



Kaon LT Status Update

December 21st, 2022

Richard Trotta

```

call SetCentralAngles (spec%e%theta, spec%e%phi, RotToLab)
write(6,*) 'e RotToLab:', RotToLab
call TransportToLab (recon%e%P, -recon%e%y, recon%e%x, recon%e%z, recon%e%xtar, recon%e%yptar, RotToLab, kf_vec)

fP = [0.0, 0.0, ki, me]
fP1 = [kf_vec(1), kf_vec(2), kf_vec(3), me]
fA = [0.0, 0.0, 0.0, targ%M]

write(6,*) 'me:', me
write(6,*) 'mp:', mp
write(6,*) 'targ%M:', targ%M

fQ = fP - fP1
fA1 = fA + fQ

call SetCentralAngles (spec%p%theta, spec%p%phi, RotToLab)
write(6,*) 'p RotToLab:', RotToLab
call TransportToLab (recon%p%P, -recon%p%y, recon%p%x, recon%p%z, recon%p%xtar, recon%p%yptar, RotToLab, Pf_vec)

fX = [Pf_vec(1), Pf_vec(2), Pf_vec(3), mp]
fB = fA1 - fX

recon%Pmx = fB(1) ! Lab
recon%Pmy = fB(2) ! Lab
recon%Pmz = fB(3) ! Lab

q_vec = [fQ(1), fQ(2), fQ(3)]
kf1_vec = [fP1(1), fP1(2), fP1(3)]

write(6,*) 'kf1_vec:', kf1_vec
write(6,*) 'q_vec:', q_vec

xq = [fX(1), fX(2), fX(3)]
bq = [fB(1), fB(2), fB(3)]

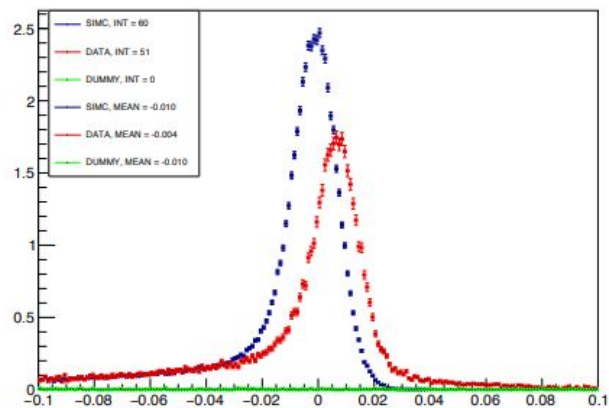
call SetZAxis (q_vec, kf1_vec, xq)
call SetZAxis (q_vec, kf1_vec, bq)

recon%Pmx = -bq(1)/10 ! wrt q, 10 to adjust peak
recon%Pmy = -bq(2)/10 ! wrt q, 10 to adjust peak
recon%Pmz = -bq(3)/10 ! wrt q, 10 to adjust peak
recon%Pm = sqrt(recon%Pmx**2 + recon%Pmy**2 + recon%Pmz**2)

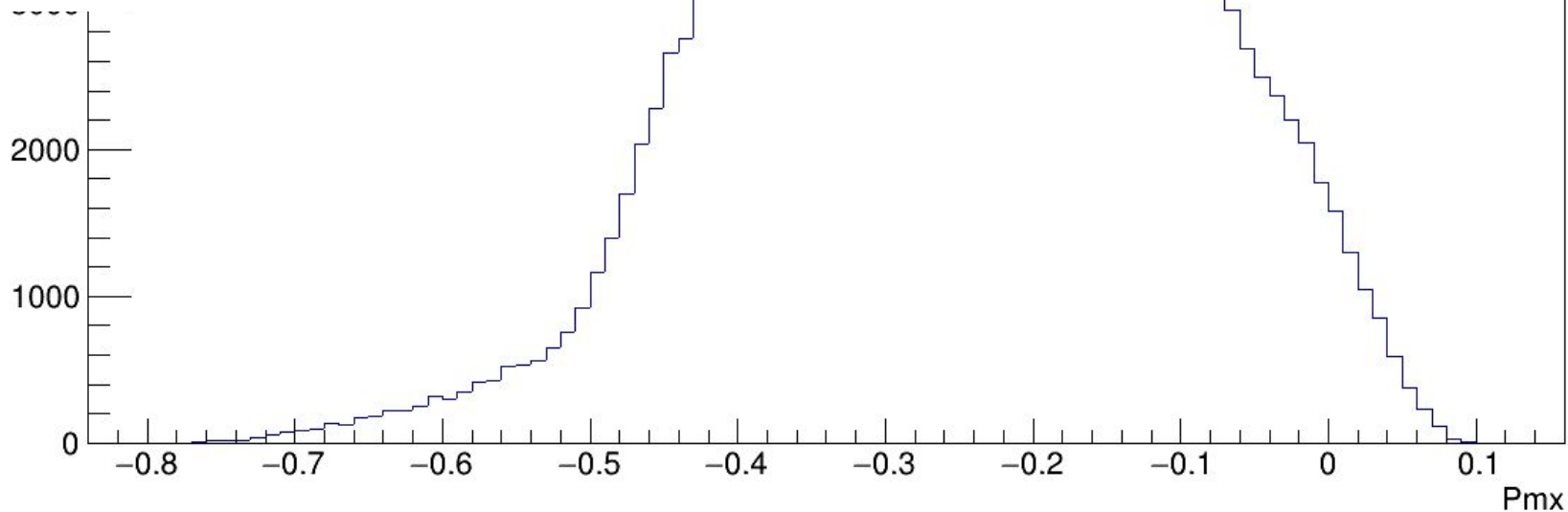
Pm_Heepz = (recon%Pmy*recon%u%y + recon%Pmz*recon%u%z) / sqrt(recon%u%y**2 + recon%u%z**2)
Pm_Heepx = recon%Pmx
Pm_Heepy = (recon%Pmz*recon%u%y - recon%Pmy*recon%u%z) / sqrt(recon%u%y**2 + recon%u%z**2)
Pm_Heepx = recon%Pmx
Pm_Heepy = recon%Pmy
Pm_Heepz = recon%Pmz

