

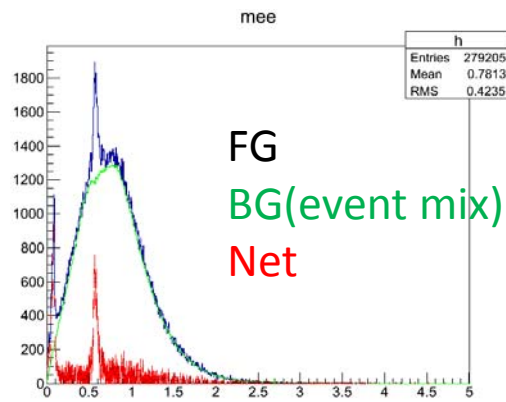
Study on Amount of Material

- In the electron measurement, amount of the material affects:
 - Conversion yield (largest background electrons)
 - Energy loss by Bremsstrahlung in the material
 - DCA distribution from conversions
 - The peak of the DCA from conversions are shifted due to the fake bending calculation.
- The amount of the material is important
 - Amount of the material can be studied using Mee.
 - The comparison of Mee between data and sim.

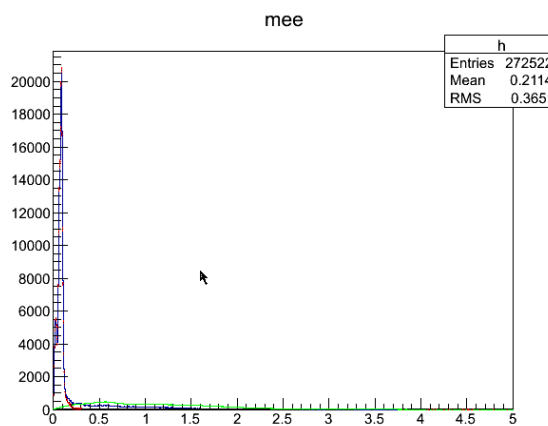
Comparison Mee distribution

- Data: Run349206, 349425 (Au+Au), 100files ERT(pp)
- Sim : Pi0 simulation with flat pT generated
 - pT weight : $p_T * (\exp(-0.42172 * p_T - 0.21329 * p_T * p_T) + p_T / 0.70972) ^{-8.34158}$ with primary pi0 pT
- Net signal is extracted subtracting BG
- Mee=0.6 is seen (check later)
- Pp and sim has no combinatorial BG. These data are compared.

