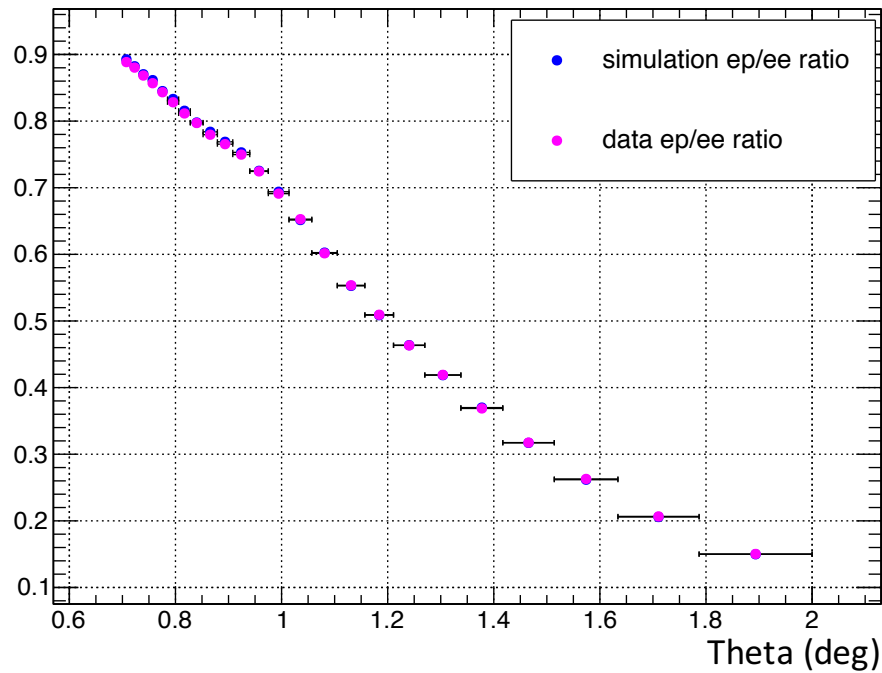


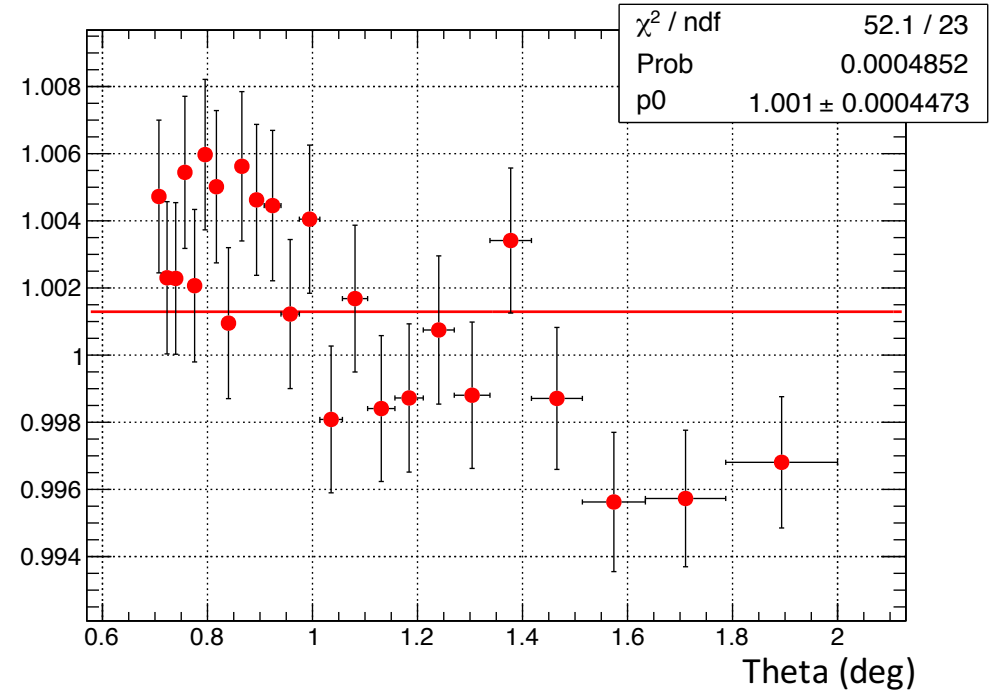
Simulation and data comparison

- Chao Peng and Chao Gu have finalized the new ee generator, I am testing its behavior
- Plots show comparison between the data and simulation at 2 GeV
- ep / ee selected using hybrid Moller selection method