```

pmx

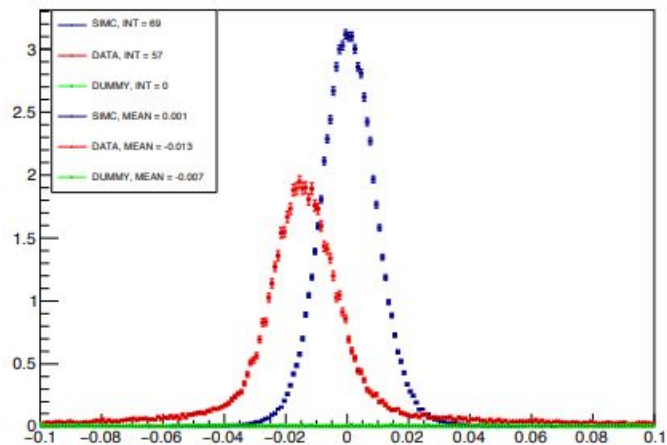


Pmx

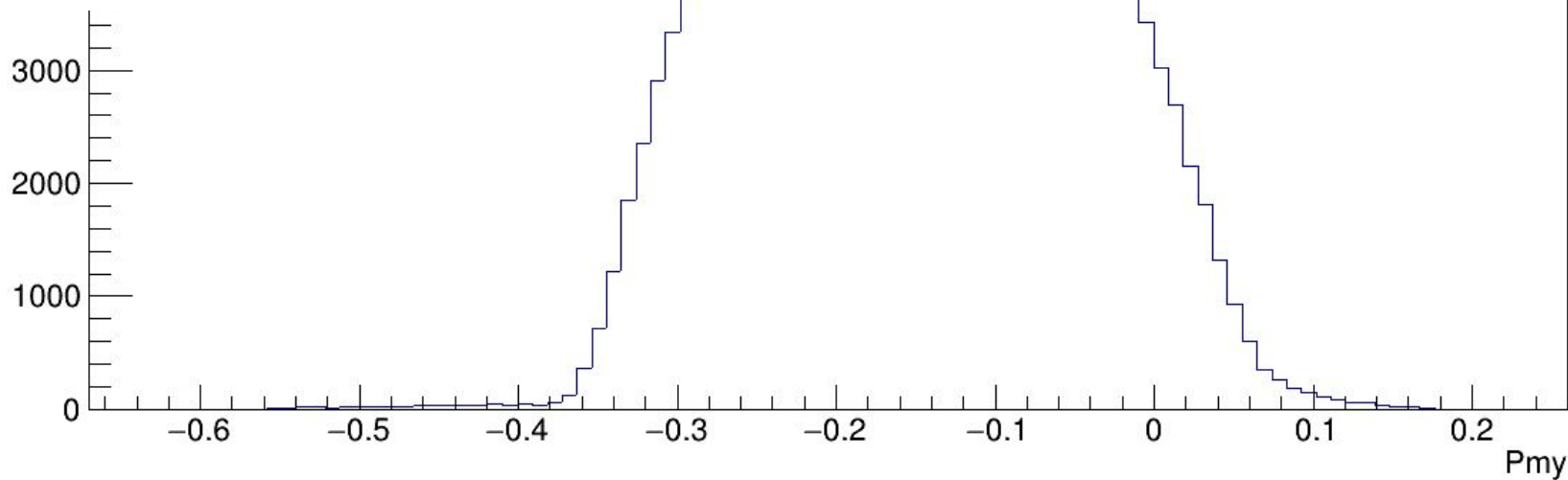


htemp	
Entries	200000
Mean	-0.2515
Std Dev	0.1429

pmy

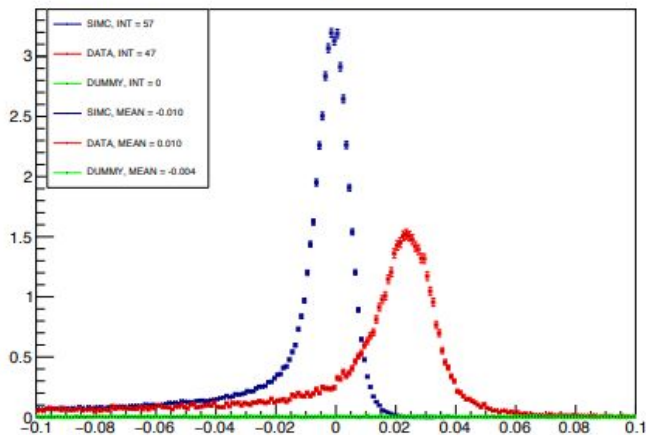


Pmy

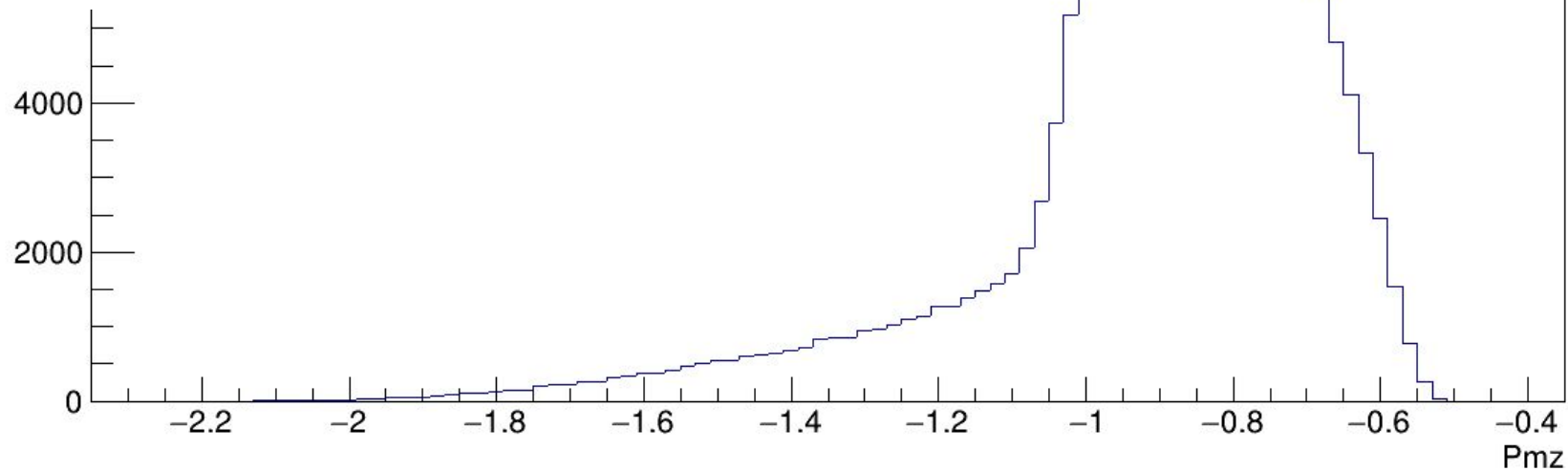


htemp	
Entries	200000
Mean	-0.1506
Std Dev	0.09895

pmz



Pmz



htemp

Entries	200000
Mean	-0.9036
Std Dev	0.2139

To Do...



- Main focus
 1. Cross sections
- Still to do
 1. Finalize PID
 2. Finalize luminosity
 3. Update simc calculation to finalize heap