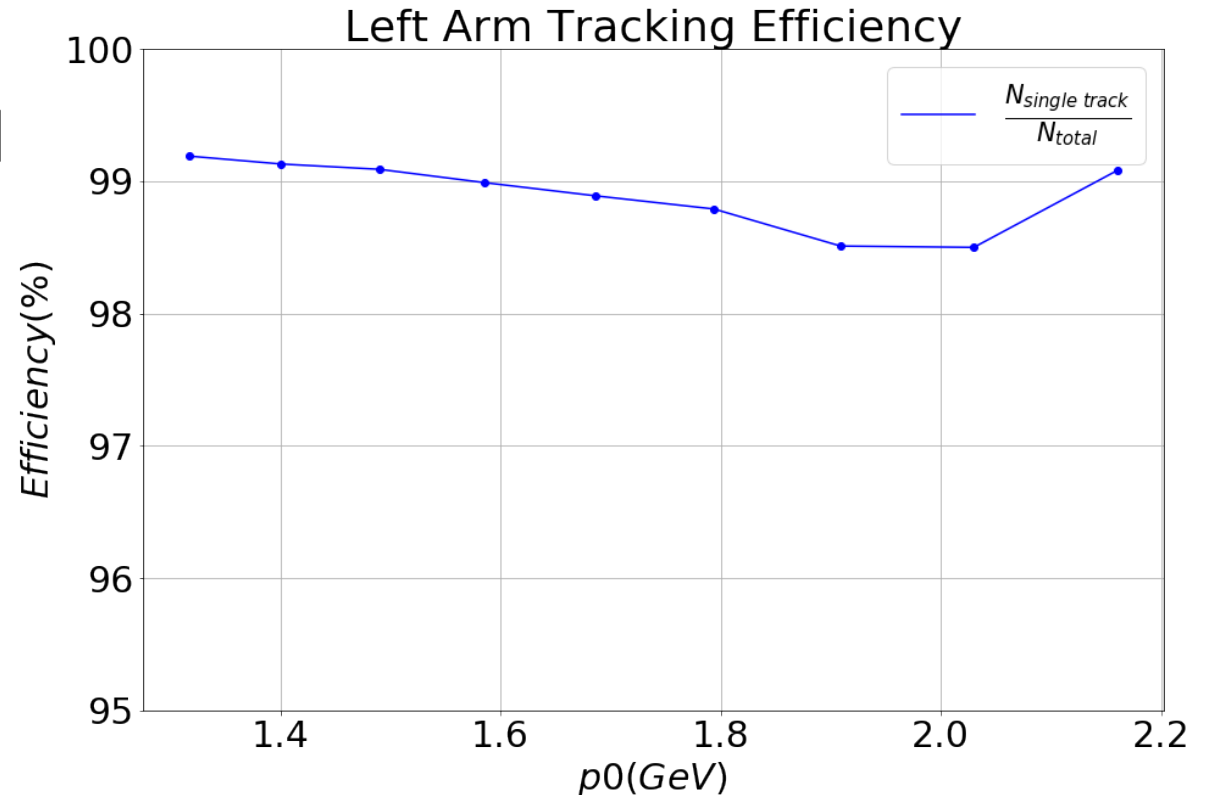
- T3 (S0&&S2) && (GC || PR) [LEFT]

