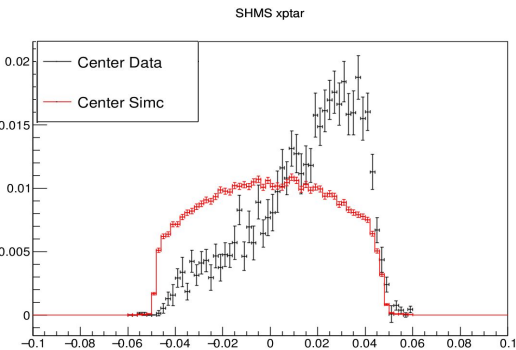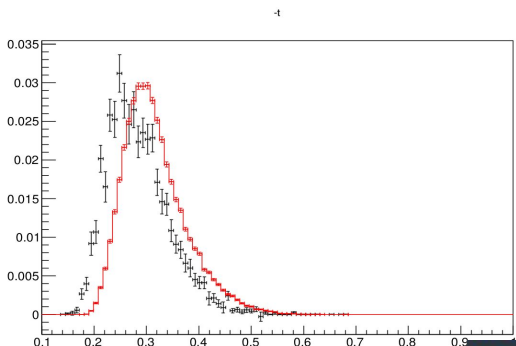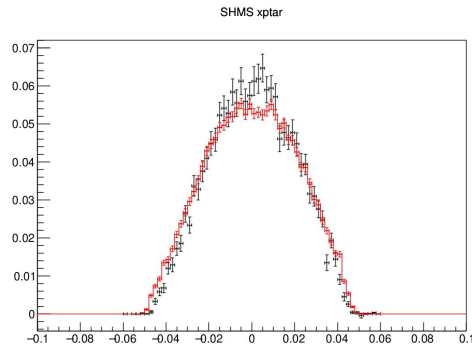# KaonLT Meeting

April 11th, 2024

Richard Trotta

Overview

1. Resolved Issues for LT separation
2. Updated xsects after fixes
3. Outstanding Issue

1) Resolved Issues (1)

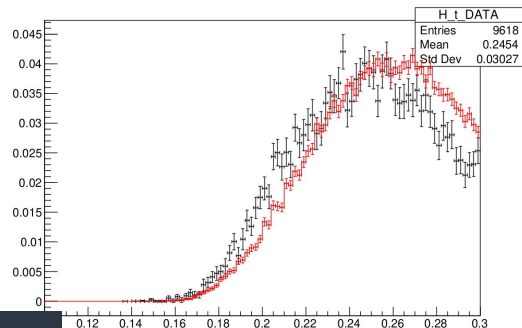$Q^2=3.0$, W=3.14, Low ε, Center

SHMS xptar

SHMS xptar

- **ISSUE:** SHMS xptar-> Removed RF time cut
- But the t-distribution was still offset

-t

- **ISSUE:** -t offset-> Wrong mass used in recon_hcana SIMC script for detected particle
- Confirmation: tmin of data/SIMC matches hand calculated tmin from centroid of Q2/W