Graph



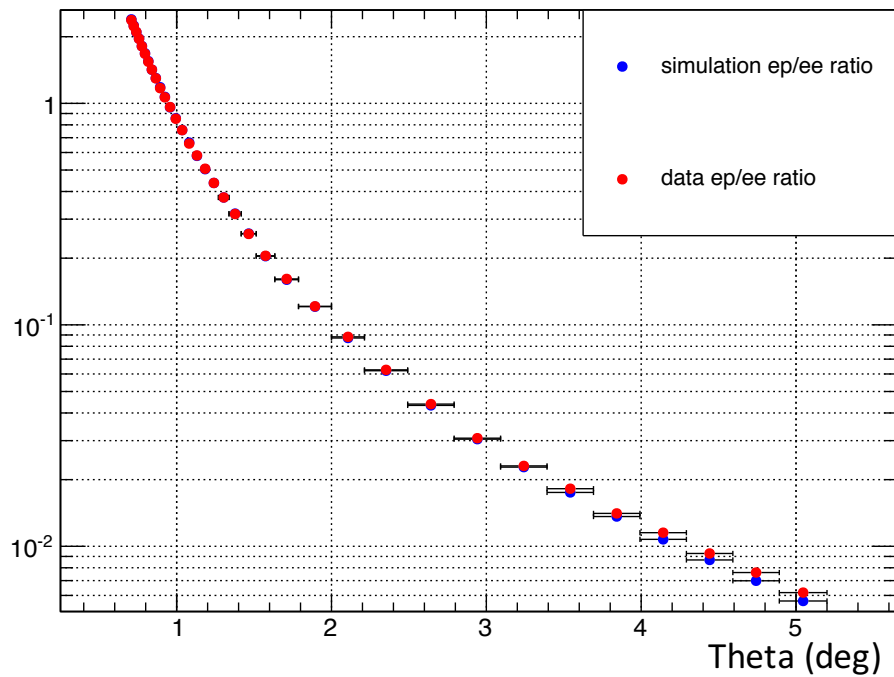
Graph



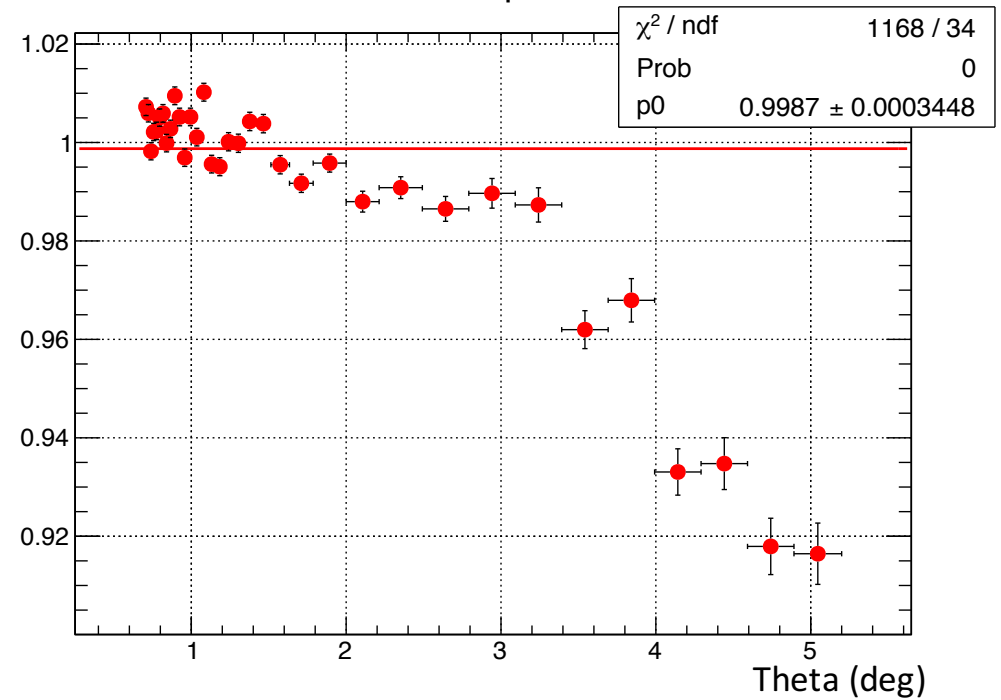
Simulation and data comparison

- Plots show comparison between the data and simulation at 2 GeV
- ep / ee using integrated Moller method
- Deviation at large angle still unsolved, plan to check out 1GeV data where Moller may cover up to 5.2 deg

