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# Energy Loss Analysis

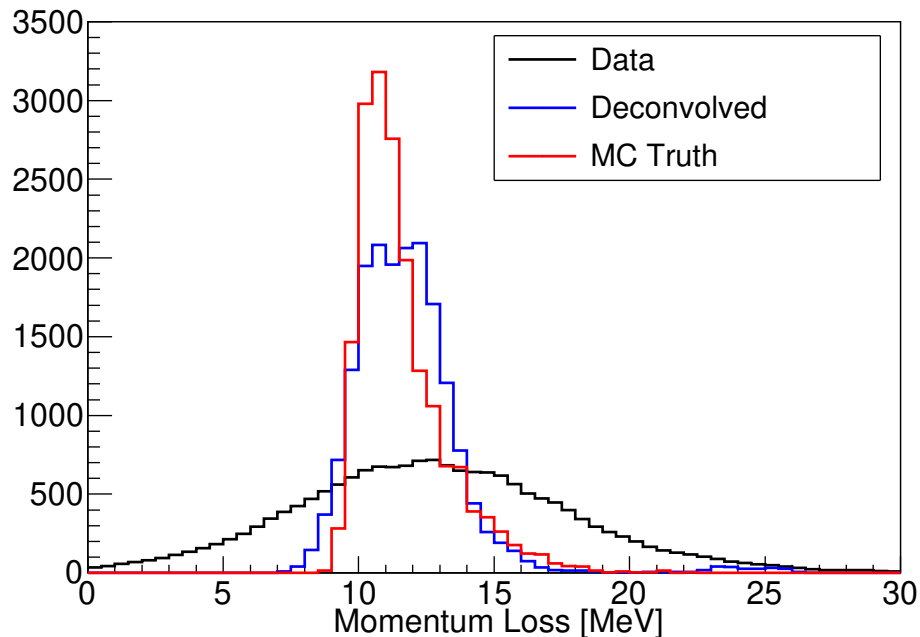
Scott Wilbur

University of Sheffield

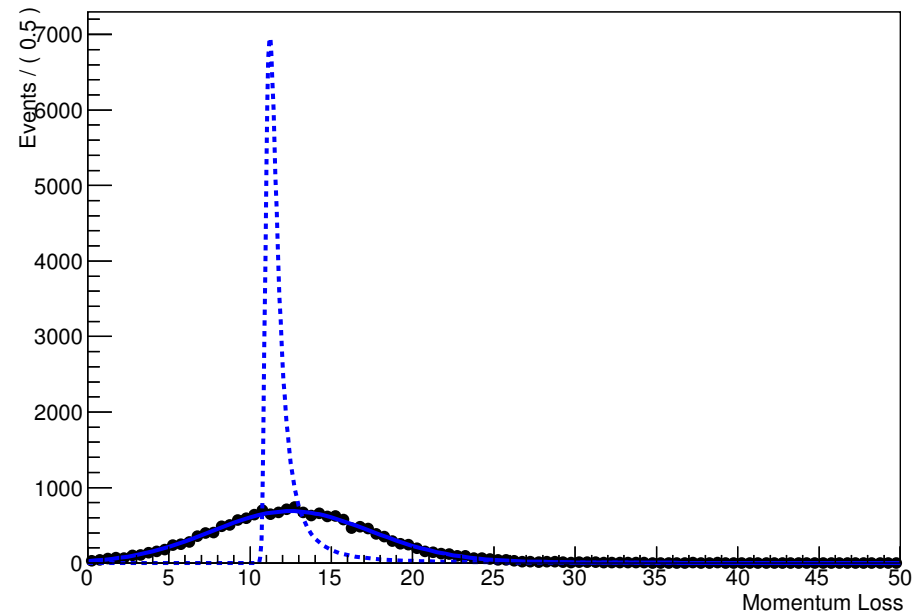
# Convolution Fit

- Upstream momentum measured by TOF and Tracker weighted average
- Downstream momentum measured by Tracker
- Fit empty absorber data to find resolution and detector effects
- Fit full absorber data to convolution of landau (free parameters) and gaussian (from empty fit)
- Fewer artifacts compared to deconvolution, more confidence that mean is correct

