

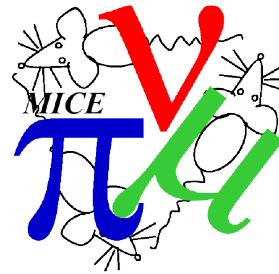
# MCS in LH2 (field-off)

## Content

- Working on putting the different elements of the analysis together
  - Cleaning up code
  - Selection reordered US->DS
- Coding error found at the KL/EMR virtual planes energy issue, there is no apparent energy increase.
- Evolution of energy through virtual planes is examined

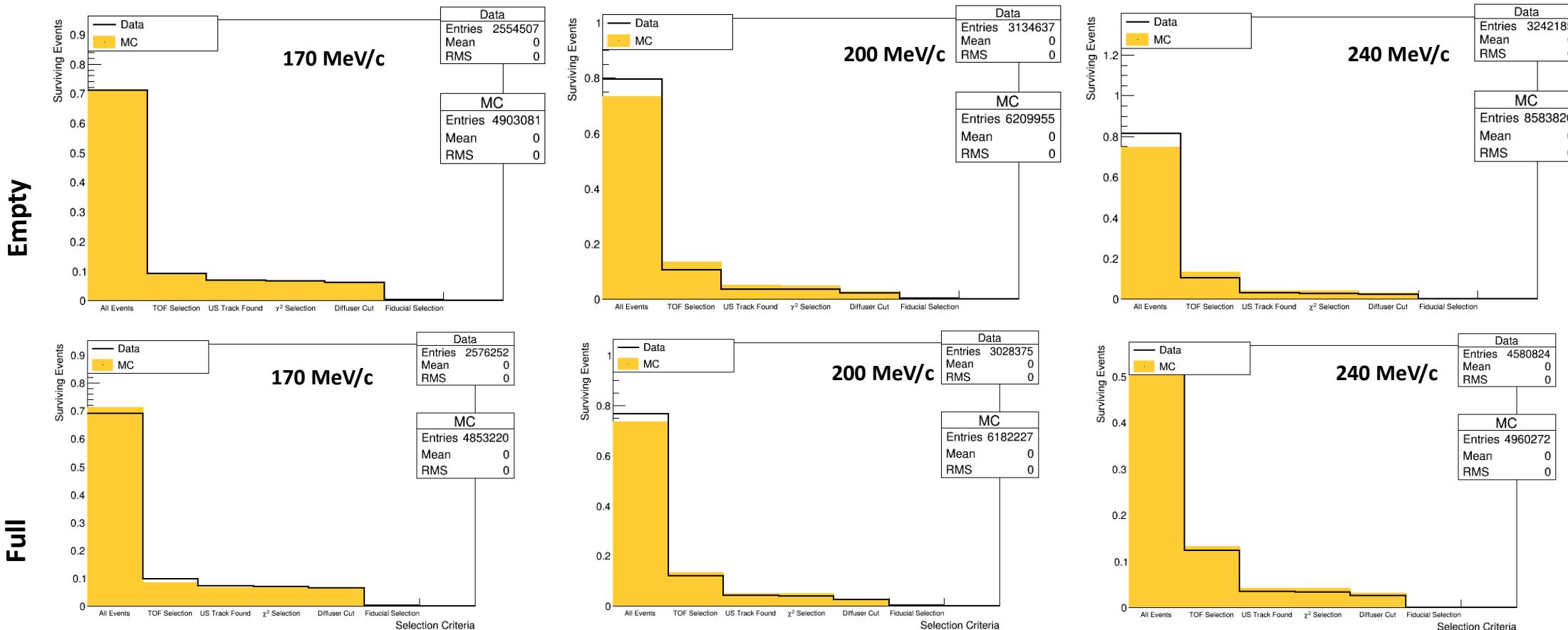


# MCS in LH2 (field-off)



## Selection Criteria

TOF0 & TOF1	<ul style="list-style-type: none"> <li>1 TOF0 SP</li> <li>1 TOF1 SP</li> <li>TOF within set interval</li> </ul>
US tracker	single track in UST
US tracker, Chi2	$\text{Chi}^2 < 4$
US tracker, Diffuser projection	Radius of projection < 90mm
US tracker, DST stations 5 projection	Radius of projection < 100mm

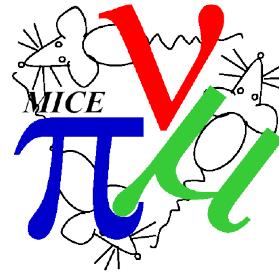




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# MCS in LH2 (field-off)

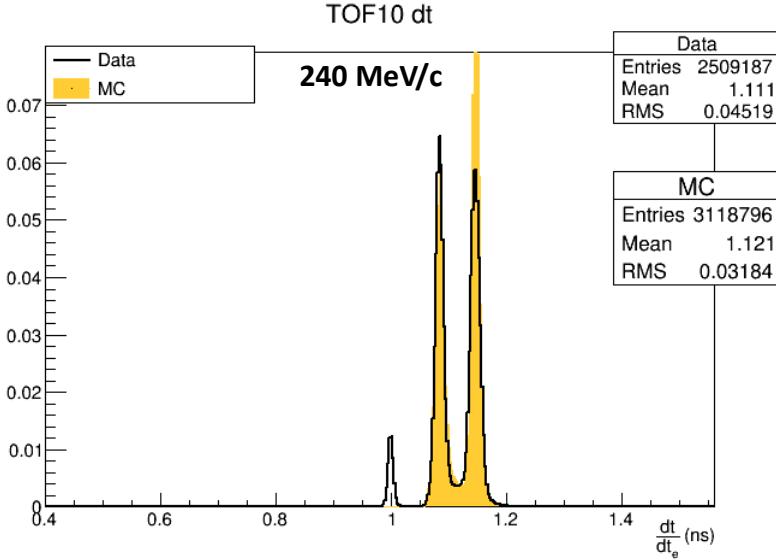
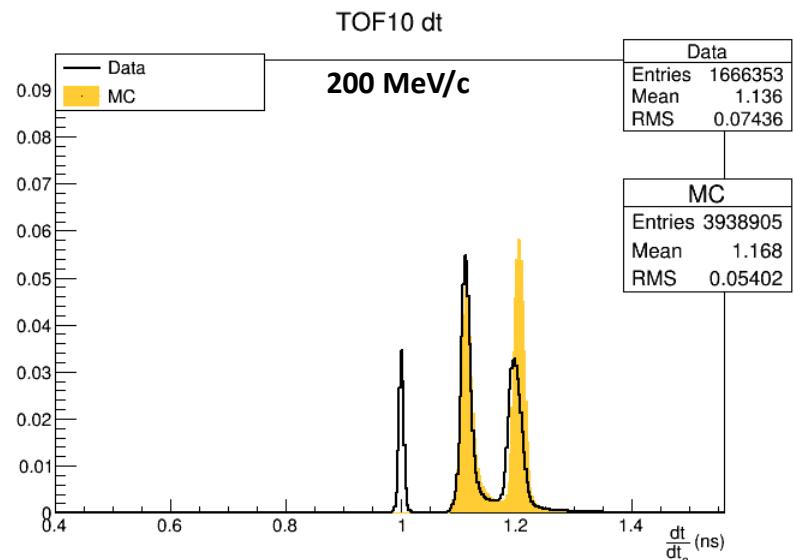
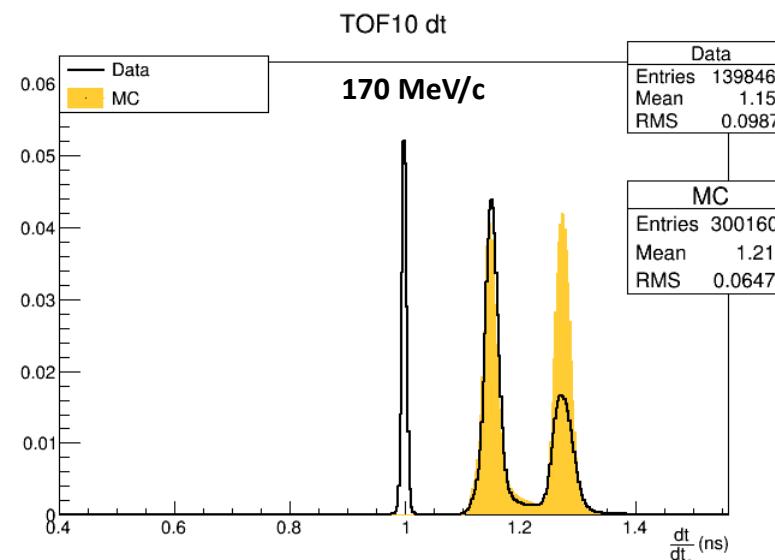
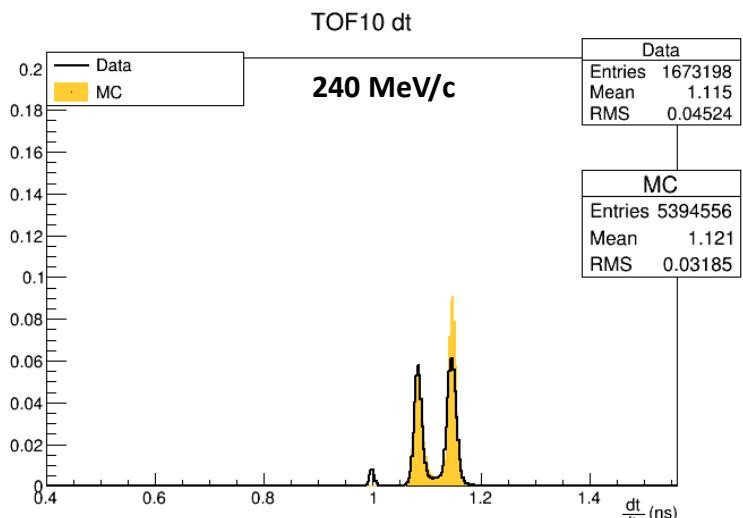
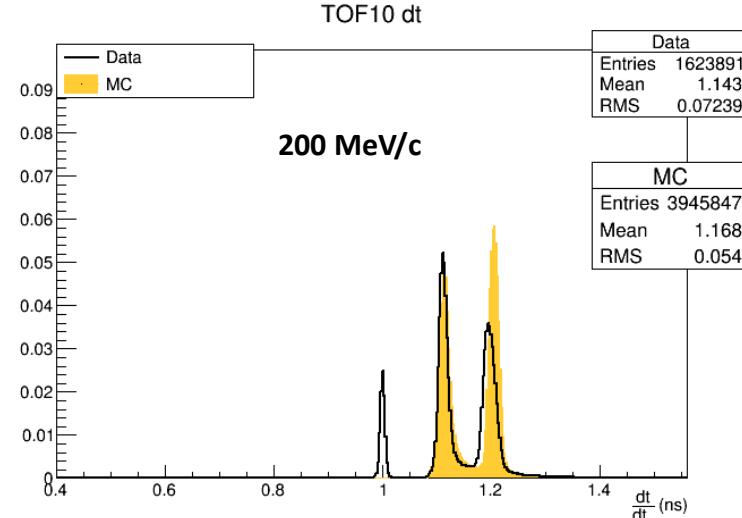
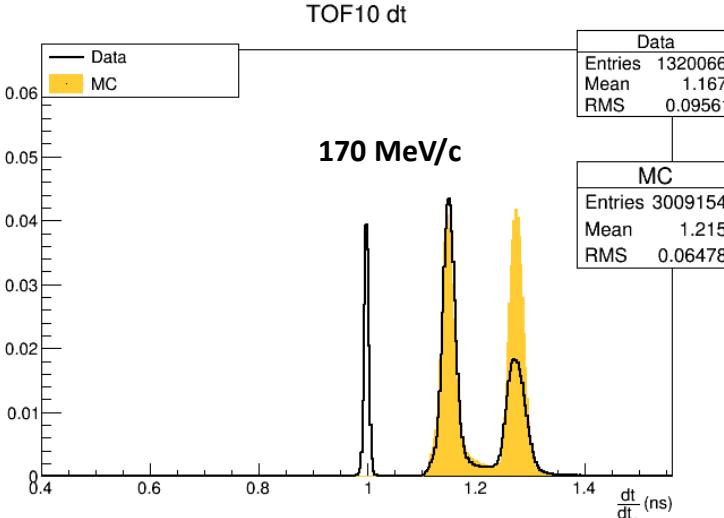