-t

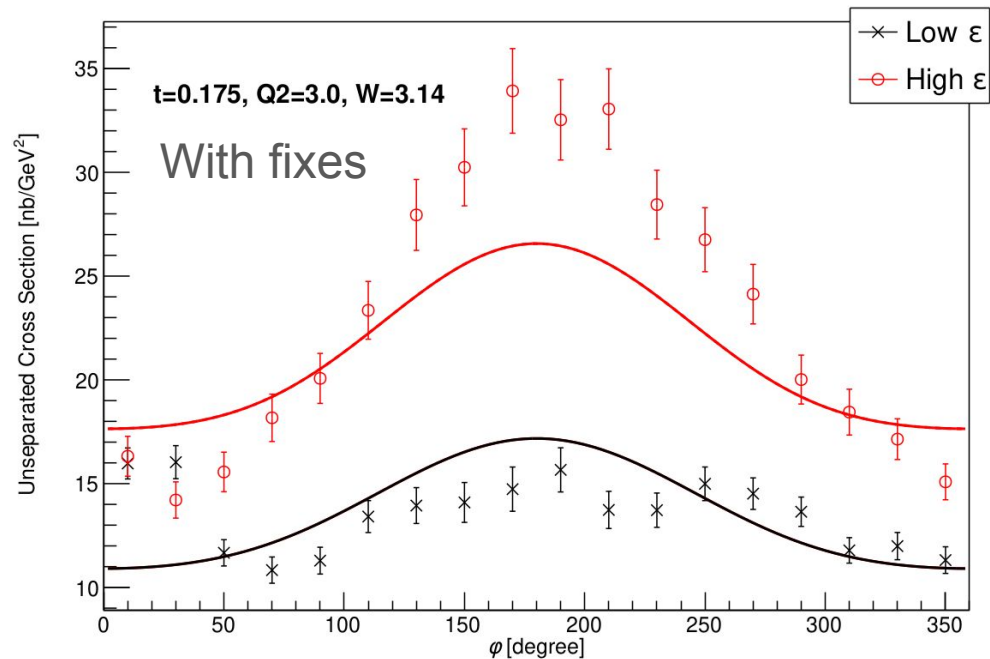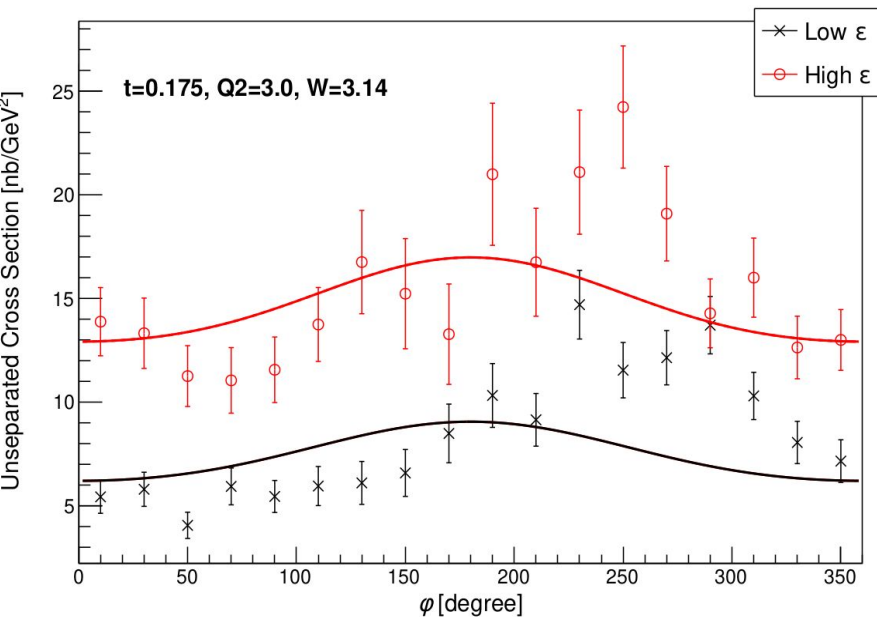| H_t_DATA	
Entries	9618
Mean	0.2454
Std Dev	0.03027

```
if(reaction=="heep"){
    fX.SetVectM(Pf_vec, MP);        //SET FOUR VECTOR OF detected particle
}else{
    // For KaonLT, this is mk (kaon)
    fX.SetVectM(Pf_vec, mk);        //SET FOUR VECTOR OF detected particle
}
```

1) Resolved Issues (2)

- **ISSUE:** SIMC recon_hcana is not recalculating cross section (sig) or weight
  - To fix this, I adjusted the weight iteration script to recalculate these values properly on 1st iteration (quick fix, eventually need to fix in recon_hcana)
  - Example…
    - 0th iteration's weight and sig are calculated from SIMC <u>NOT</u> recon_hcana
    - 1st iteration's weight and sig are recalculated using…
      - wtn = wt_sim * sig / sigcm_sim ⬅
      - Parameterization matches <u>exactly</u> what is used in SIMC
    - All subsequent iterations (i.e., >1) will have new parameterization
- **ISSUE:** Weight iterations were not being properly recalculated
  - Issue with ROOT was overwriting previous iteration weight and sig with 0th
  - Example…
    - If I was on iteration 4 my new weight would calculate sig with the new parameterization, but wt_sim and sigcm_sim (see arrow above) are from the 0th iteration, NOT the 3rd.

2) Updated xsects

Q^2=3.0, W=3.14, Low ε, Center

** Adjustments+Iterations still underway

3) Outstanding Issues

Q^2=3.0, W=3.14, Low ε, Center

- Still some mismatch between SIMC and data distributions even with corrected weight/sig

- Pion subtraction looks good, but background subtraction needs improvement