Reconstruction (240 MeV)

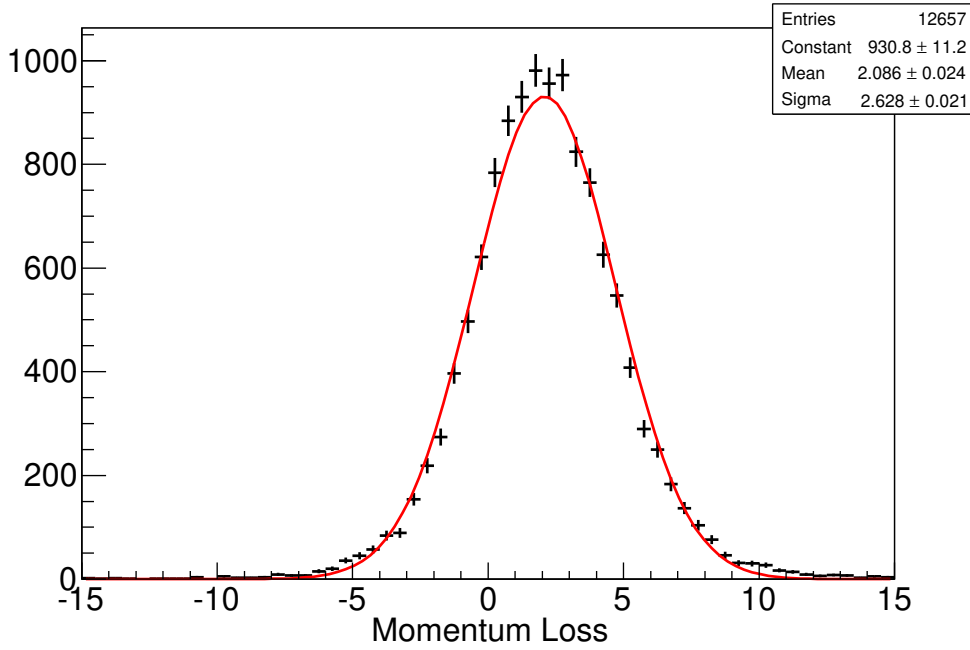


240 MeV

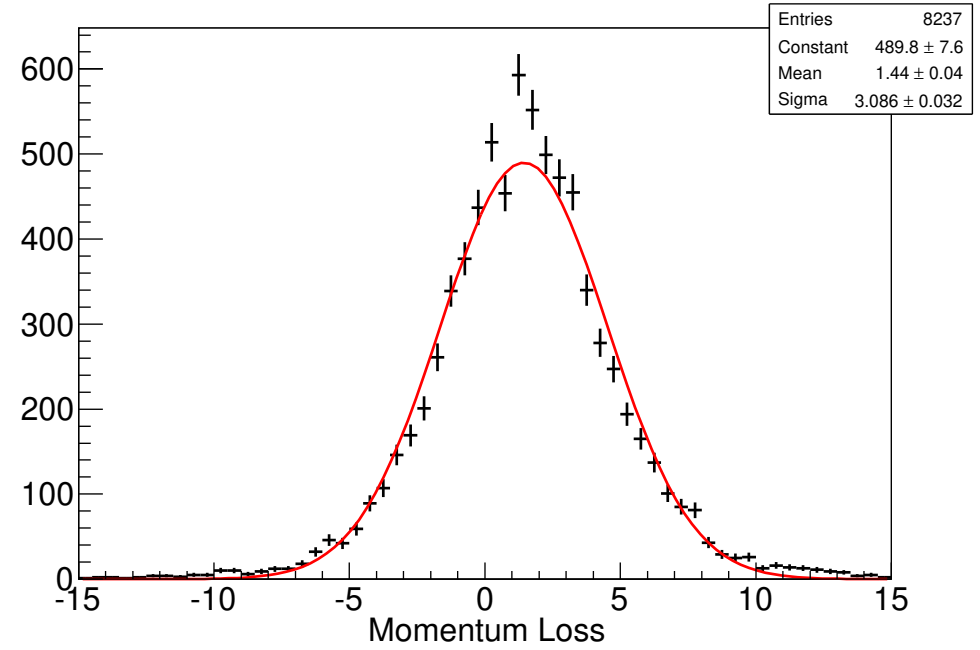


