

# From Cosmics to Attenuation

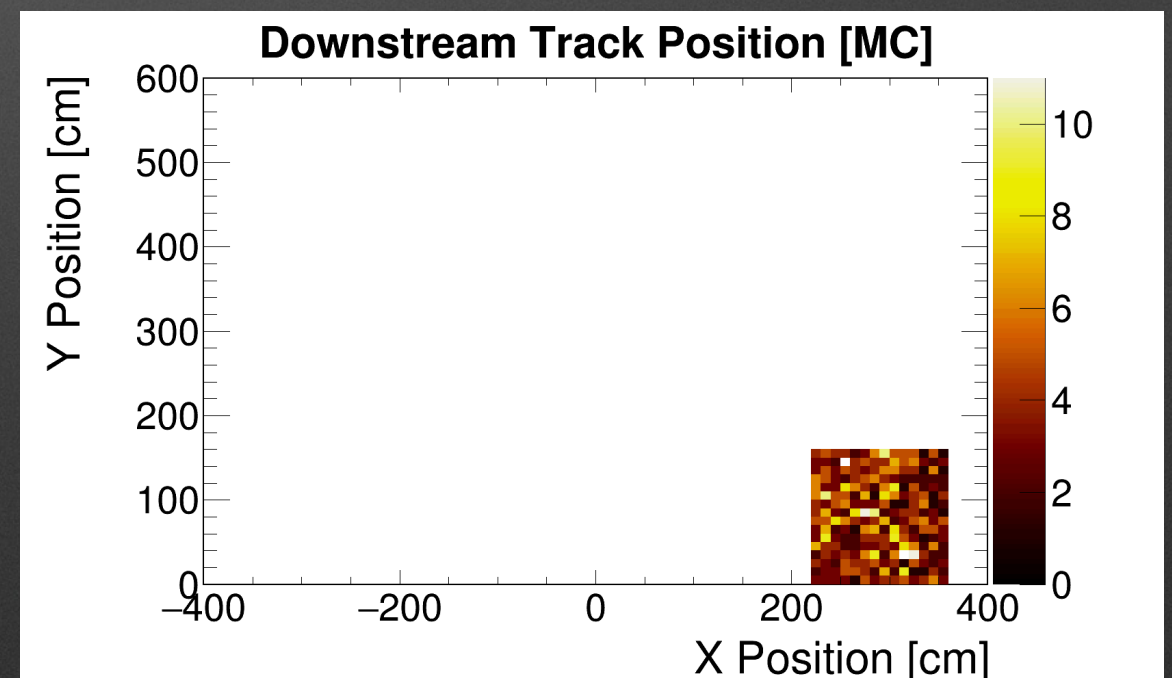
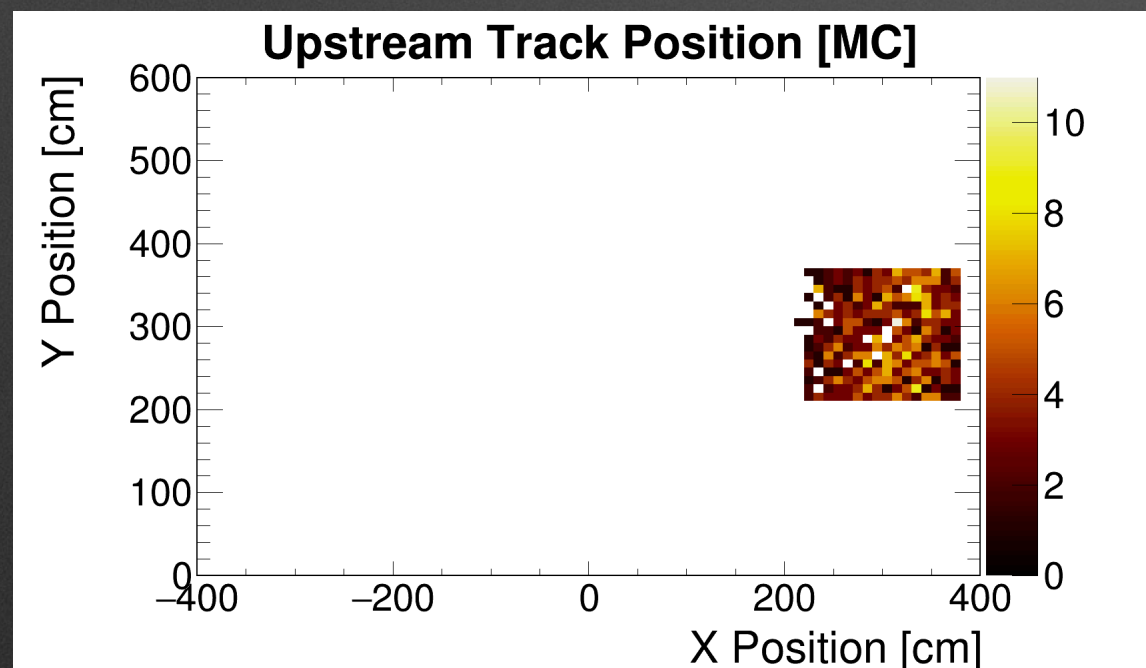