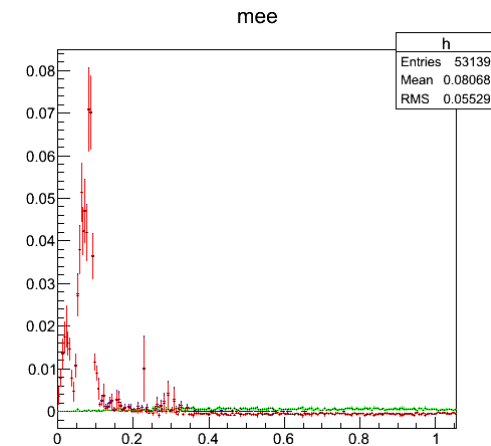
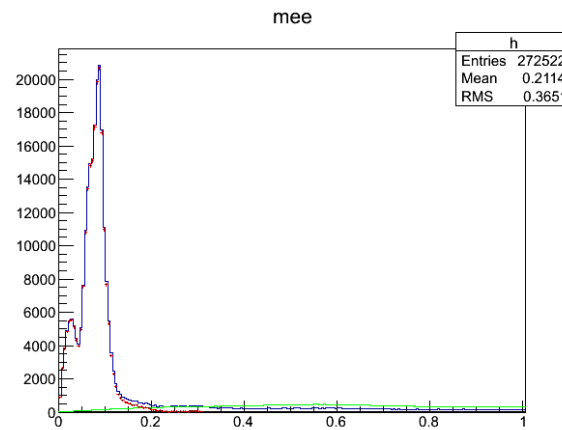
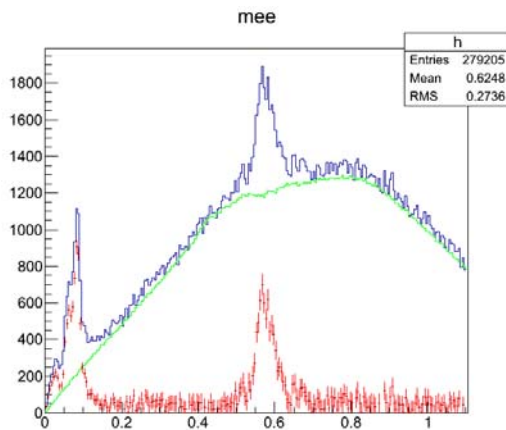
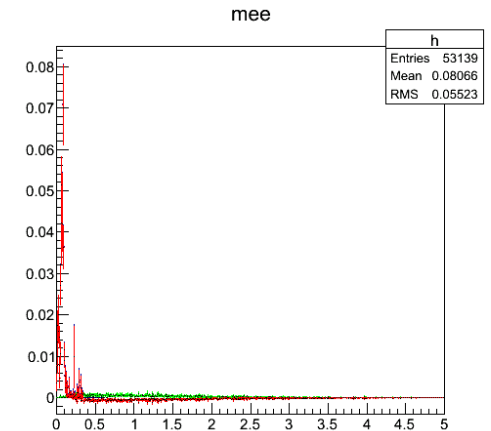
Data (AuAu)



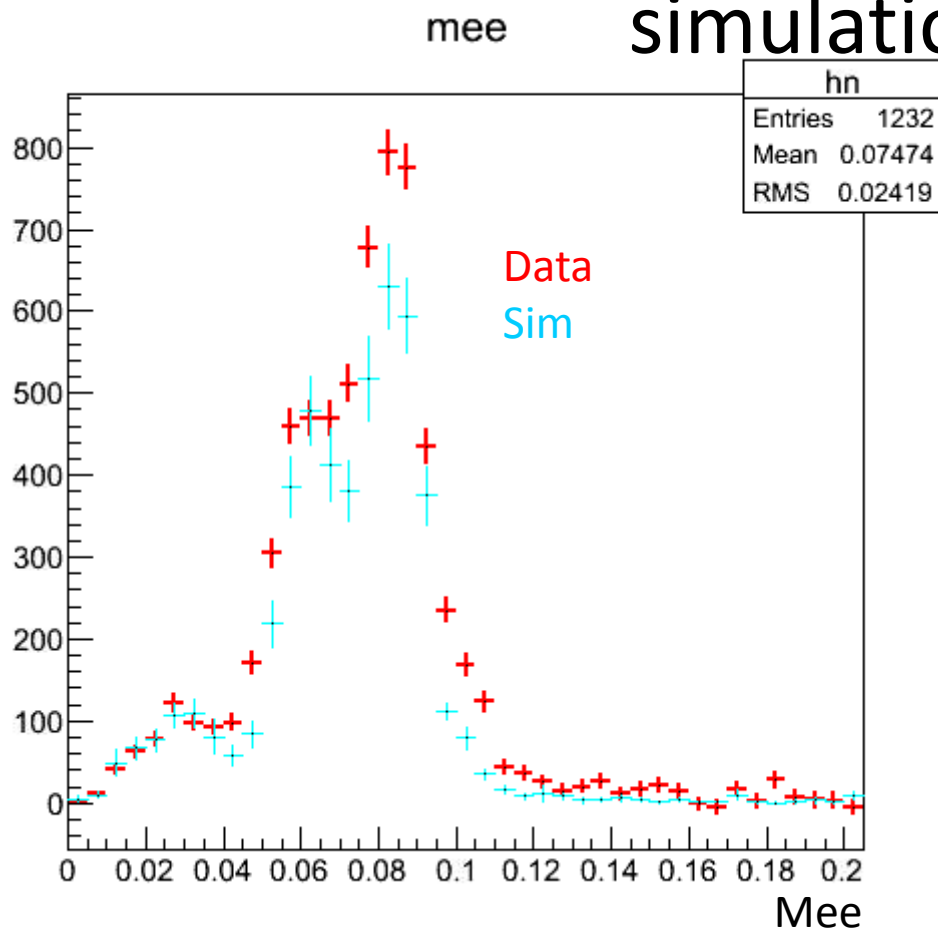
Data (pp)



