

MCS in LH_2 , Field-off



Outline

- Updated MC/Data comparison with latest MC
- Revised TOF normalisation method
- Currently working on alignment correction

TOF normalisation



- Consider a systematic delay that is the same for all particles for each TOF,

$$\Delta t_{TOF1} \neq \Delta t_{TOF0}$$

- That produces a non-zero Δt_{TOF10}
- We know for the true electron TOF

$$dt_{TOF10}^e = dt_{TOF10}^c$$

- To eliminate any bias, set

$$\Delta t_{TOF10} = dt_{TOF10}^c - dt_{TOF10}^e$$

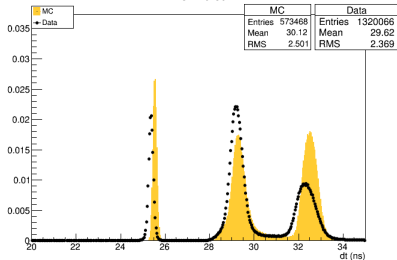
- Take the ratio:

$$\beta_{norm}^{-1} = \frac{dt_{TOF10}^\mu}{dt_{TOF10}^e} = \frac{dt_{TOF10}^\mu + \Delta t_{TOF10}}{dt_{TOF10}^e + \Delta t_{TOF10}} = \frac{dt_{TOF10}^\mu + dt_{TOF10}^c - dt_{TOF10}^e}{dt_{TOF10}^c}$$