## TOF selection

### Criteria:

### Detectors: TOF0, TOF1

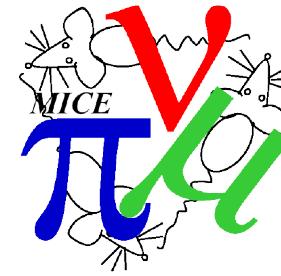
- 1 TOF0 SP, 1 TOF1 SP
- TOF within set interval



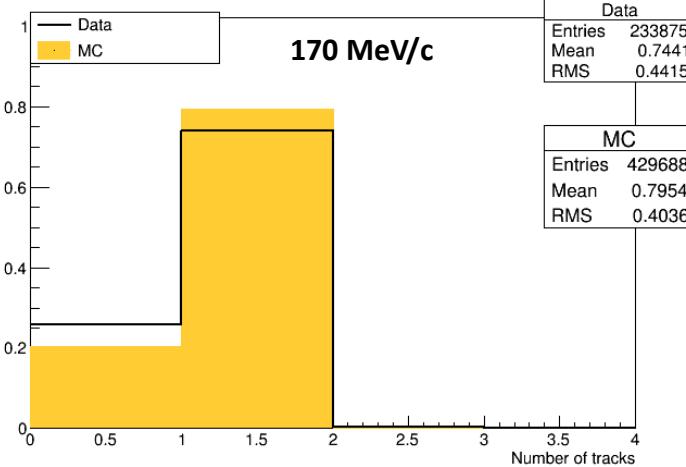
# MCS in LH2 (field-off)