Graph

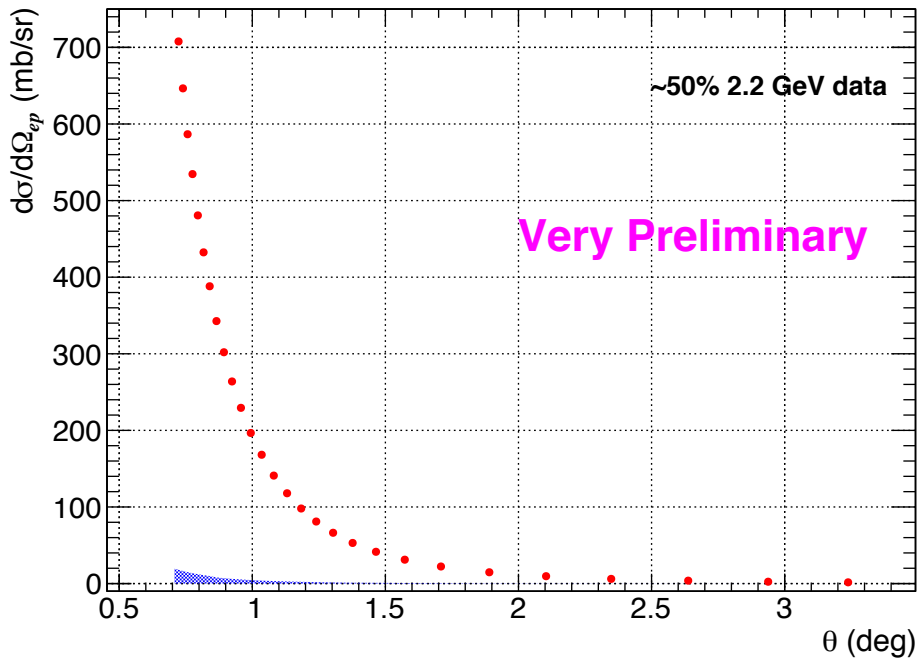


Graph

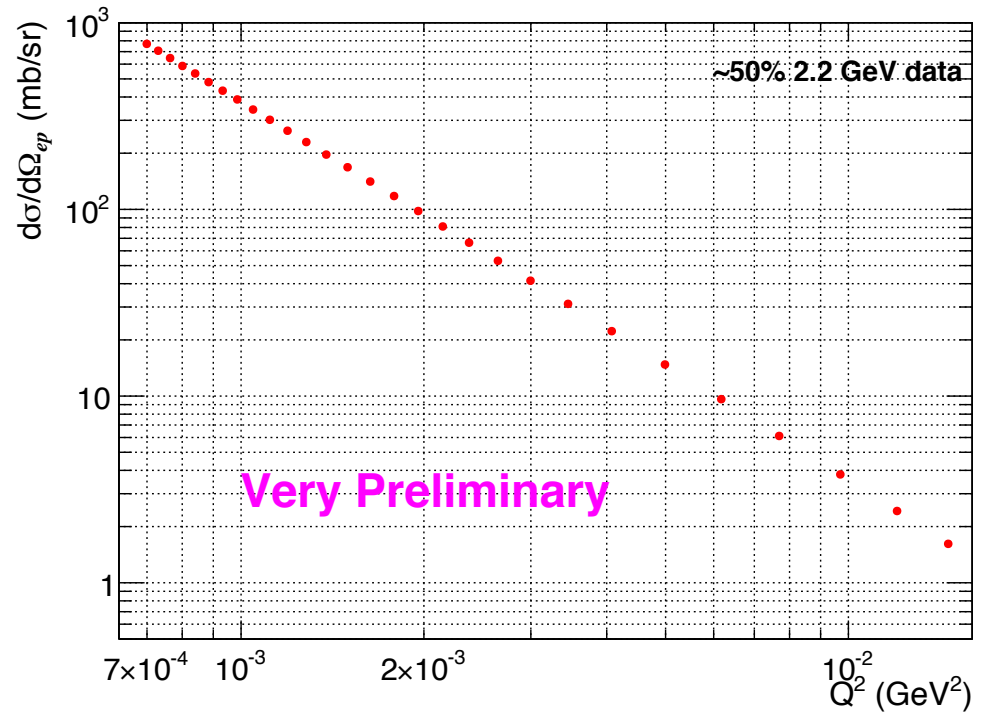


EP cross section