TOF selection, 170MeV/c

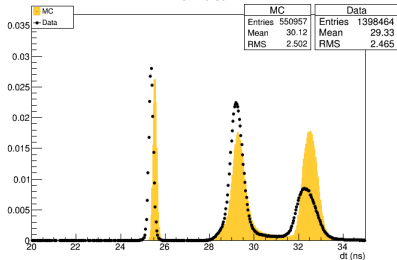
Empty

TOF10 dt

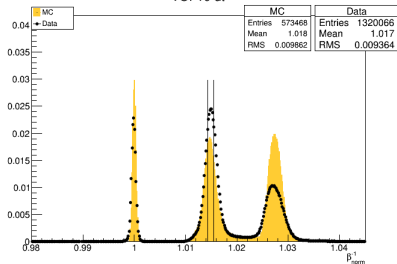


Full

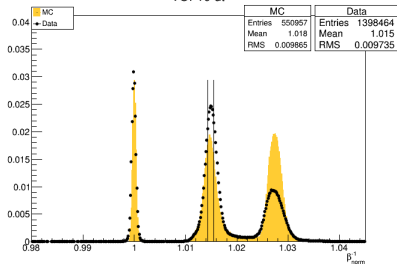
TOF10 dt



TOF10 dt



TOF10 dt

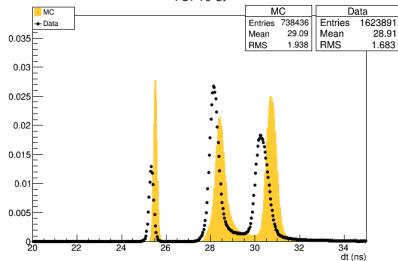


TOF selection, 200MeV/c

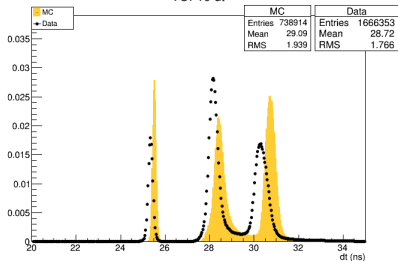


no normalisation

Empty
TOF10 dt

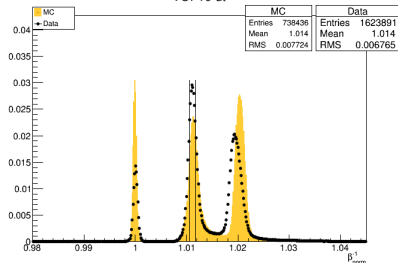


Full
TOF10 dt

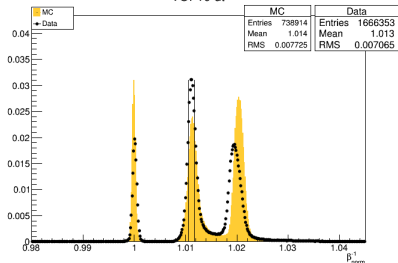


normalised

TOF10 dt



TOF10 dt

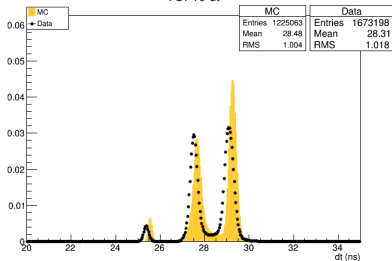


TOF selection, 240MeV/c

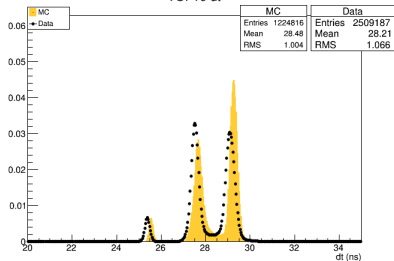


no normalisation

Empty
TOF10 dt

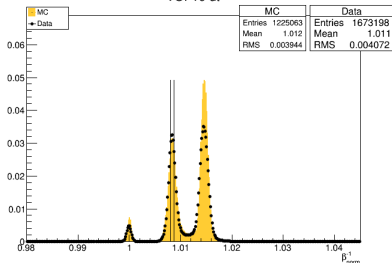


Full
TOF10 dt

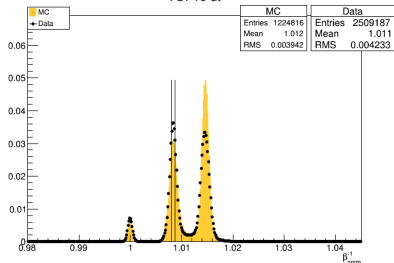


normalised

TOF10 dt



TOF10 dt



P_{ZTOF21} vs P_{ZTOF10}^{Bethe}

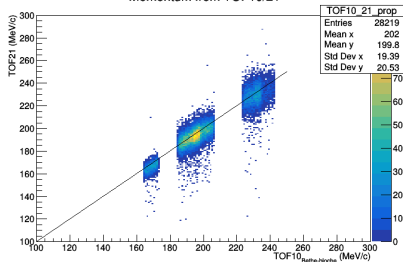
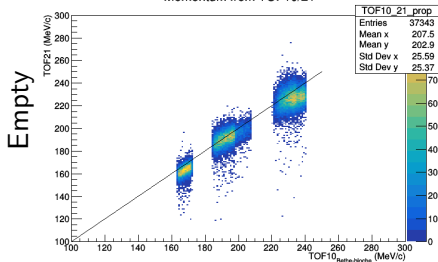


Data

MC

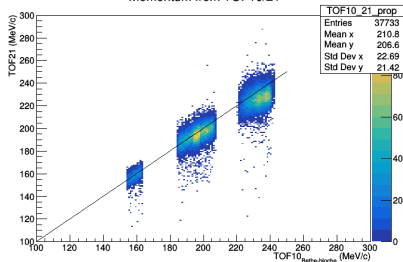
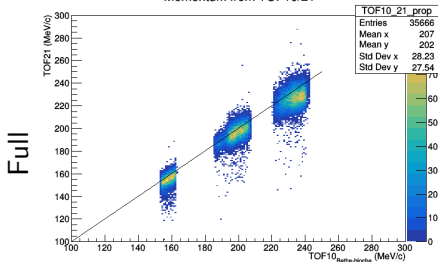
Momentum from TOF10/21

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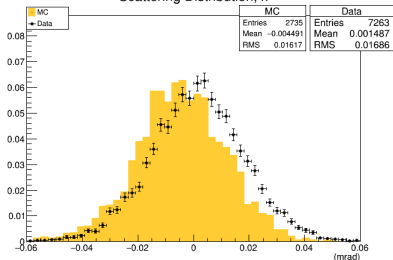