Sim



Comparison of Mee between data(pp) and simulation(pi0)



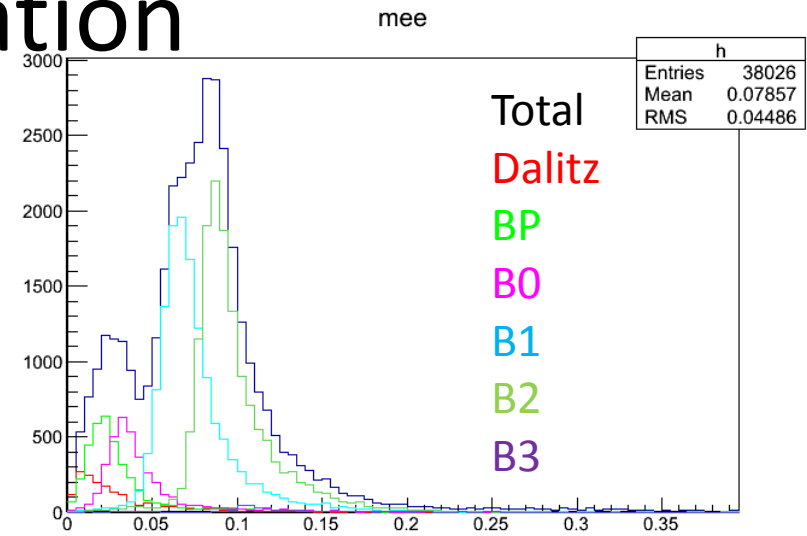
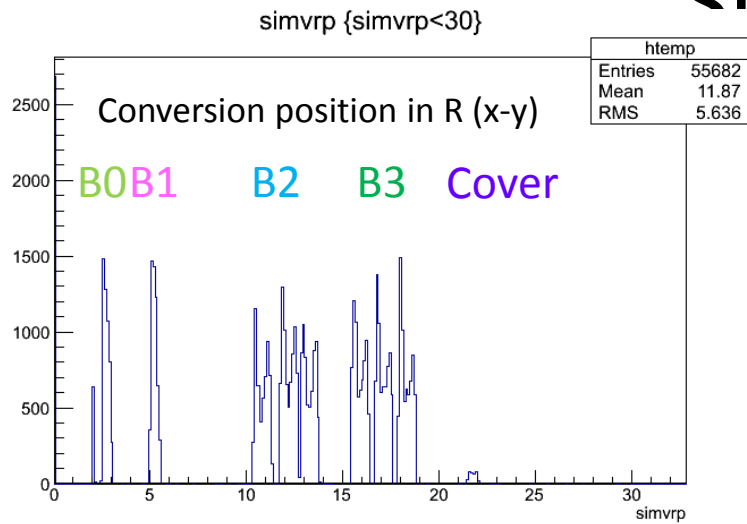
- Using tighter eID cut and phiv cut, Mee is much cleaner.
- These histograms are normalized so that Mee<0.04 is the same.
- From the comparison, Mee yield is similar between data and simulation. But the Mee=0.08-0.1 seems to be different. Data has more material than sim.
- I suspect that the cover material after the 4th strip layer is not well implemented in the simulation (Next page)