from 0.7 to 3.5 deg, at 2GeV

ep elastic scattering cross section

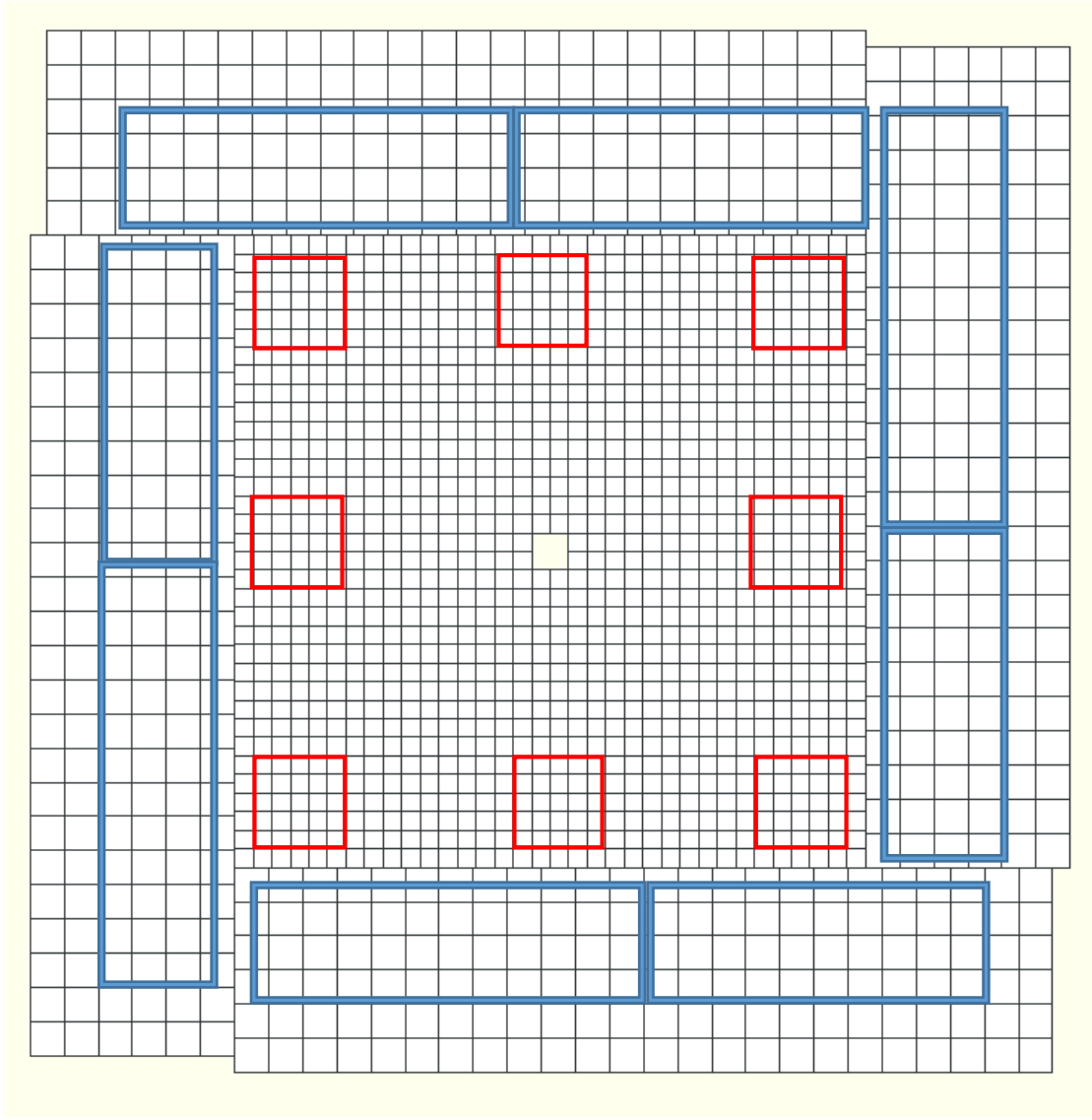