Detector: UST

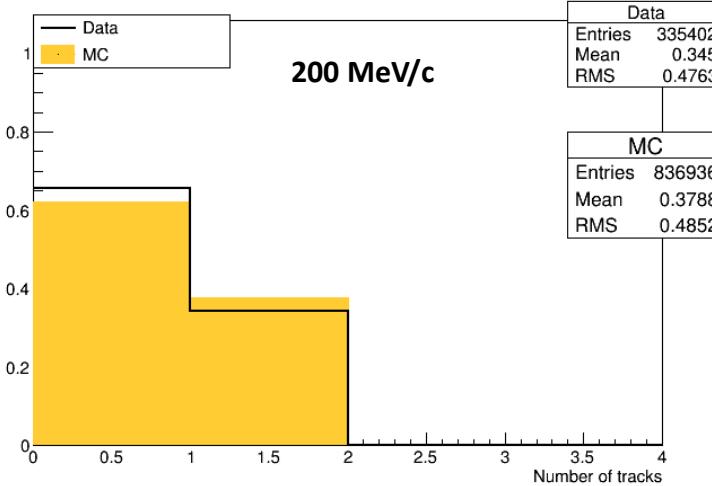
Criteria: single reconstructed track



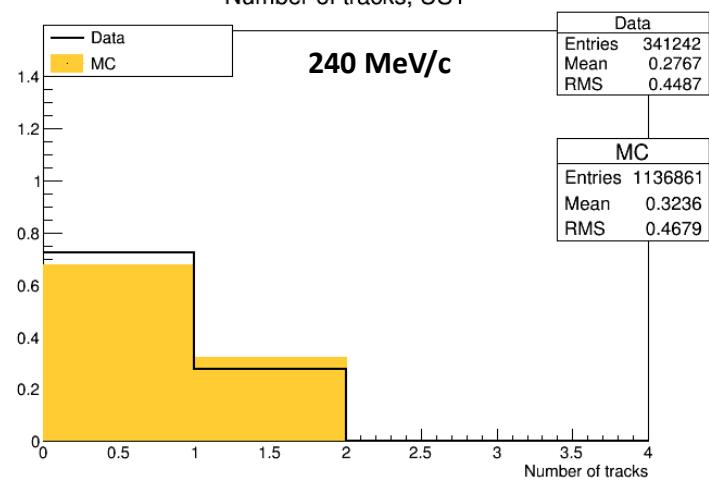
Number of tracks, UST



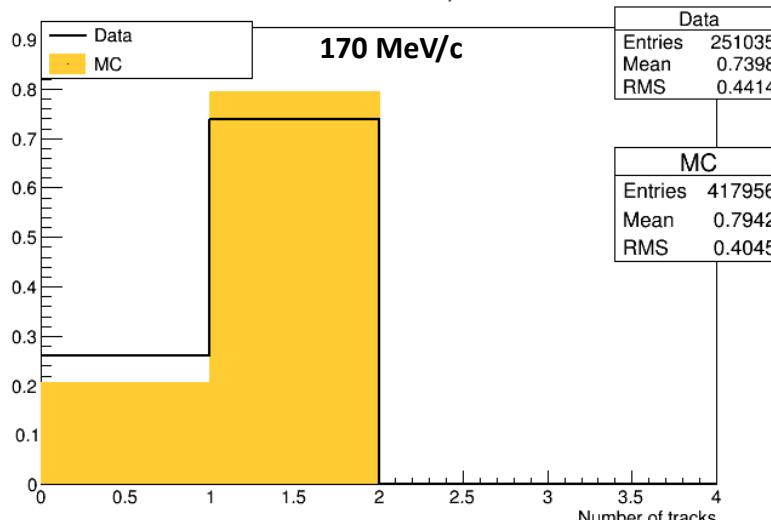
Number of tracks, UST



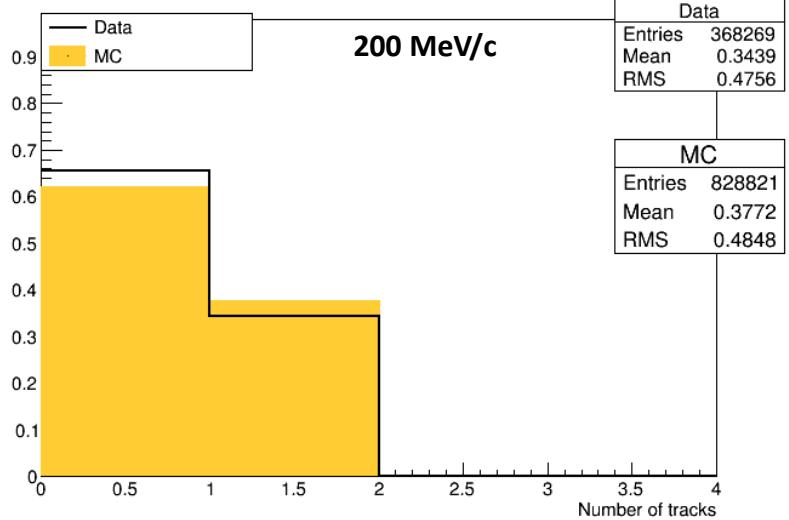
Number of tracks, UST



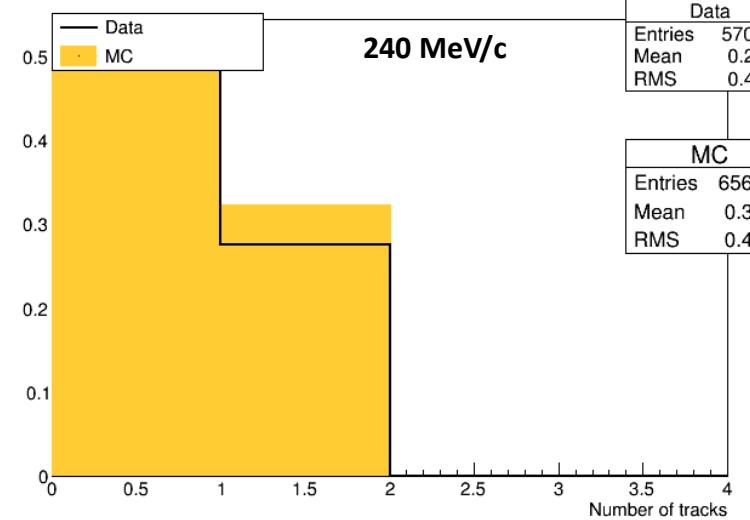
Number of tracks, UST



Number of tracks, UST



Number of tracks, UST





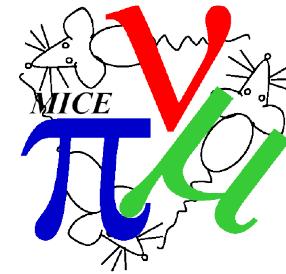
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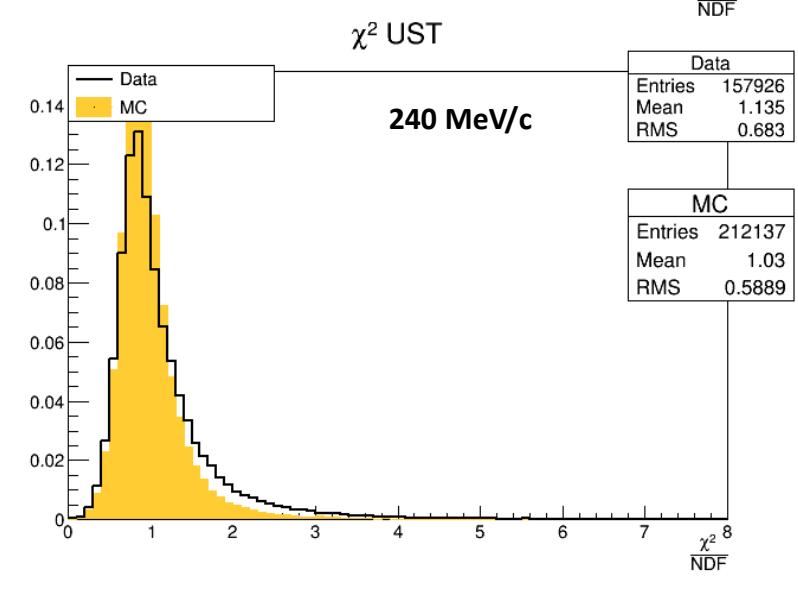
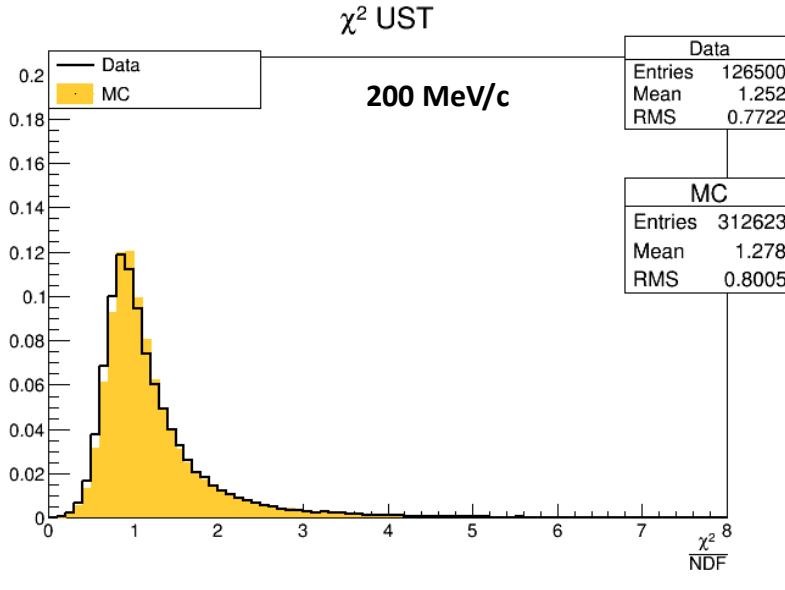
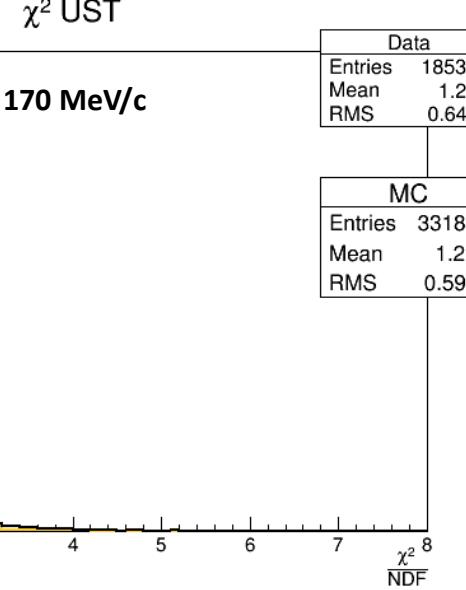
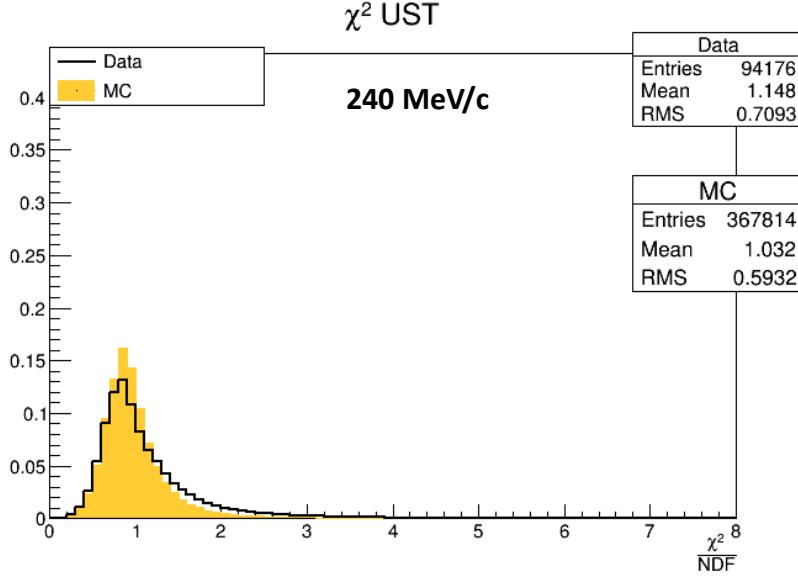
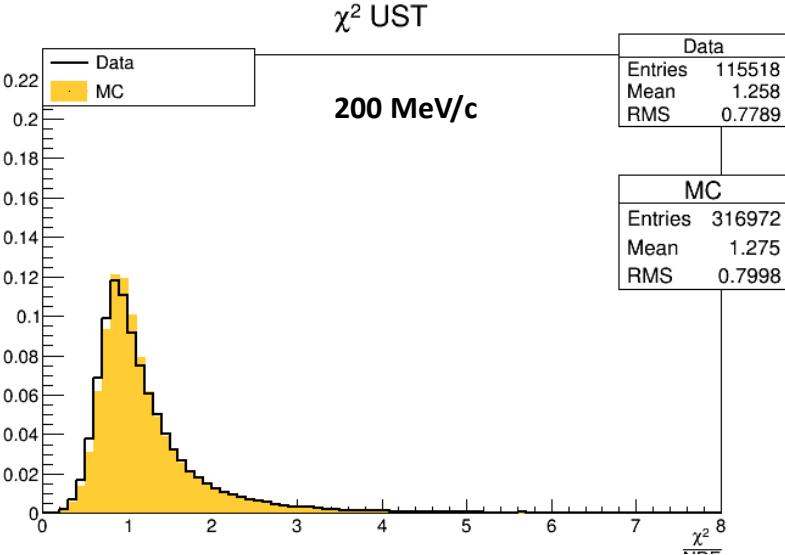
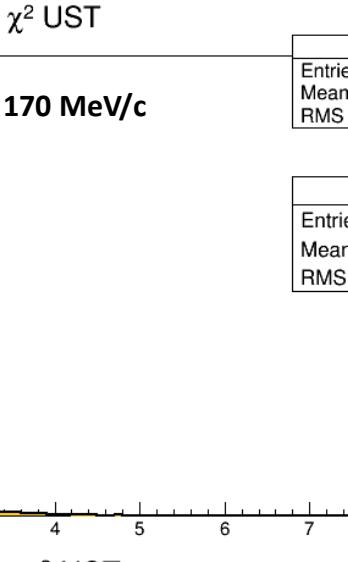
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# MCS in LH2 (field-off)

Detector: UST



Selection Criteria: Chi2<4



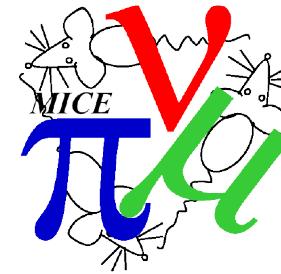


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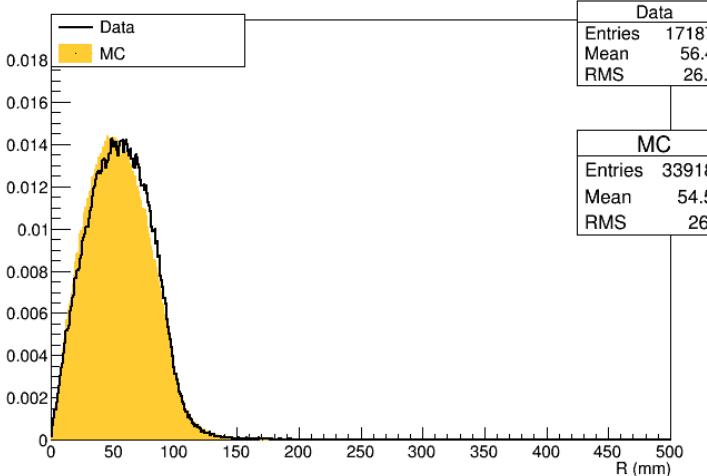
# MCS in LH2 (field-off)