# Empty Absorber Fits

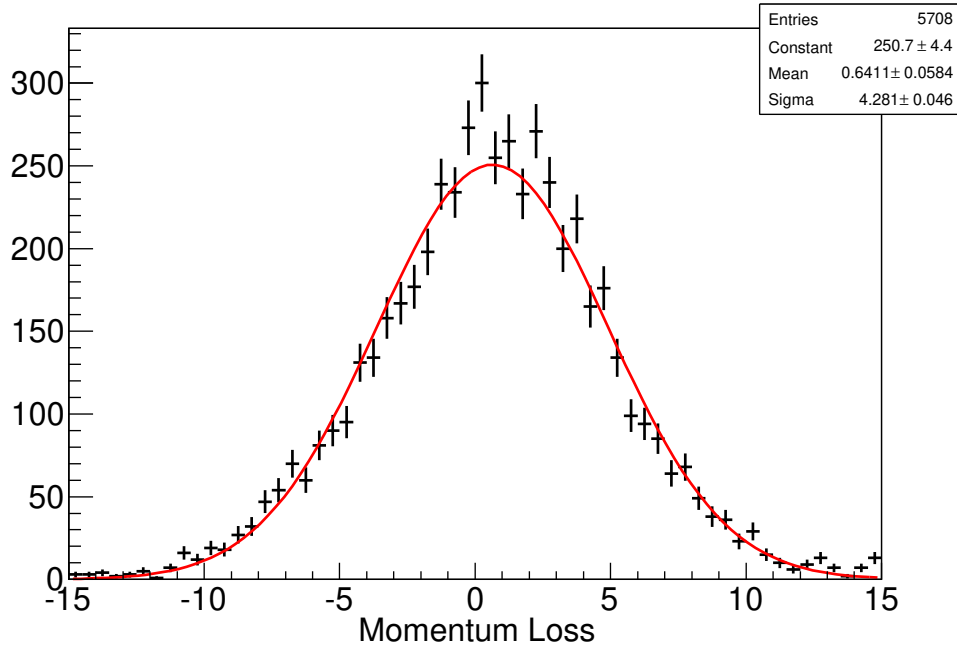
140 MeV



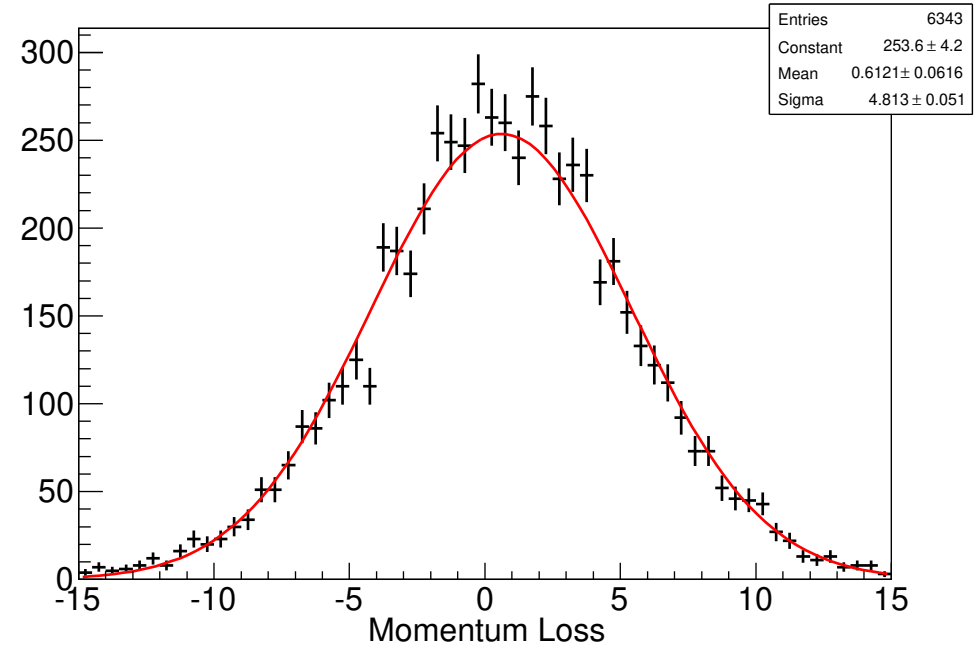
170 MeV



200 MeV