- Acceptance Cuts

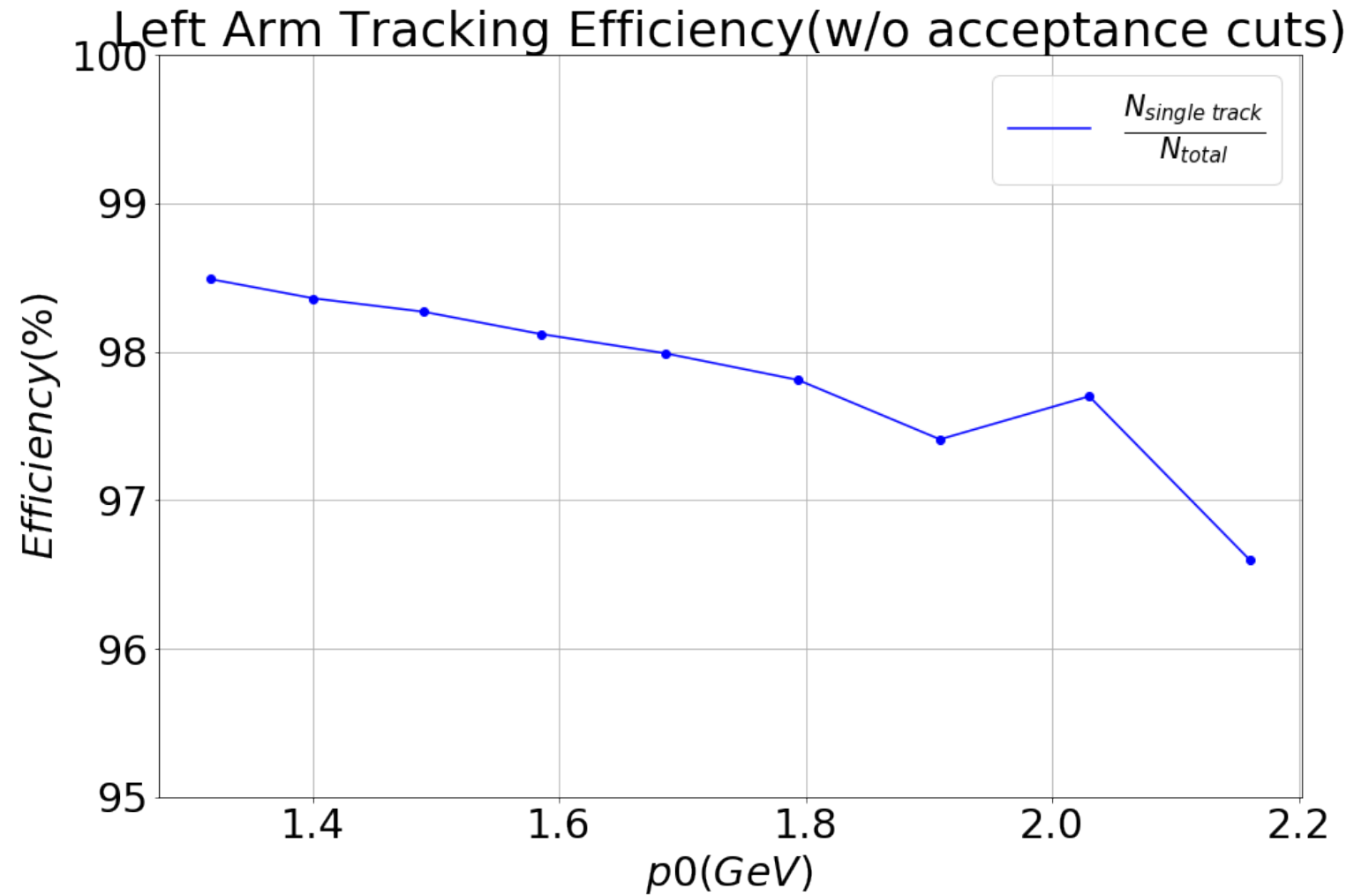
- $\text{abs(L.tr.tg_ph)} < 0.04$
- $\text{abs(L.tr.tg_th)} < 0.06$
- $\text{abs(L.tr.tg_dp)} < 0.04$