Detector: UST

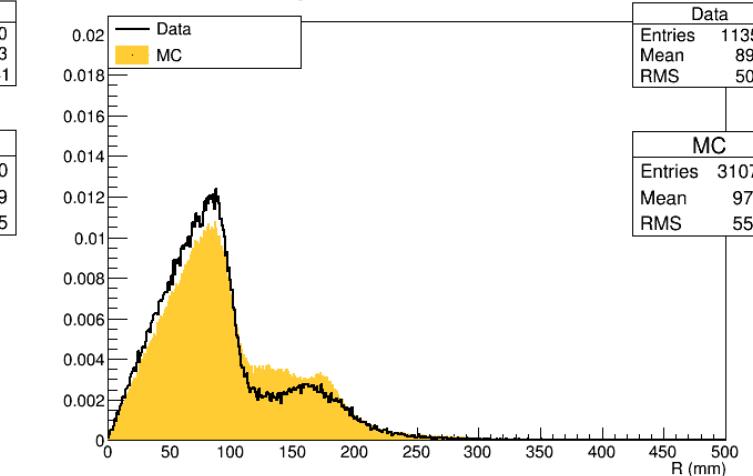


Selection Criteria: projected radius at diffuser < 90mm

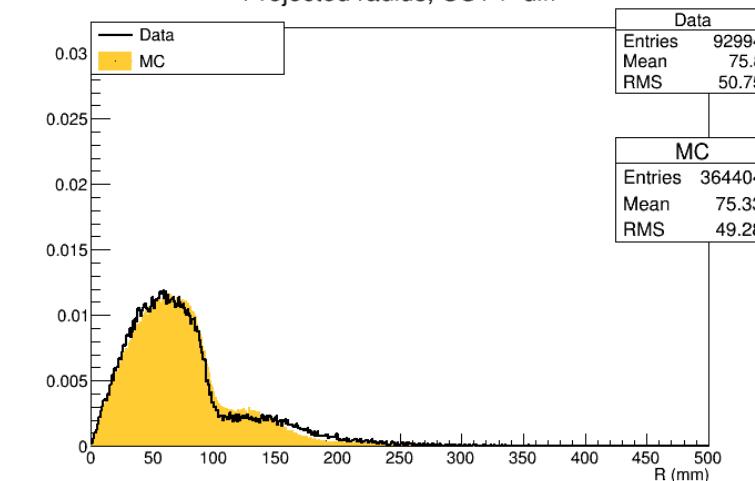
Projected radius, UST-> diff



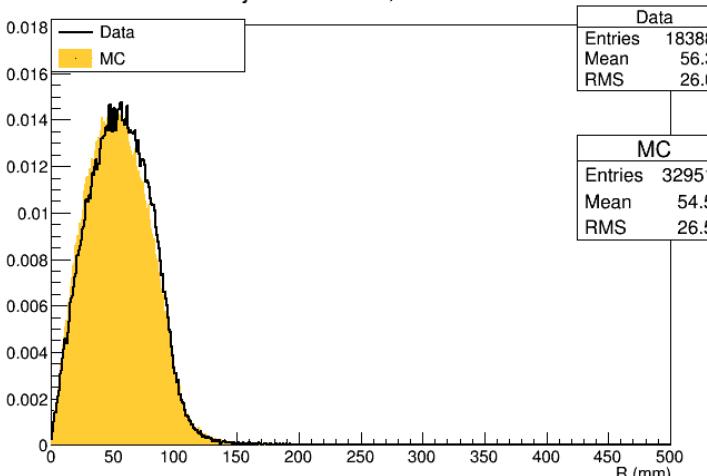
Projected radius, UST-> diff



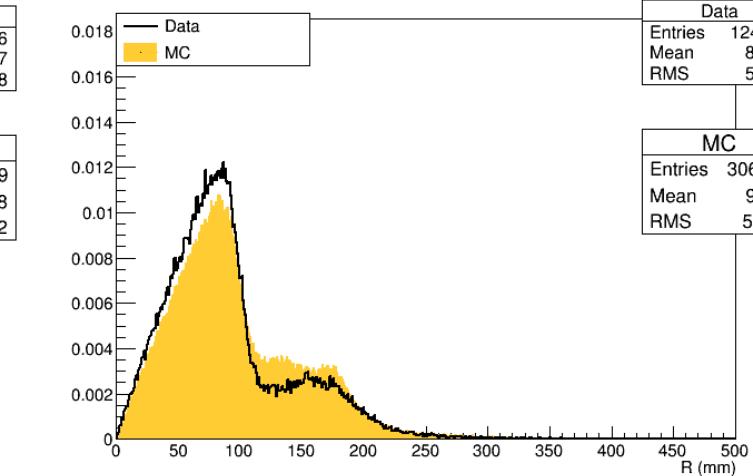
Projected radius, UST-> diff



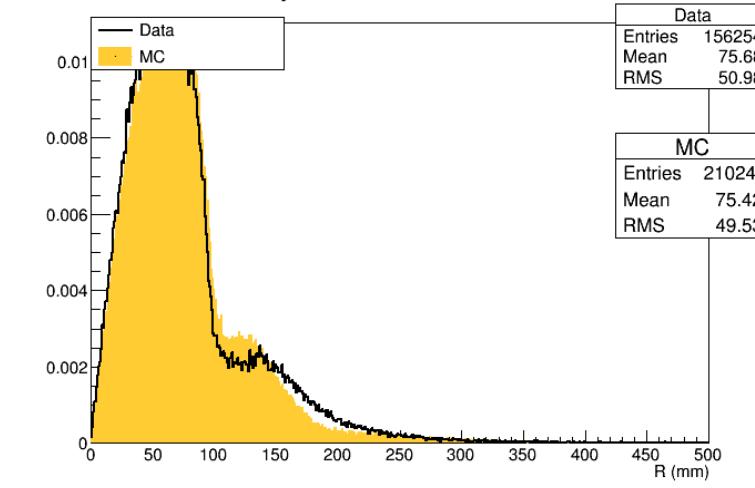
Projected radius, UST-> diff



Projected radius, UST-> diff



Projected radius, UST-> diff



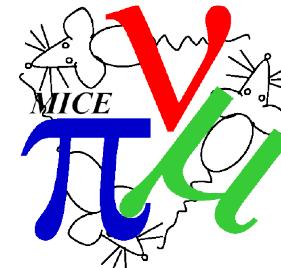


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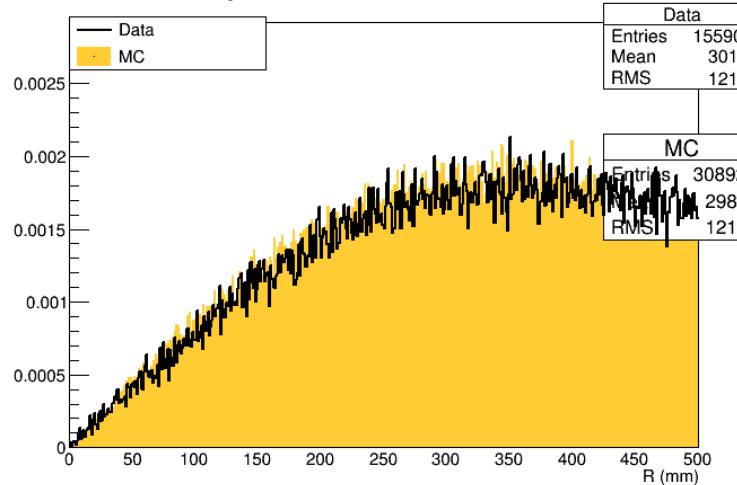
# MCS in LH2 (field-off)