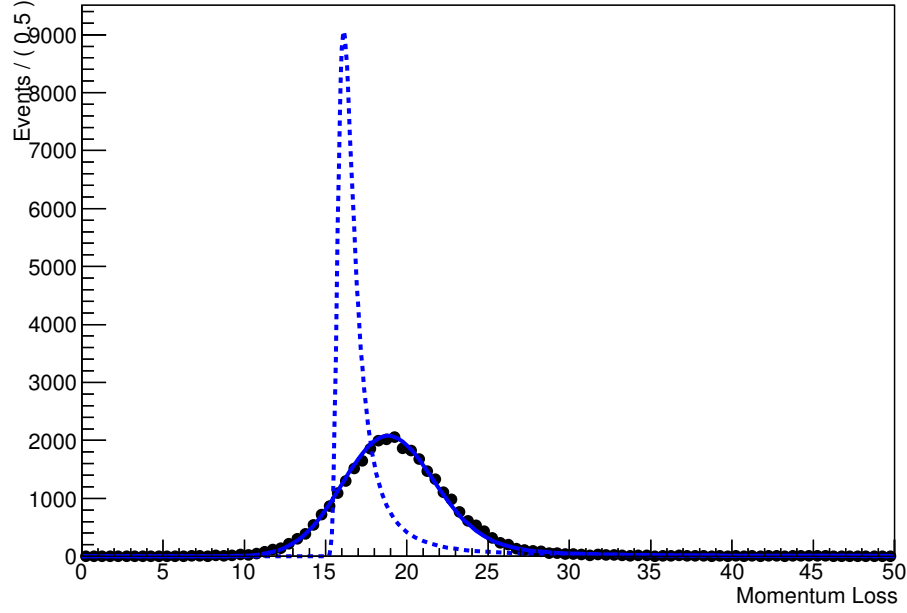


240 MeV

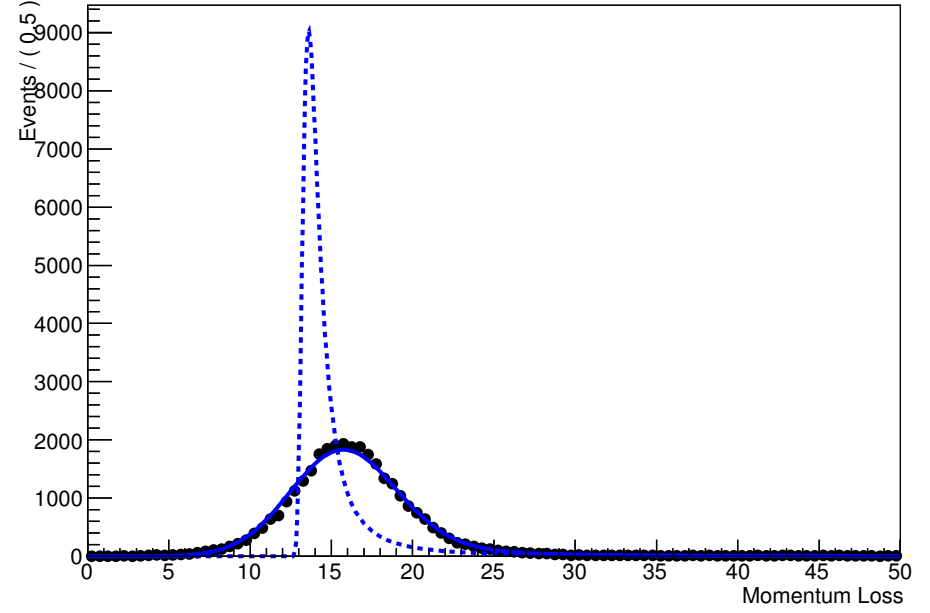


# Convolved Energy Loss Fits