N0>3, E/p>0.8, phiv>2.9, abs(emcdphi)<0.02
 Dch mom is used to calculate Mee (not refit mom)

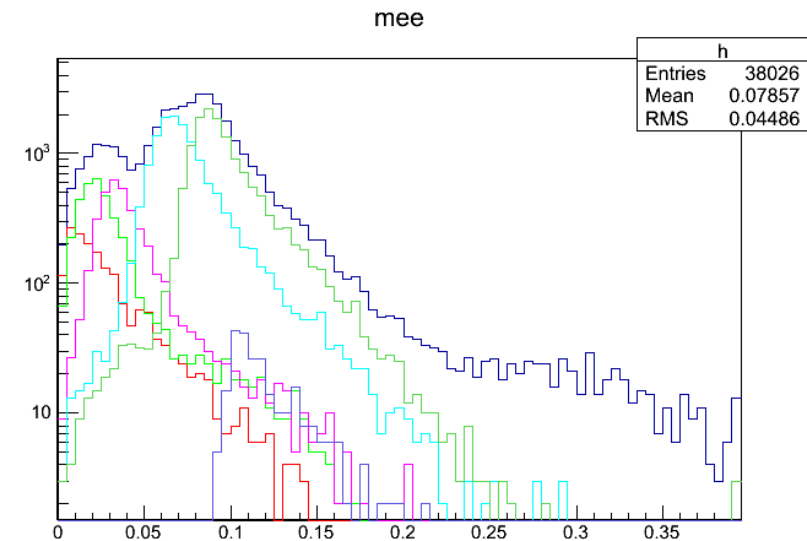
R(Mee(40-100)/Mee(0-40)):
 Data(p+p): 8.63+- 0.0462
 Sim : 8.44+- 0.0727

R(data)/R(sim) : 1.023 +- 0.0883

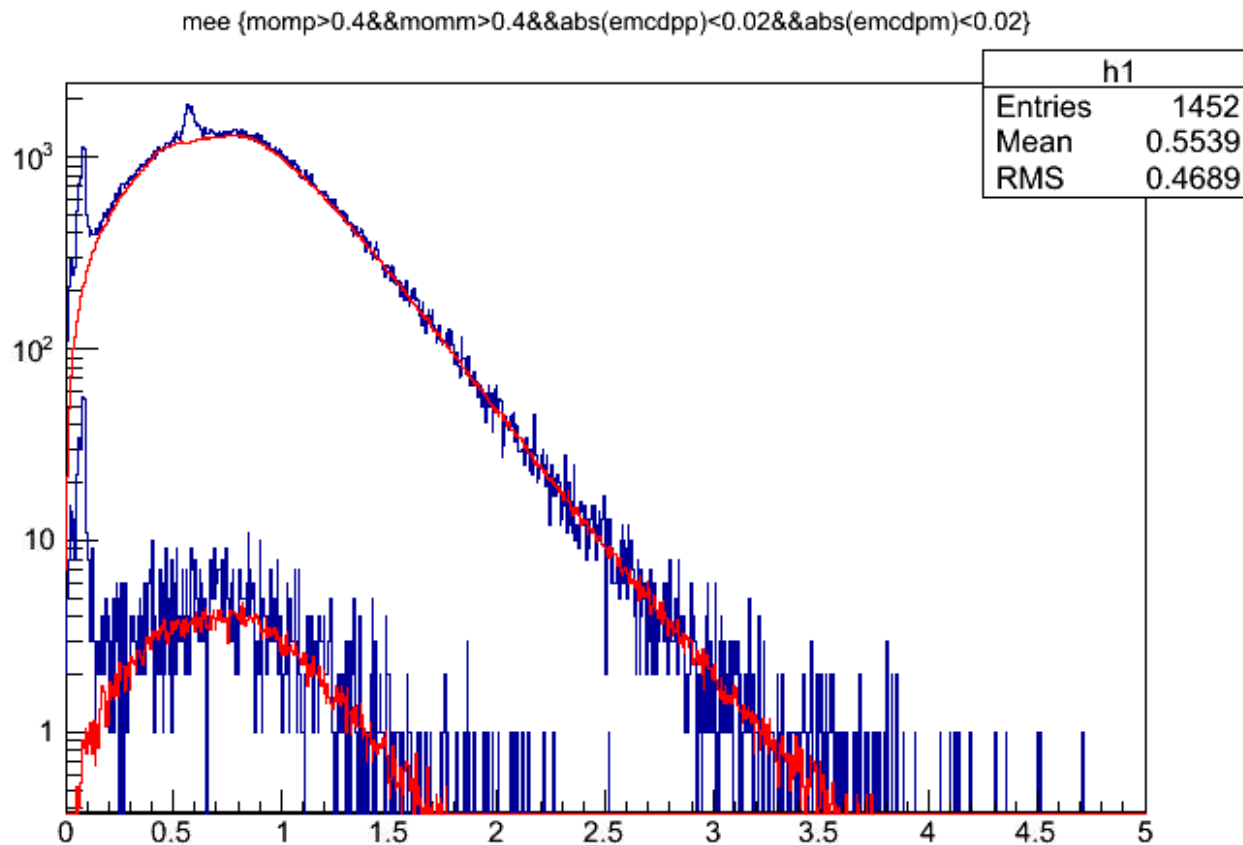
Conversion Position and Mee in Simulation