Detector: UST

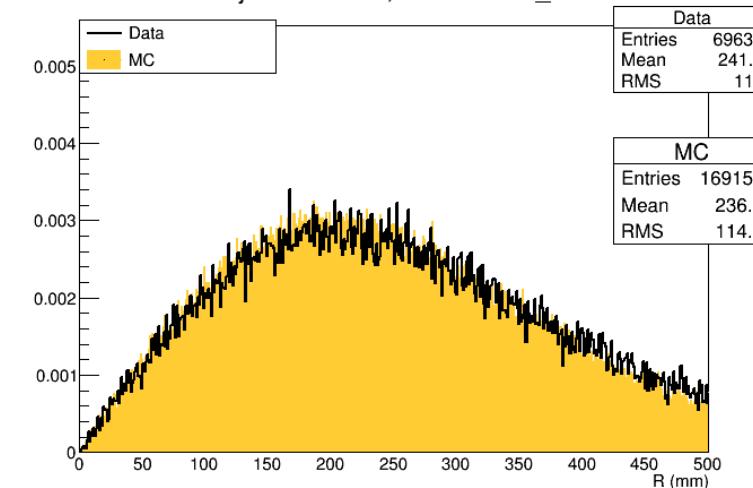


Selection Criteria: projected radius at DST St5 < 100mm

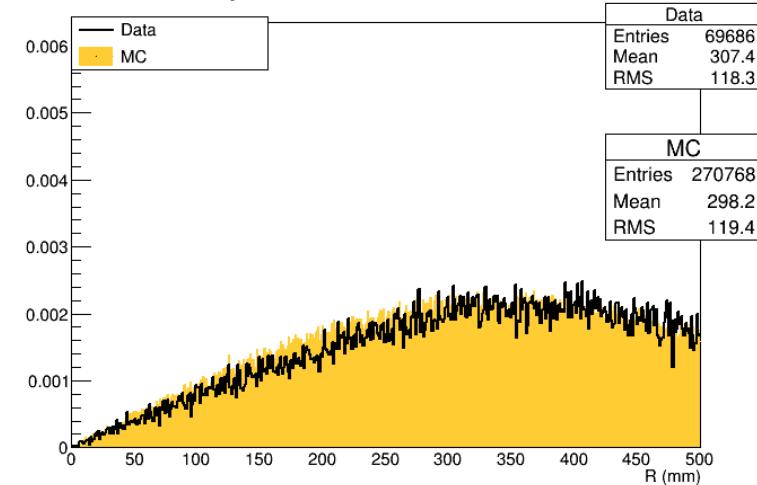
Projected radius, UST-> DST\_St5



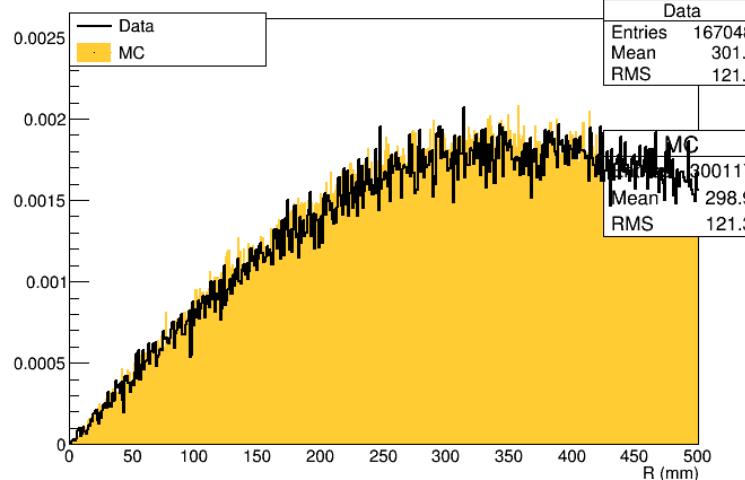
Projected radius, UST-> DST\_St5



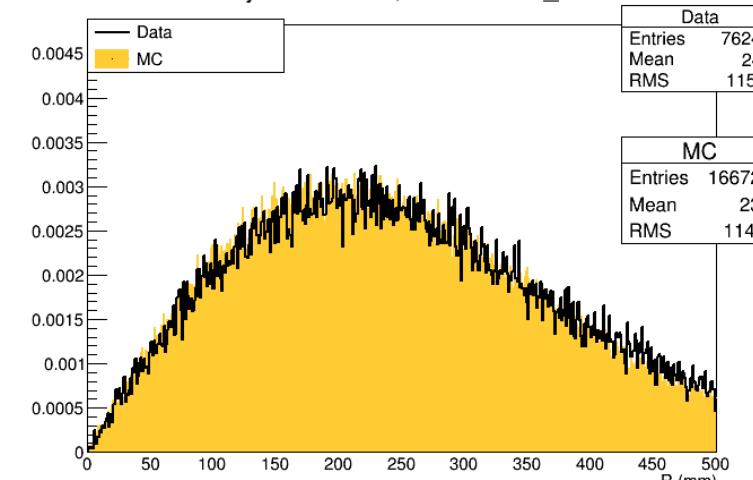
Projected radius, UST-> DST\_St5



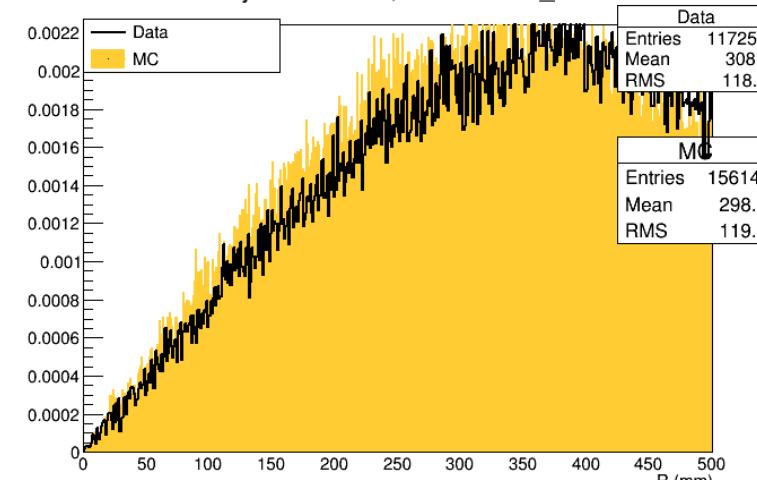
Projected radius, UST-> DST\_St5



Projected radius, UST-> DST\_St5



Projected radius, UST-> DST\_St5



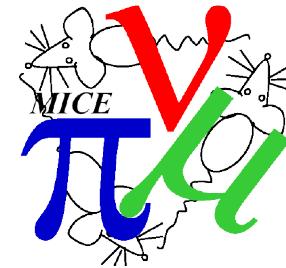


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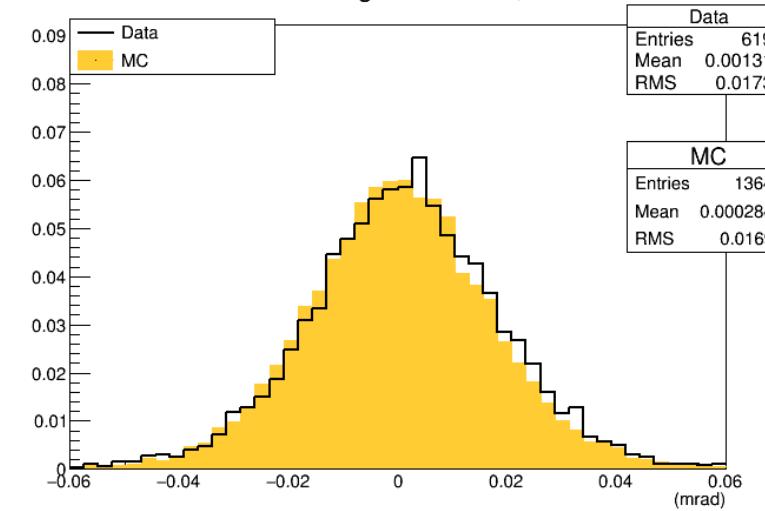
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of  
Glasgow