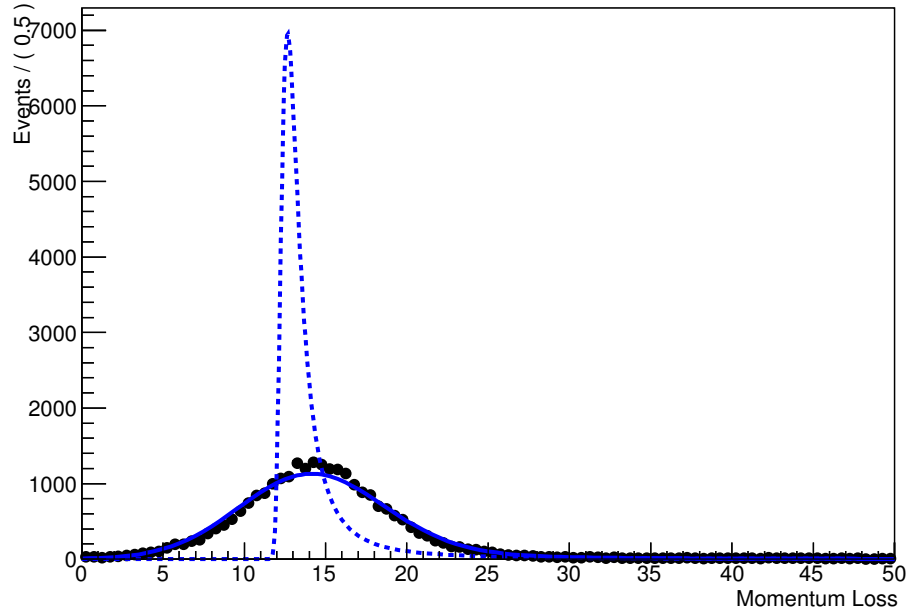
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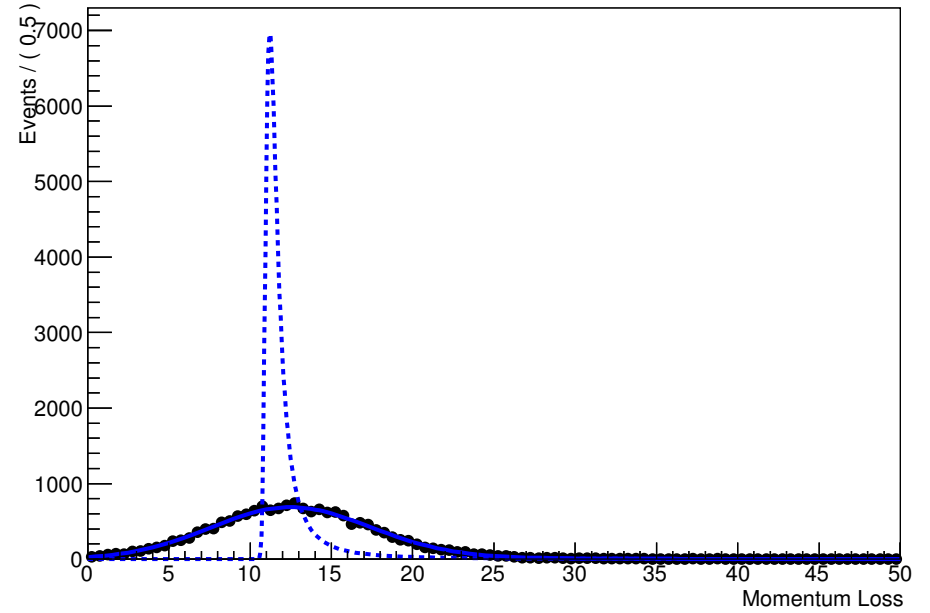
170 MeV