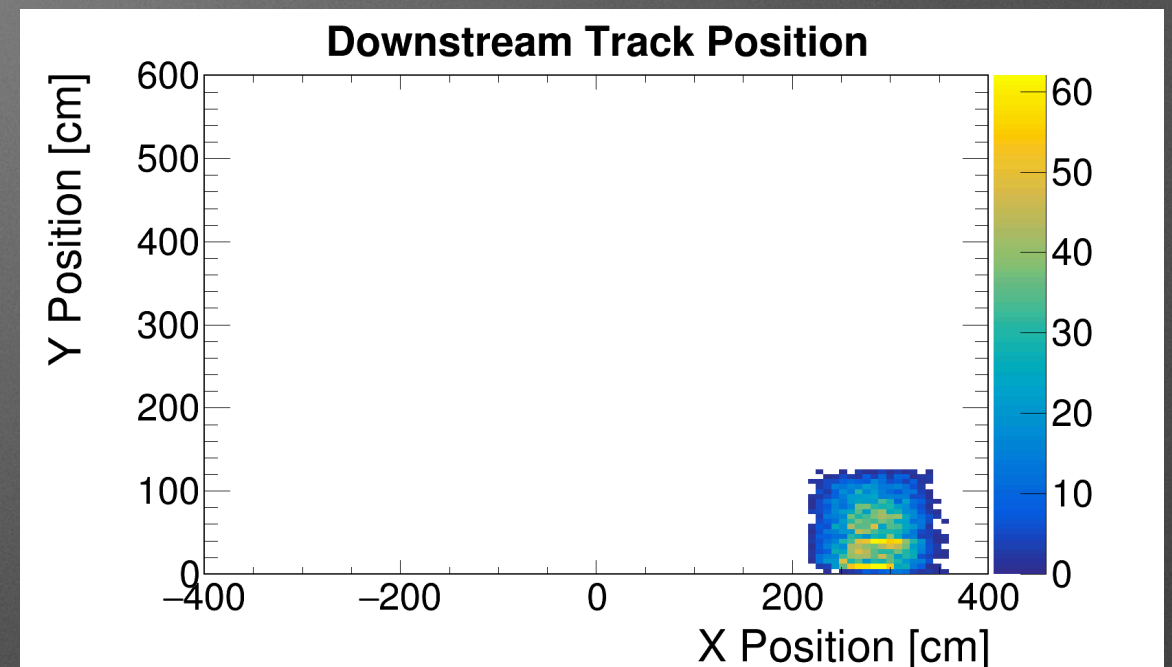
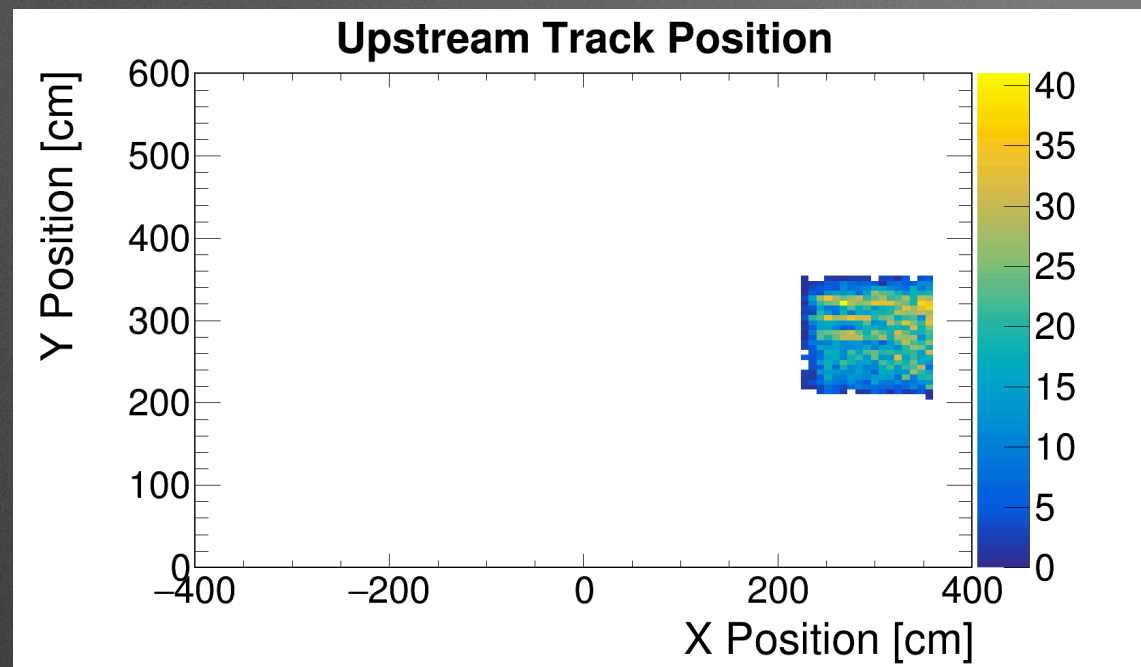
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