ep elastic scattering cross section



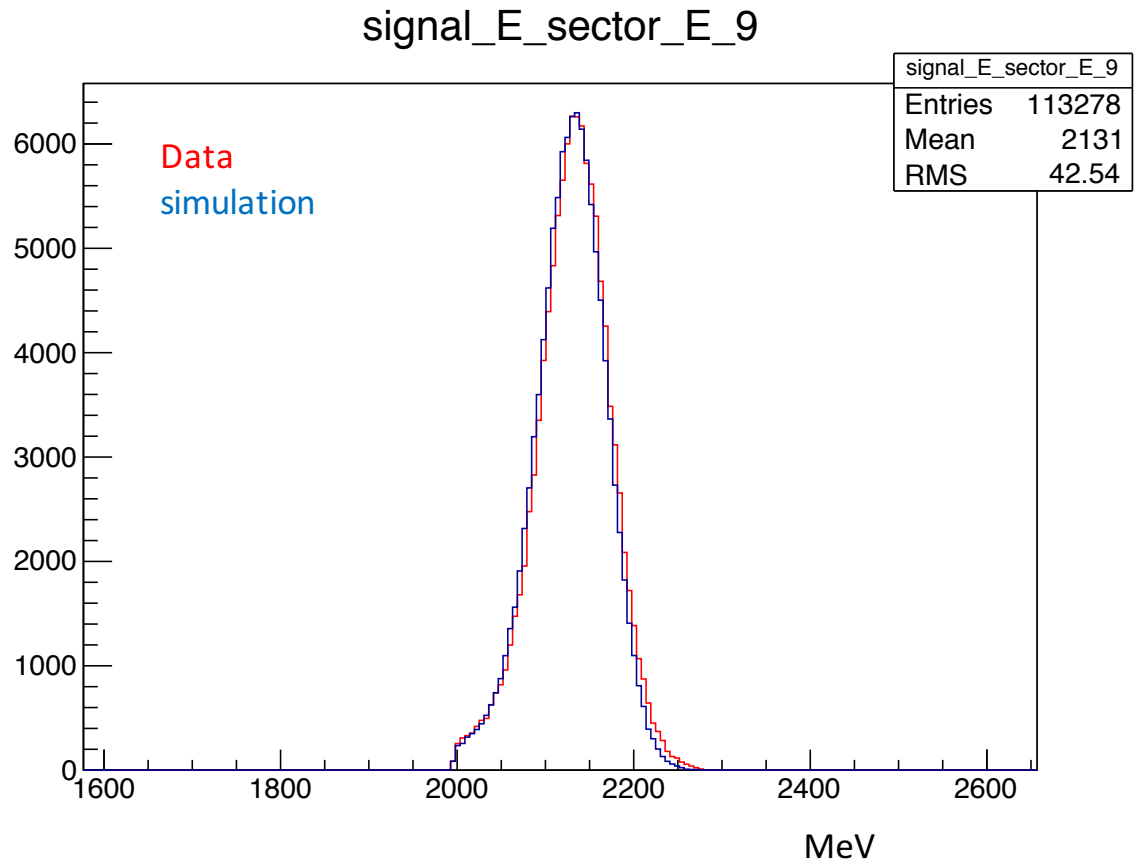
Simulation and data comparison at large angle