We can trace the conversion position in the simulation

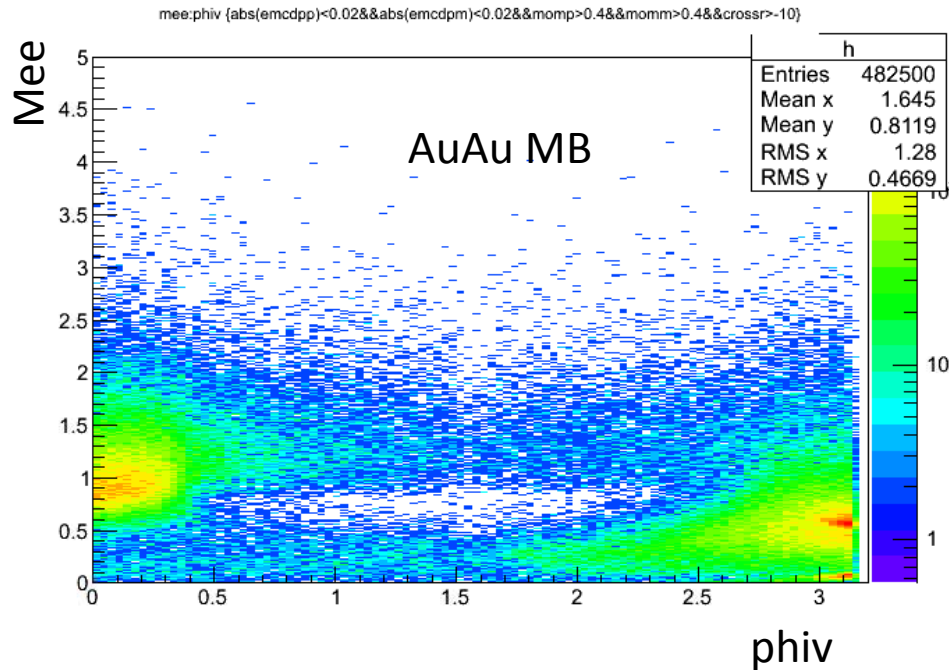


About $M_{ee}=0.6$ peak



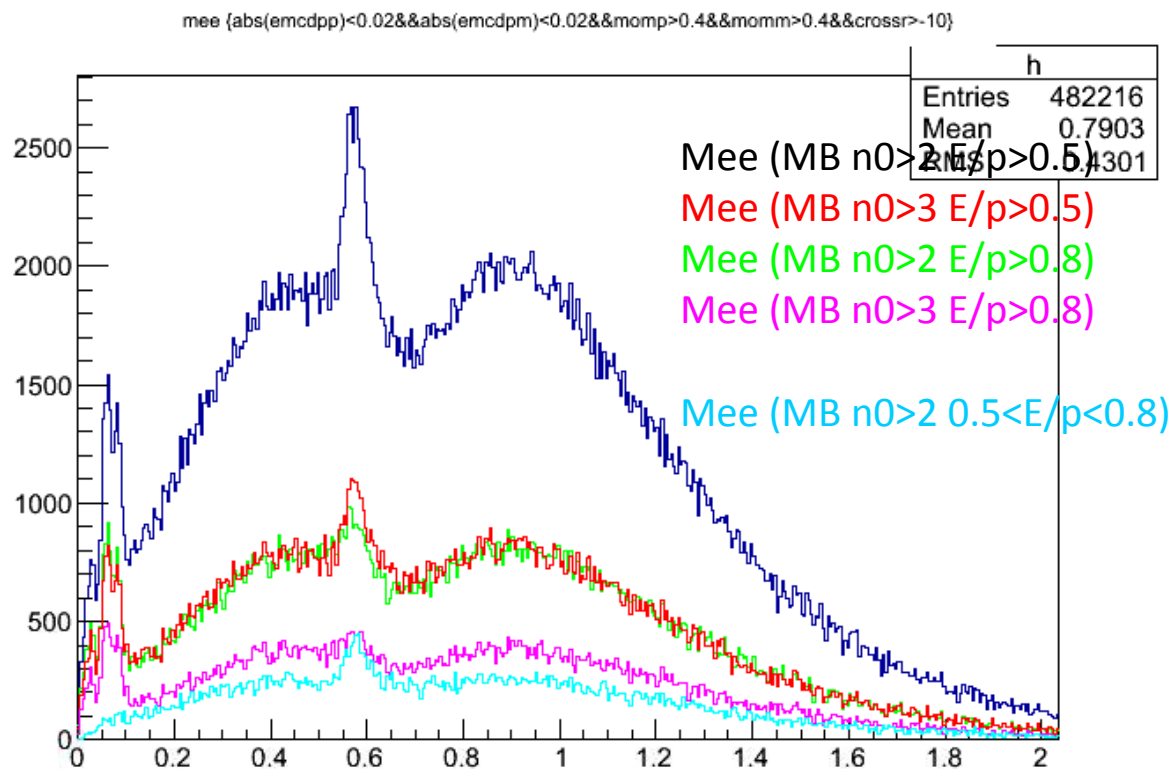
- The peak ($M_{ee}=0.6$) is disappeared in peripheral event.
- This should be fake peak, not related to Physics (even conversion).
- I thought that the ghost or mis-association due to higher multiplicity make the problem.

Correlation between phiv and M_{ee}



- The peak at $M_{ee}=0.6$ has large phiv (almost π) as same as conversion ($M_{ee}=0.1$)
- This suggests that the hadron parallel to the conversion electron makes the fake peak at $M_{ee}=0.6$
 - The tracks going in parallel focus to the same ring on the RICH.
- To confirm this, I checked M_{ee} with tigher eID cut (next page)

Mee with tigher eID



Here, DCH-mom is used to calculated Mee.
Refit mom is not used.

- Compare Mee=0.6, 0.08 peak with tigher eID
- If using tigher eID, the peak at Mee=0.6 get small, but Mee=0.08 does not change.
- This shows the peak at Mee=0.6 is made from the hadron track with mis-ID
- If choosing hadron even associated with RICH:
 - N0>2 & 0.5<E/p<0.8
 The peak at Mee=0.6 was appeared and Mee=0.08(convpeak) was disappeared.