# MCS in LH2 (field-off)

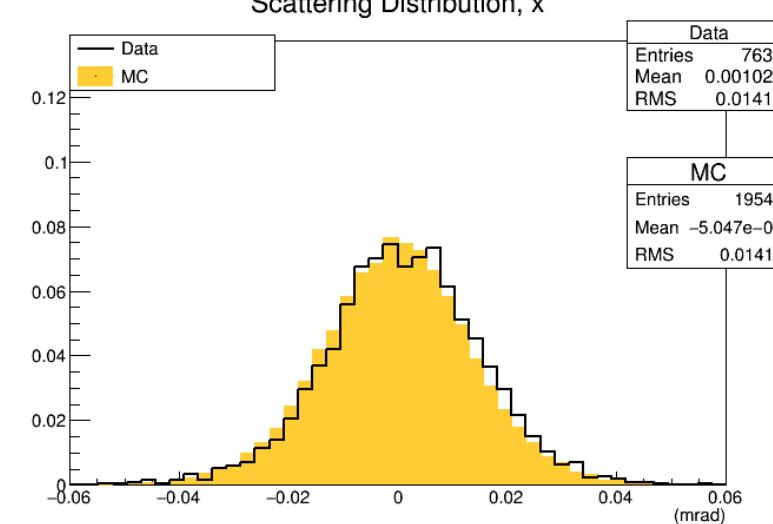
Final sample, Empty



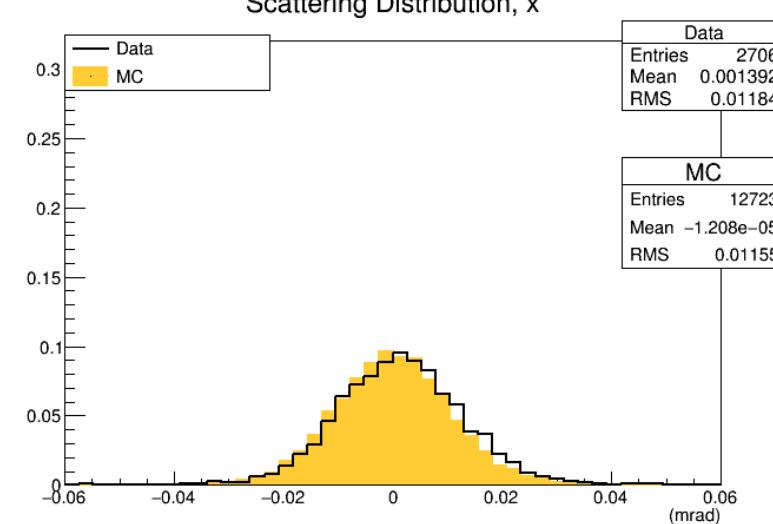
Scattering Distribution, x



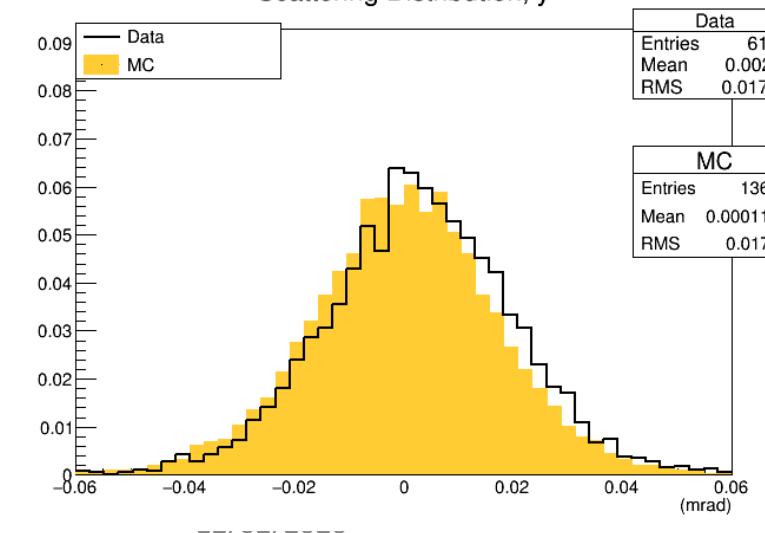
Scattering Distribution, x



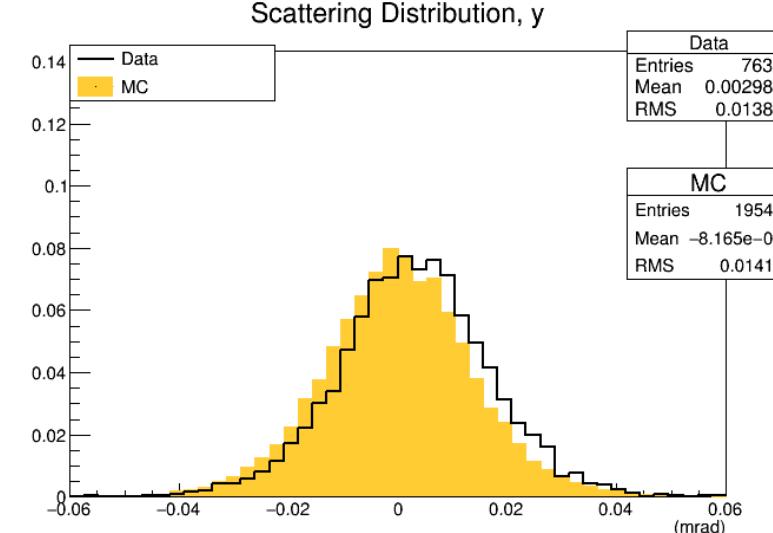
Scattering Distribution, x



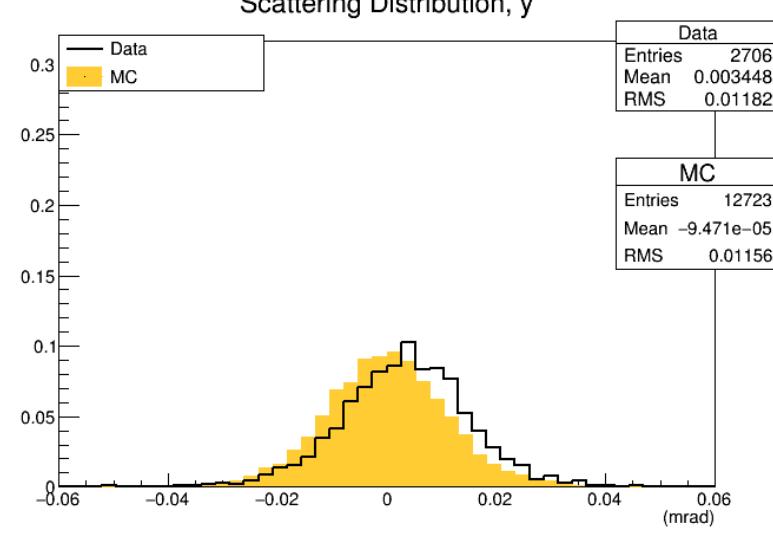
Scattering Distribution, y



Scattering Distribution, y



Scattering Distribution, y



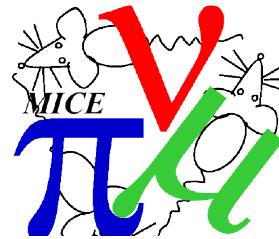


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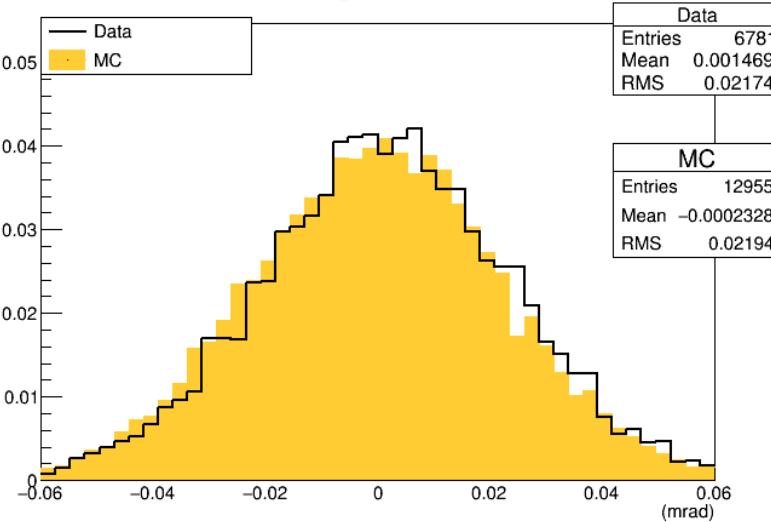
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of Glasgow  
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# MCS in LH2 (field-off)