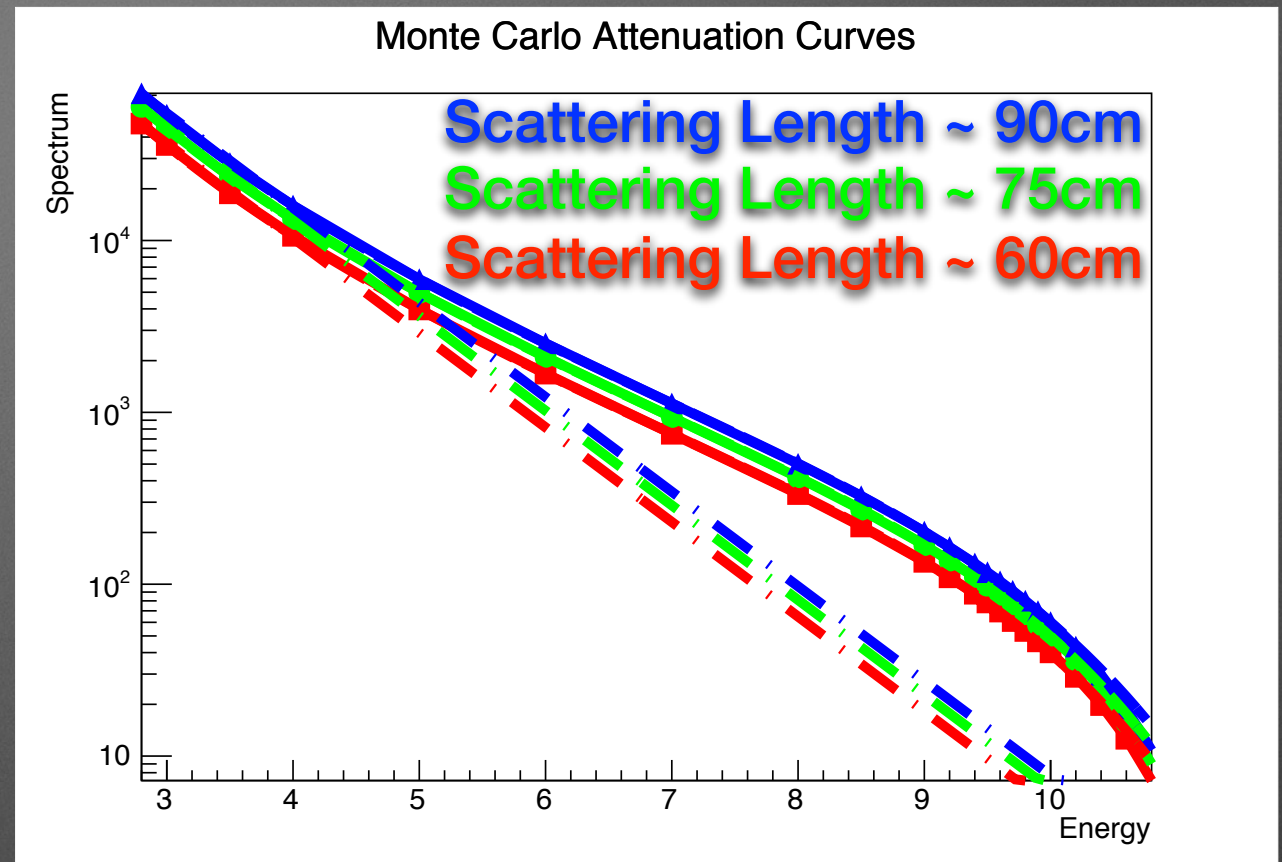
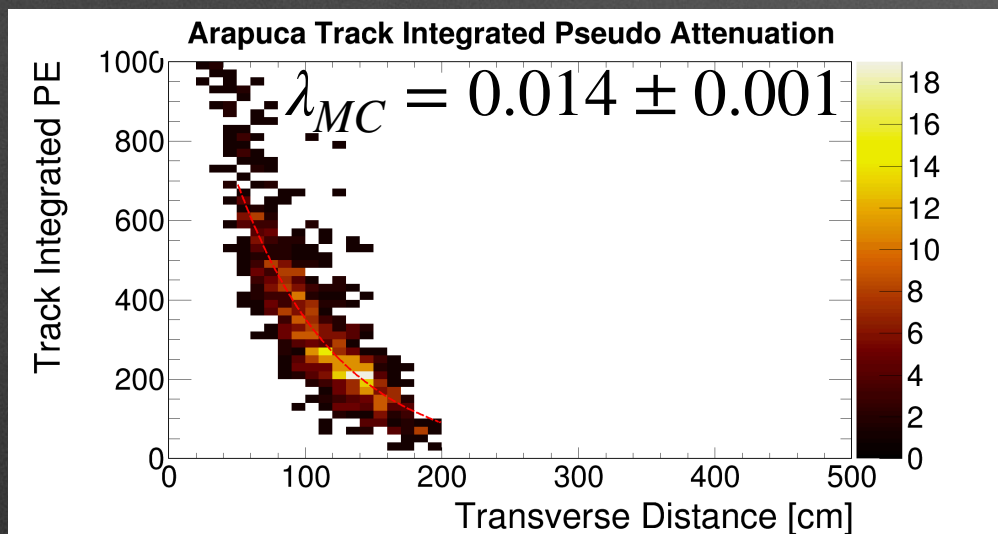
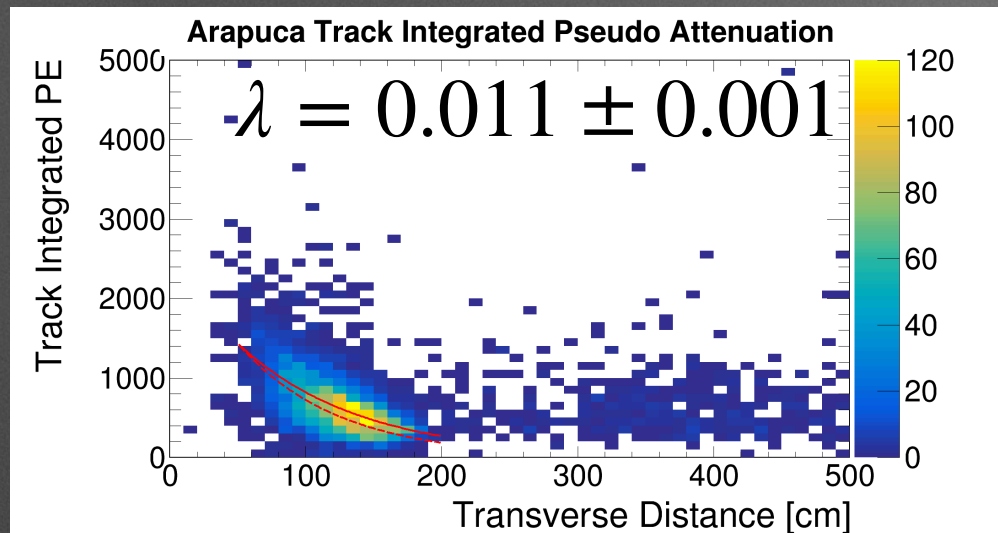
# Comparison to Monte Carlo