- The previous argument about the ϕ dependence of the ep yield is actually not fair, because we use difference cut for hit landing in PWO and LG
- GEM efficiency correction for the small angle ee should be reasonably good as shown by the comparison between integrated Moller and hybrid Moller method
- After GEM efficiency correction to the data, I scale the simulation and the data to have the same amount of ee in the small angle (one way to equalize the luminosity)
- And then compare the ep yield at difference region



Ep yield in 4 5x5 pwo blocks
near the side of boundary of
PWO

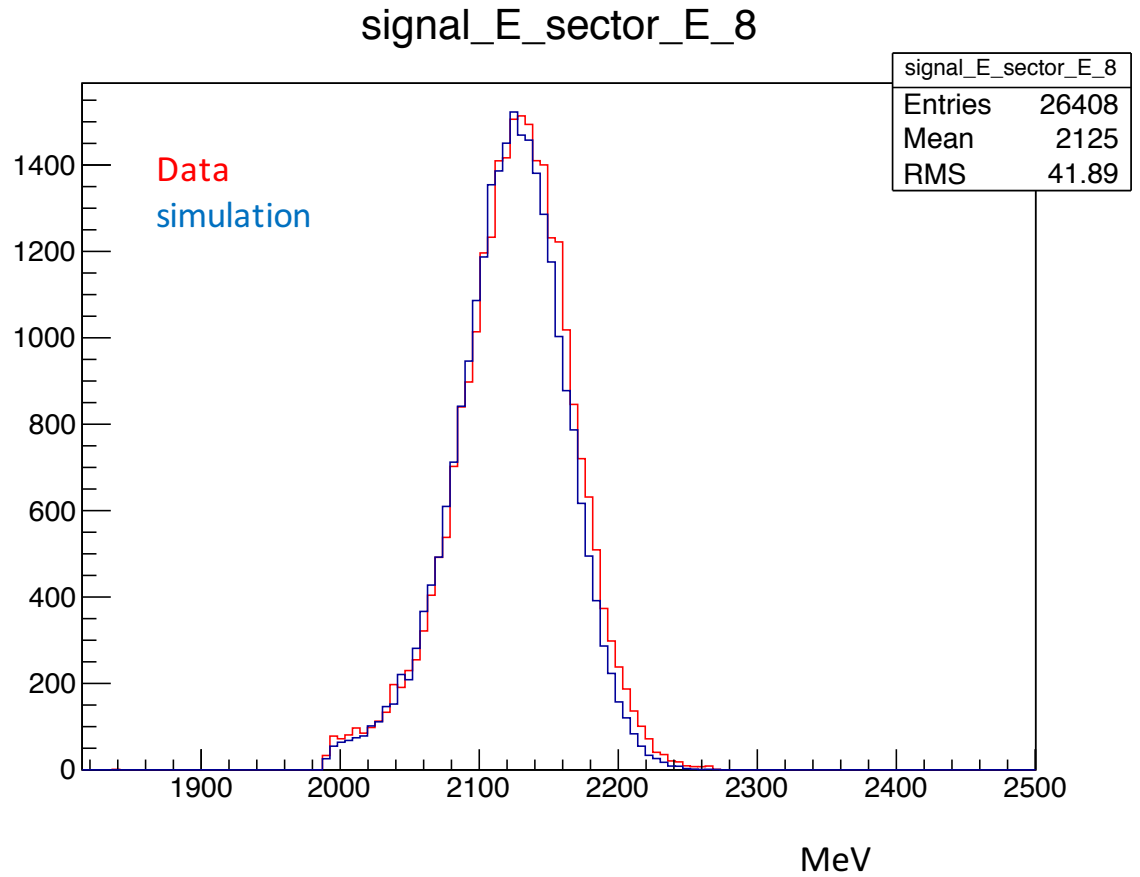
Agreement within 1% between
data and simulation