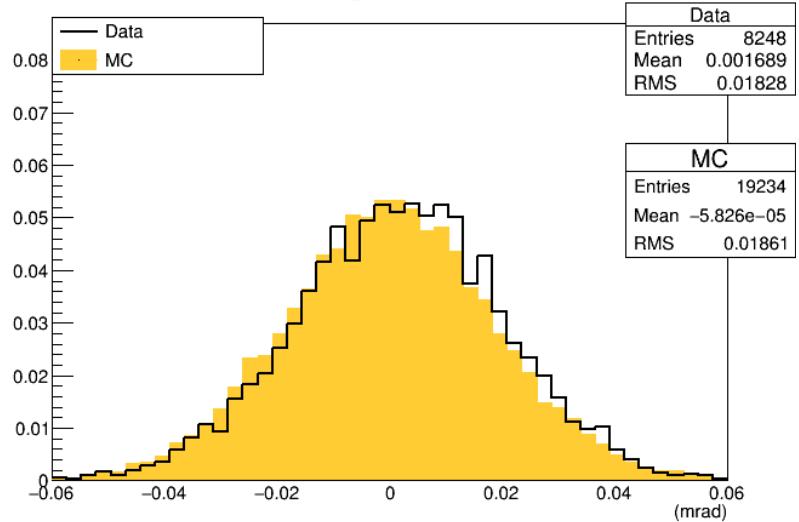
Final sample, Full



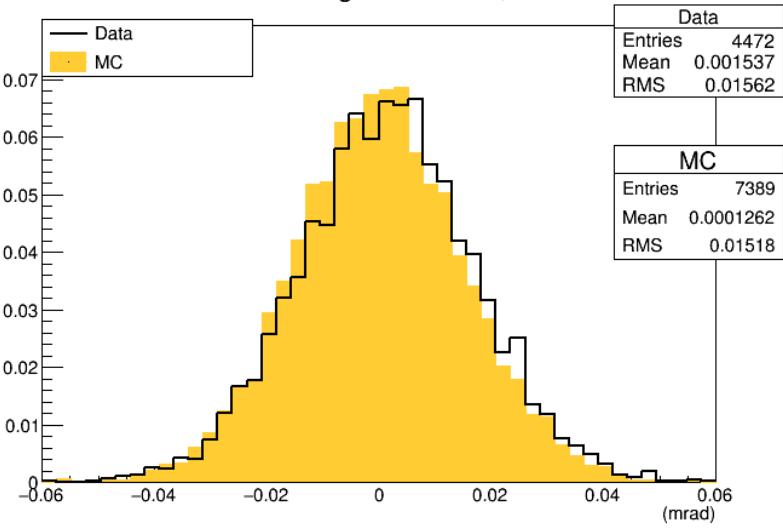
Scattering Distribution, x



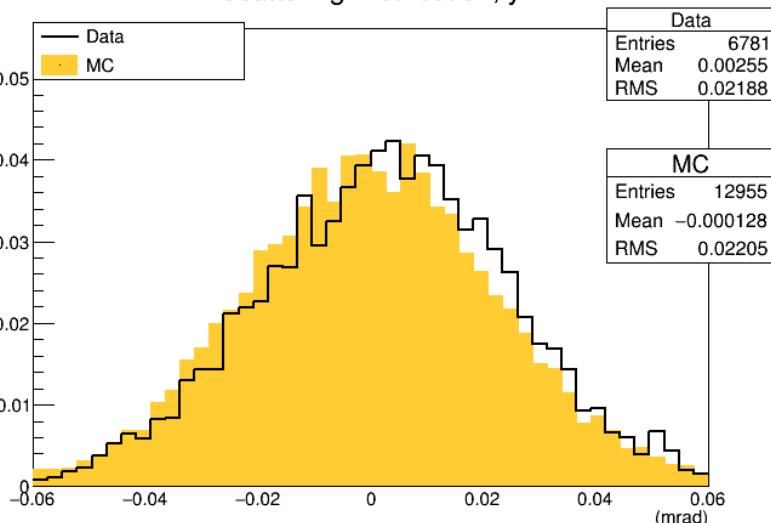
Scattering Distribution, x



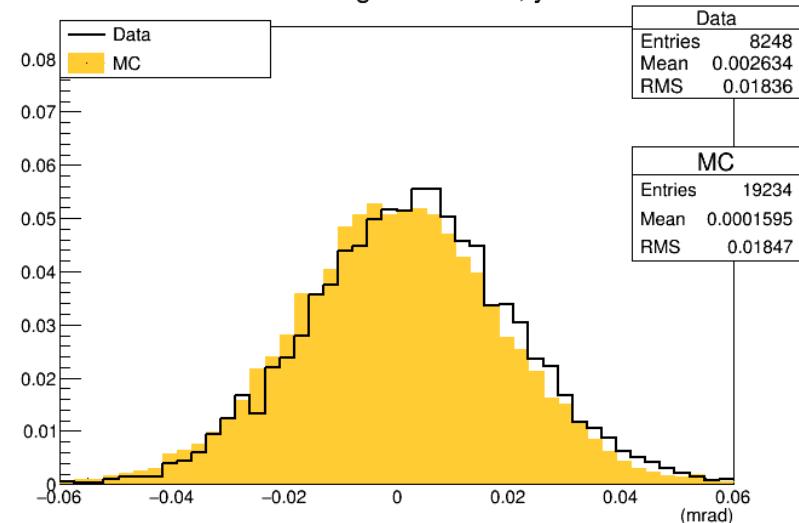
Scattering Distribution, x



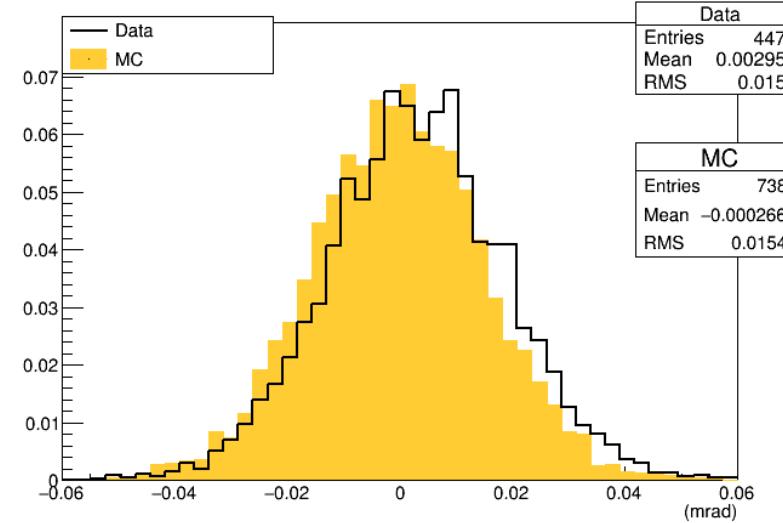
Scattering Distribution, y



Scattering Distribution, y



Scattering Distribution, y



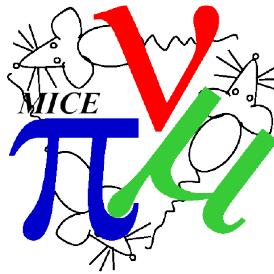
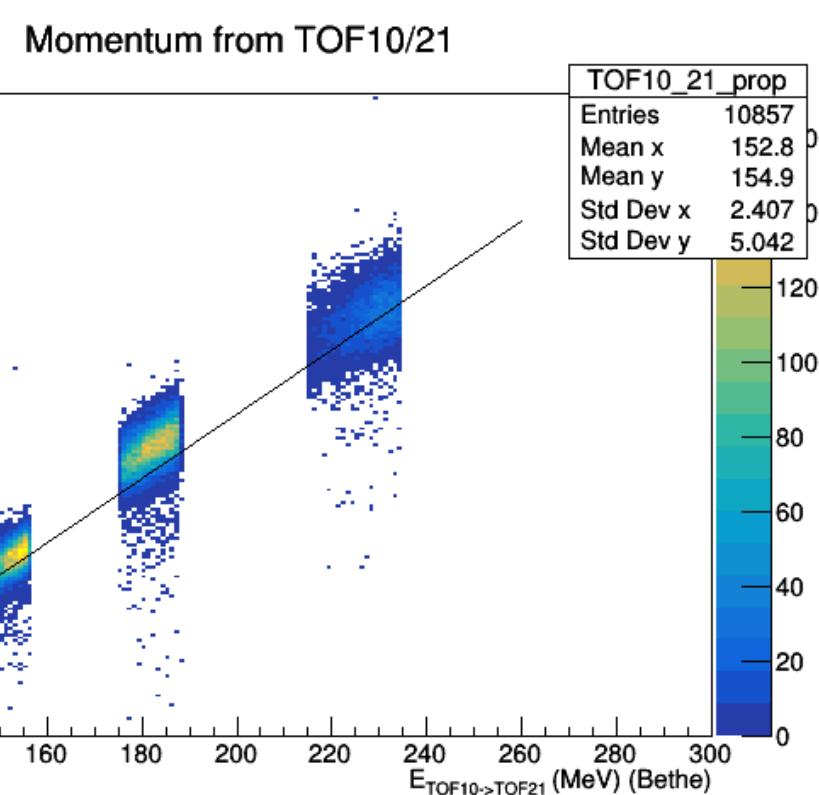
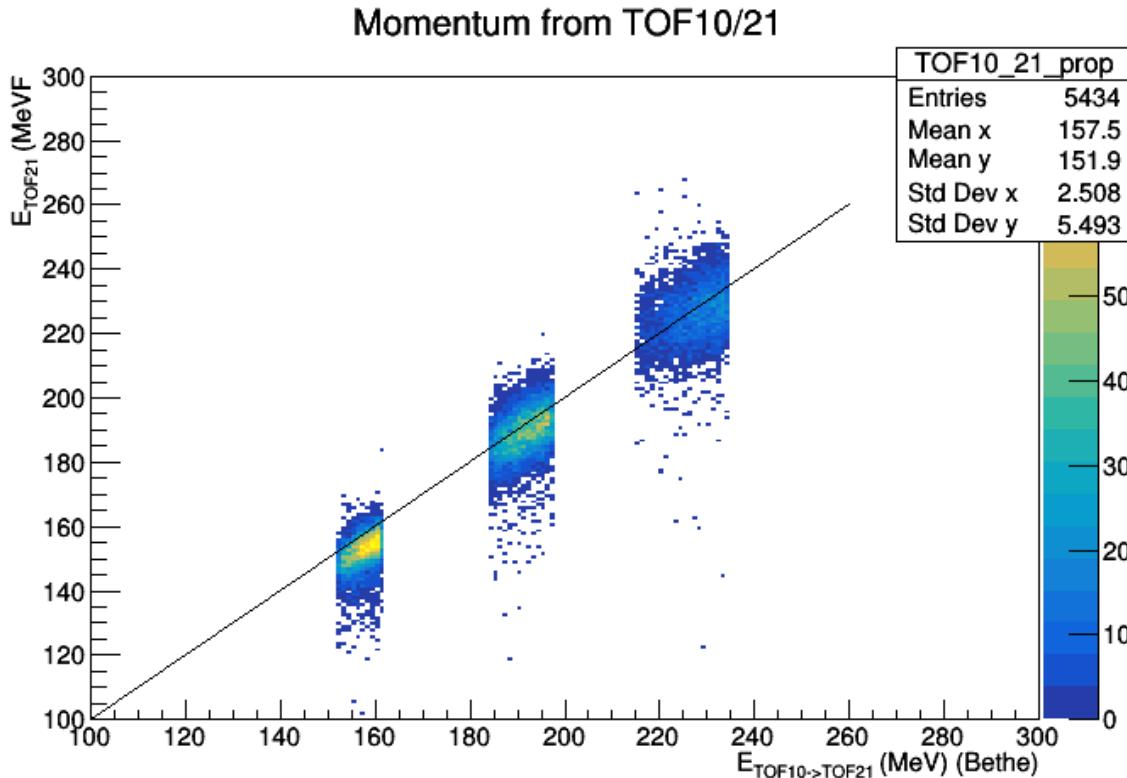


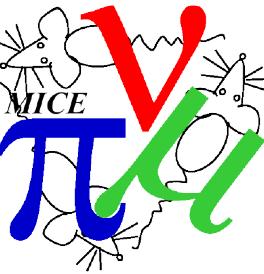
# MCS in LH2 (field-off)

Energy propagation

Full

Data

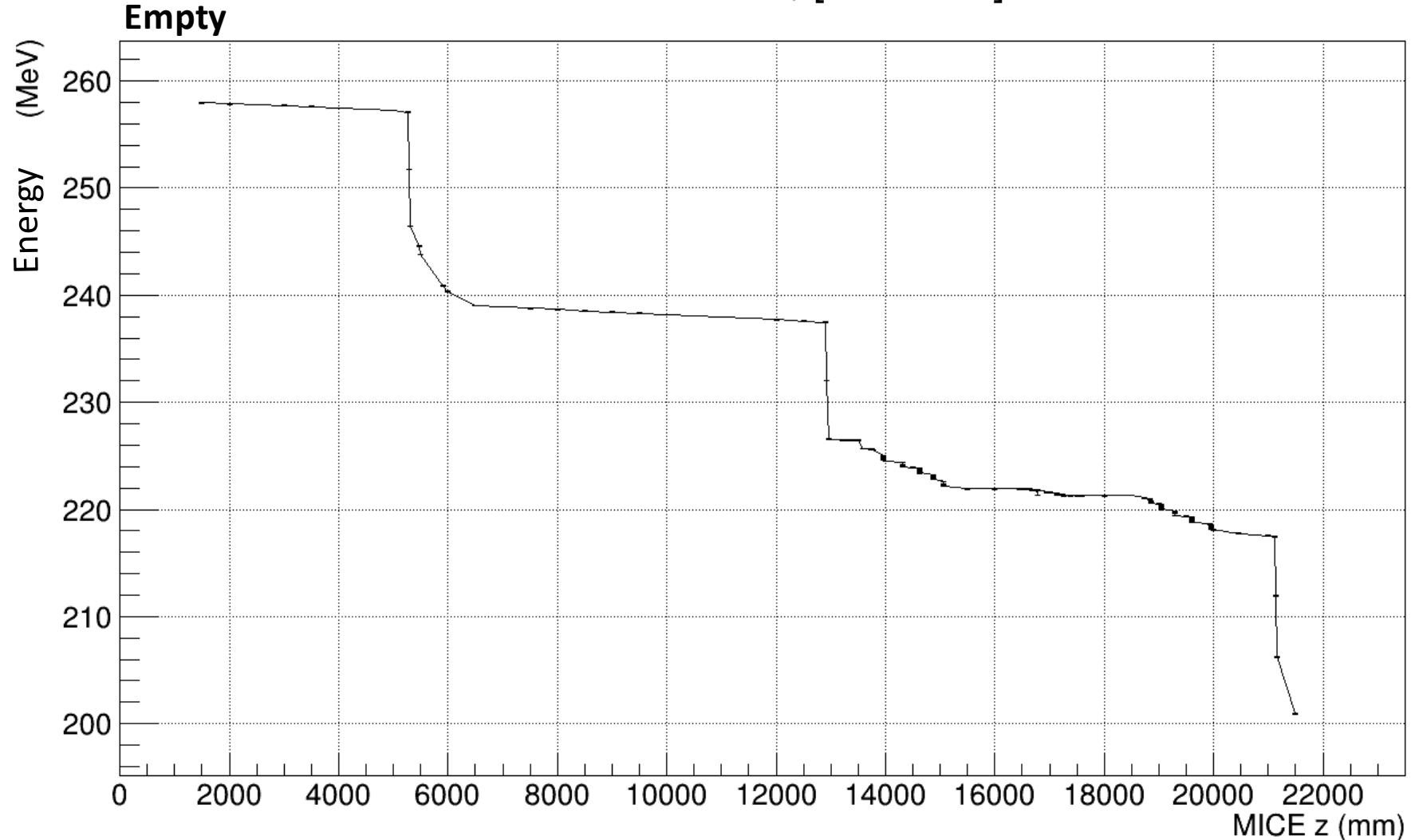




# MCS in LH2 (field-off)

EMR & KL virtual plane energy issue

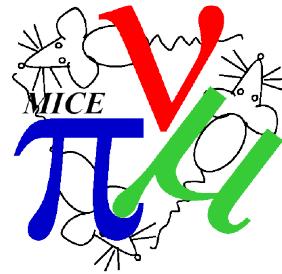
Virtual Planes, [200EMC]