Threw MC with random angle distribution corresponding to CTB Pixel channels 12 & 25:





# Getting Attenuation from Pseudo-Attenuation



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*****Scattering Length ~ 60cm
Minimizer is Minuit / Migrad
Chi2           = 3.73701e+06
Ndf            = 20
Edm            = 4.24948e-07
NCalls        = 71
Constant       = 14.3136 +/- 0.0742618
Slope          = -1.26783 +/- 0.0249184
    
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Minimizer is Minuit / Migrad
Chi2           = 73.6423
Ndf            = 15
Edm            = 2.48337e-09
NCalls        = 932
p0             = 18.0715 +/- 0.0339414
p1             = -4.33326 +/- 0.0371776
p2             = 0.881418 +/- 0.0155024
p3             = -0.11279 +/- 0.00302233
p4             = 0.00679161 +/- 0.000261488
p5             = -4.78193e-05 +/- 5.56175e-06
p6             = -9.54441e-06 +/- 2.71755e-07
    
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About 27% difference  
without MC  
attenuation scan.



# Conclusion & Next Steps

- Attenuation is a significant product from the CRT+TPC+PDS matching
- Requires detailed understanding of higher order terms.
- Next iteration should include SCE, updated gain calibrations, Flash/OpSlicer hit selection, Matched MC attenuation, production/higher precision CRT modules, updated CRT geometry.
- First draft of document with current analysis completed before the end of the month.