Ep yield in 4 5x5 pwo blocks
near the corner of PWO

Data is 4 % more than
simulation

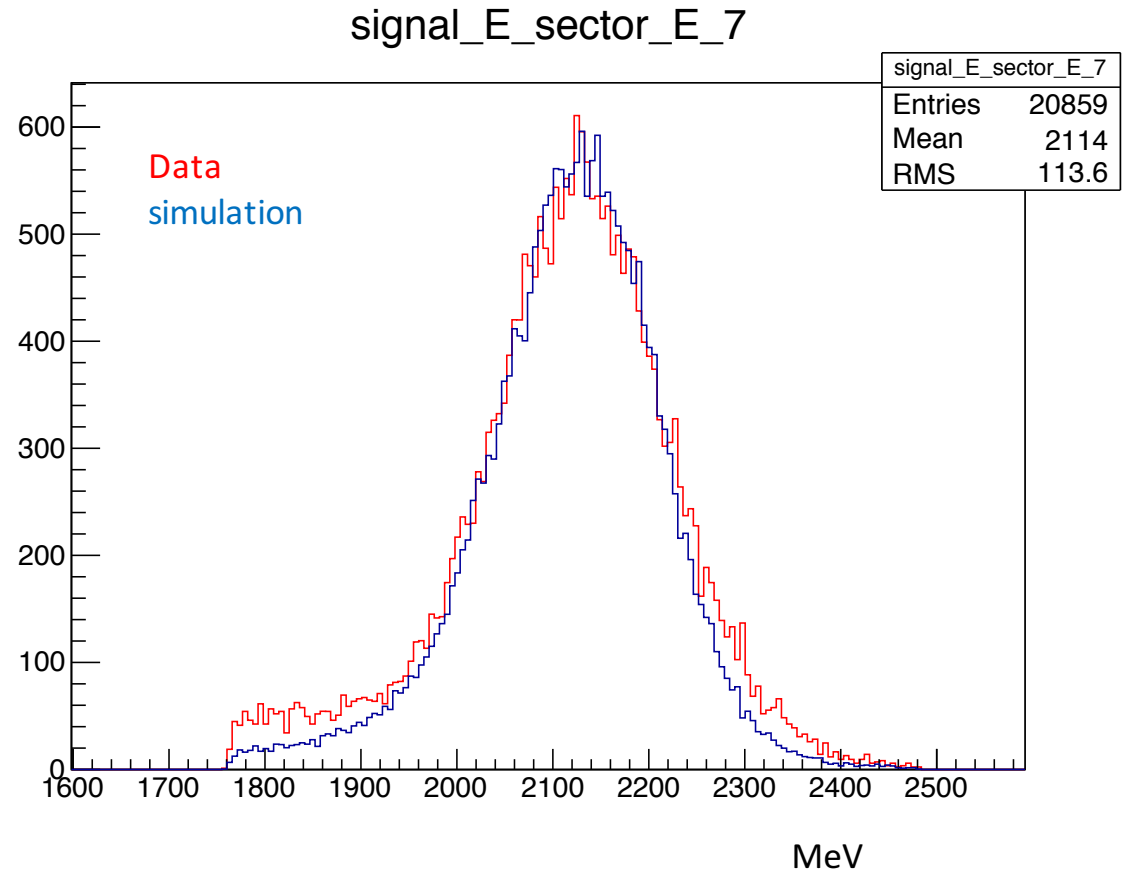
Shape still reasonably agree
with each other



Ep yield in a LG sector

Data is 8 % more than simulation

Shape doesn't not agree with each other, particularly the tail



Possible explanation and solution

- Electronic response of HyCal is not simulated good enough yet
 - Clearly the tail doesn't match for the LG part
- GEM efficiency might have percentage level systematic shift at large angle
 - Plan to check 1GeV data where Moller may cover up to 5.2 deg
- Outer part might contain additional background in the data
 - Cosmic? Unlikely but possible
- To do:
 - Finish testing the new ee generator at 2GeV and 1GeV
 - Compare the simulation and data at 1GeV