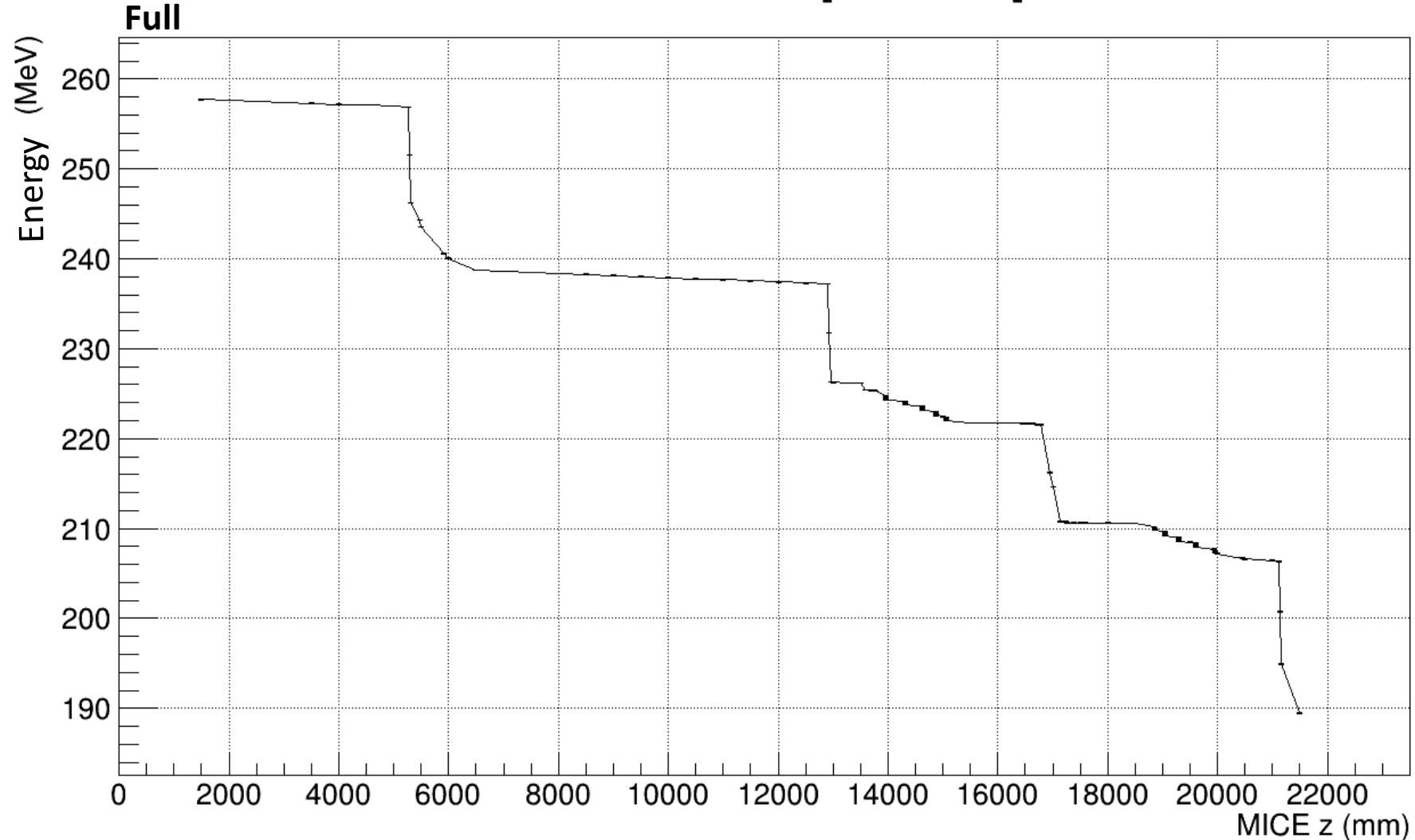


# MCS in LH2 (field-off)

EMR & KL virtual plane energy issue



Virtual Planes, [200FMC]

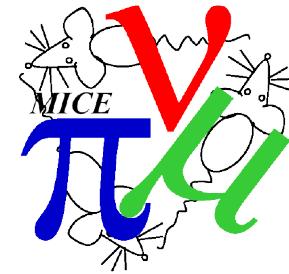




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# MCS in LH2 (field-off)

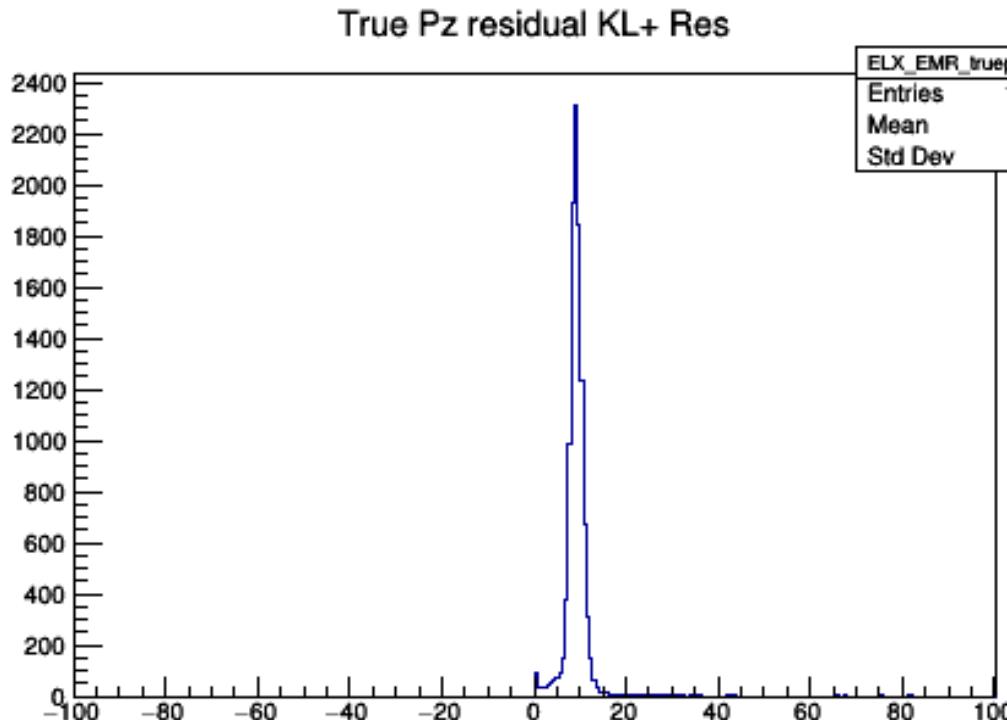


EMR & KL virtual plane energy residual

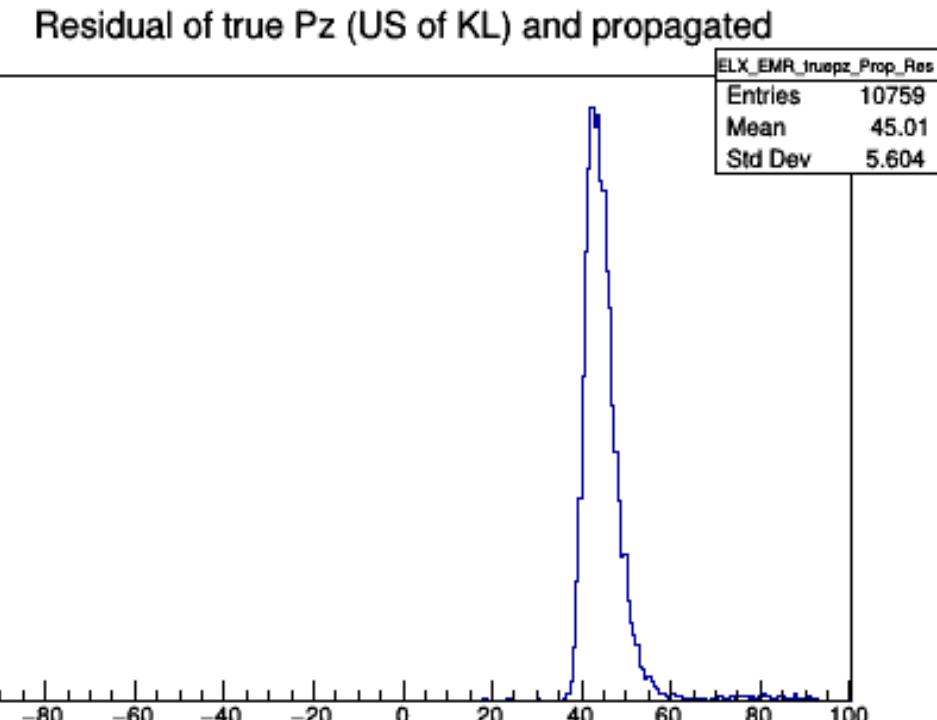
MC

170 MeV/c (Full)

$Pz_{\text{truth}}(\text{US of KL}) - Pz_{\text{truth}}(\text{DS of KL})$

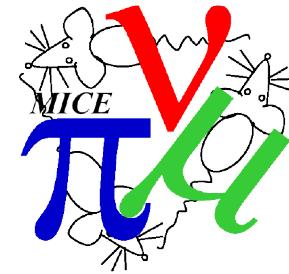


$Pz_{\text{truth}}(\text{US of KL}) - Pz_{\text{BetheBloch}}(\text{DS of KL})$





# MCS in LH2 (field-off)



EMR & KL virtual plane energy residual

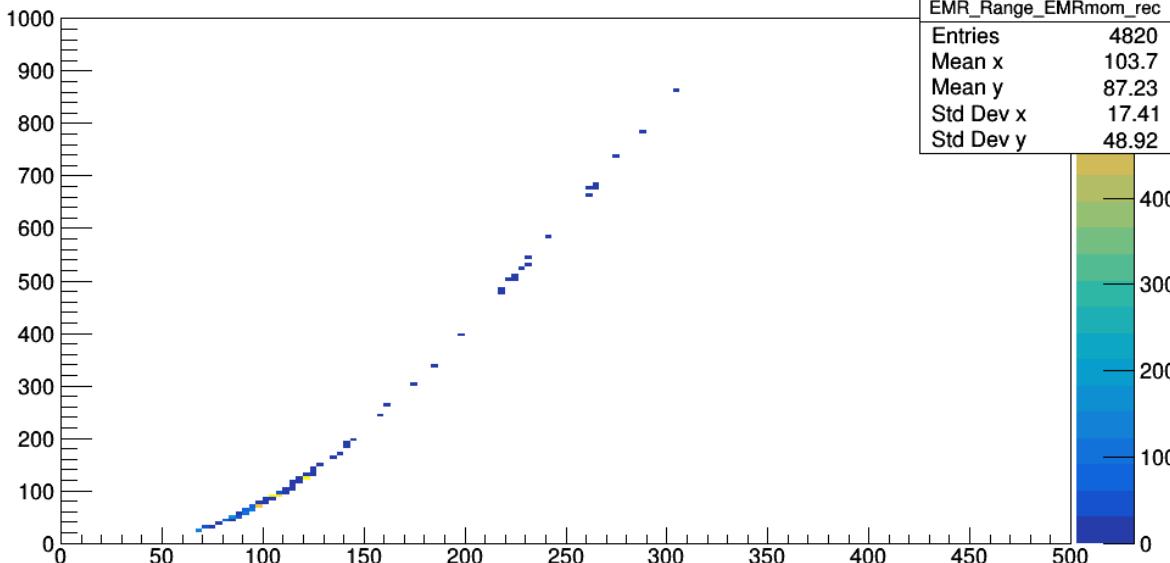
Data

Full

170 MeV/c

MC

EMR Range vs EMR rec. pz EMRmom\_rec



EMR Range vs EMR rec. pz EMRmom\_rec