200 MeV

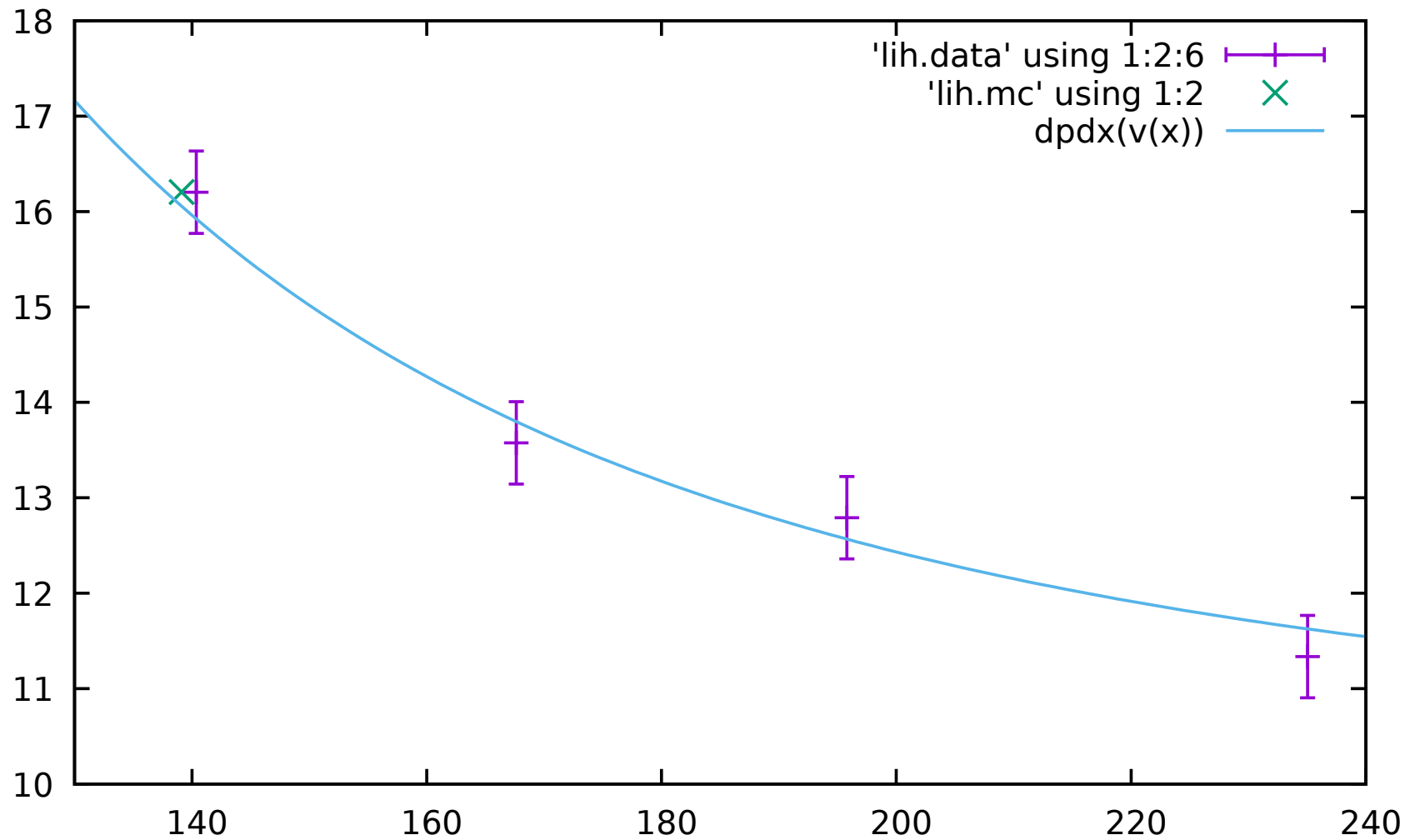


240 MeV

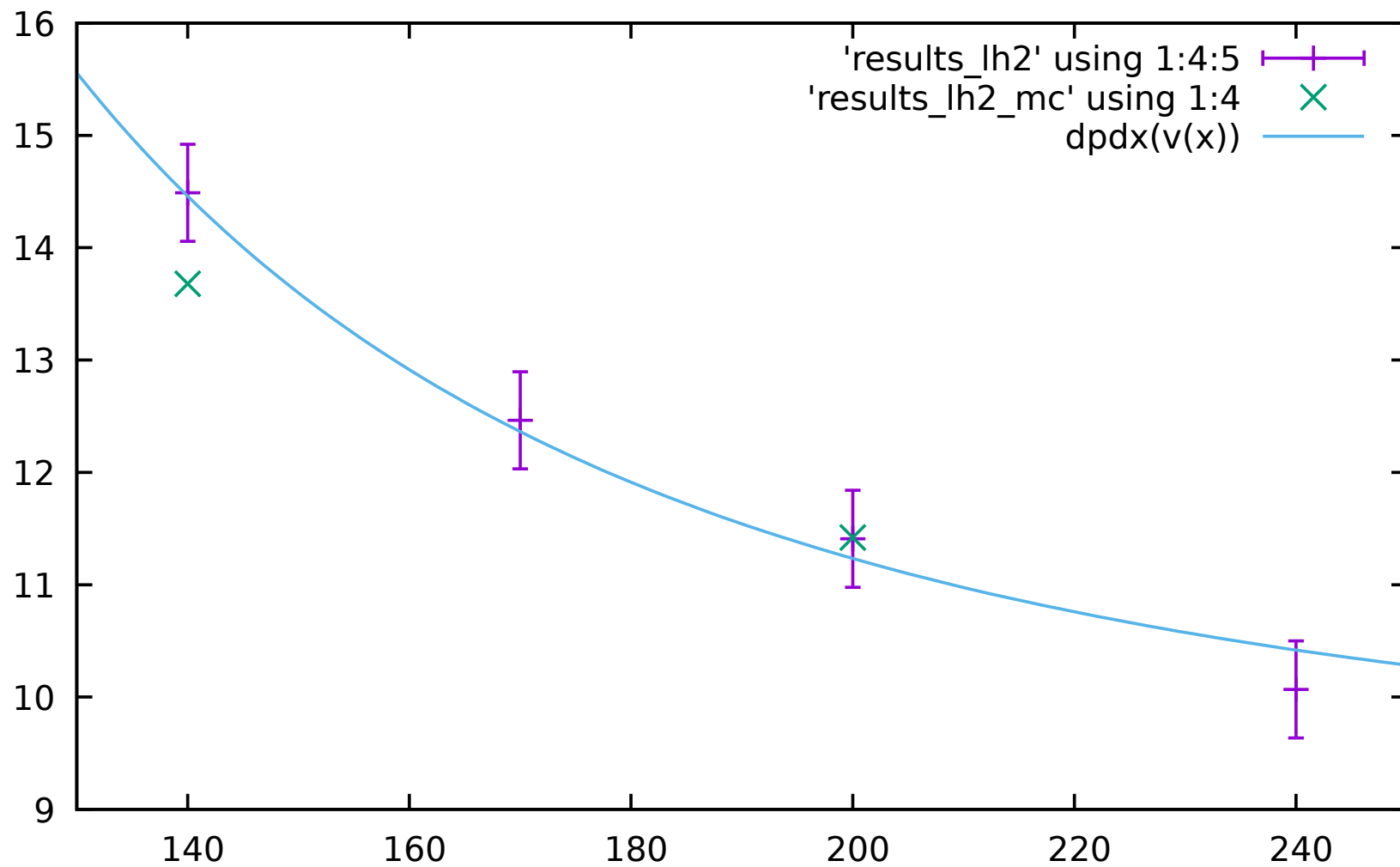


# Comparison to Theory - LiH

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# Comparison to Theory - LH2



# Systematics

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- Have MC with LH2 parameters varied (small to medium compared to statistical)
- Many systematics should be canceled out by full/empty comparison  
e.g. TOF and tracker calibrations will be only horizontal error

# Current Work

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- Extrapolate LH2 tracks to measure distance in absorber
- Finish systematics
- Need to request more MC to compare at more momentum points



# New Plots