- PID Cuts

- $\text{L.cer.asum_c} > 600$
- $E/p > 0.6$



VDC Efficiency



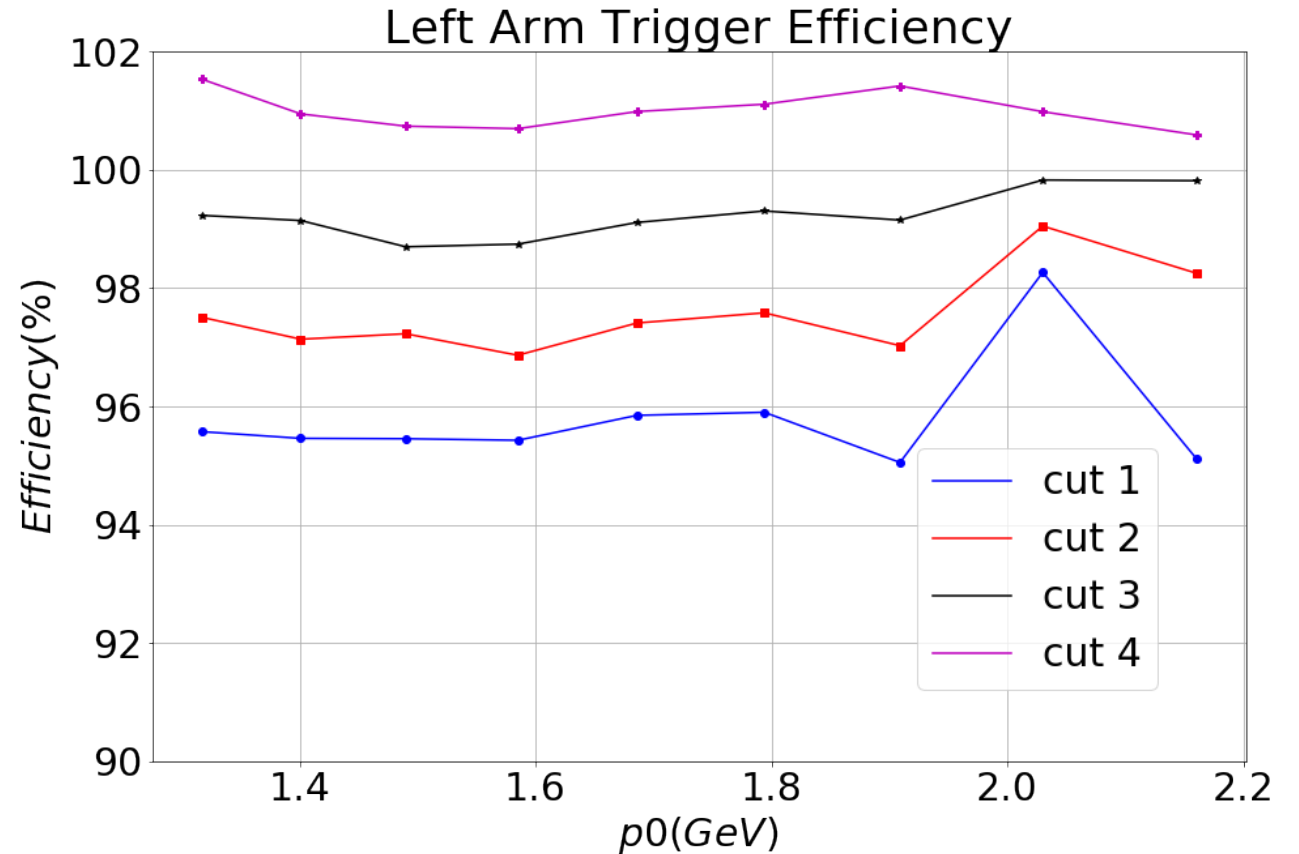
Trigger Efficiency (S0&&S2 Efficiency)

- Main Trigger : $T3 = (S0 \&\& S2) \&\& (GC \mid \mid PR)$ [LEFT]
- Efficiency Trigger: $T5 = (S0 \mid \mid S2) \&\& (GC \mid \mid PR)$ [LEFT]
- $\epsilon = \frac{T3}{T5} = \frac{\#T3 * ps_3 / (1 - DT_3)}{\#T5 * ps_5 / (1 - DT_5)}$

Trigger Efficiency (S0&&S2 Efficiency)

Cuts we made:

1. No cuts
2. Only Single track cut
3. Single track cut + PID cuts
4. Single track cut + PID cuts + acceptance cuts



Thank you!

Delta scan runs

Run#	730	731	739	740	747	748	755	756	763
p0	2.16	2.03	1.909	1.794	1.686	1.585	1.49	1.401	1.317