Scattering distributions, 170 MeV/c Empty

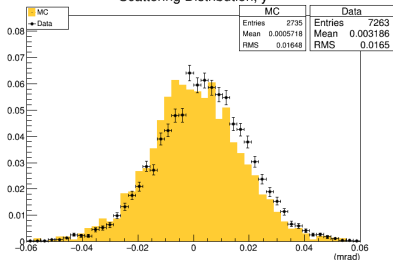


no normalisation

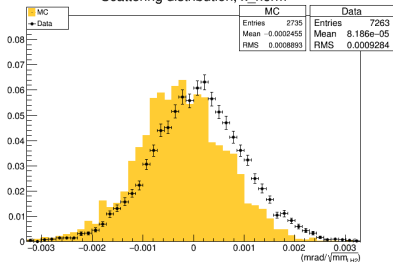
Scattering Distribution, x



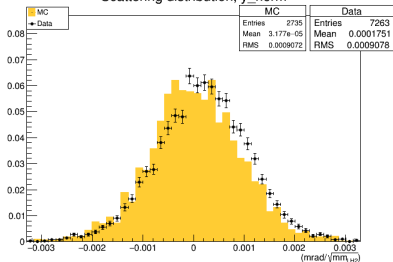
Scattering Distribution, y



Scattering distribution, x_norm



Scattering distribution, y_norm



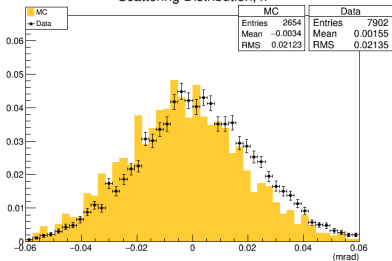
$$\theta * \frac{1}{\sqrt{LH_2(mm)}}$$

Scattering distributions, 170 MeV/c Full

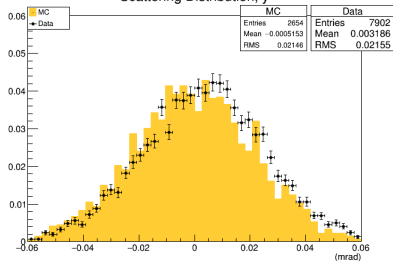


no normalisation

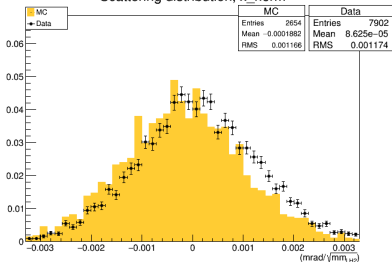
Scattering Distribution, x



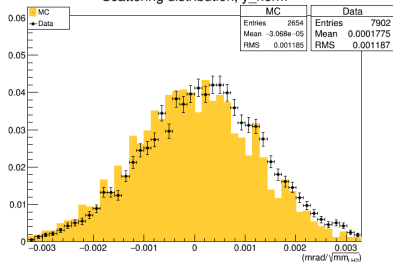
Scattering Distribution, y



Scattering distribution, x_norm



Scattering distribution, y_norm



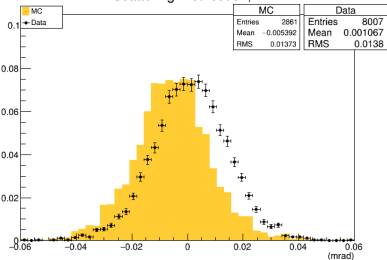
$\theta * \frac{1}{\sqrt{LH_2(mm)}}$

Scattering distributions, 200 MeV/c Empty

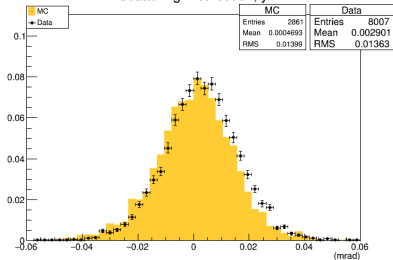


no normalisation

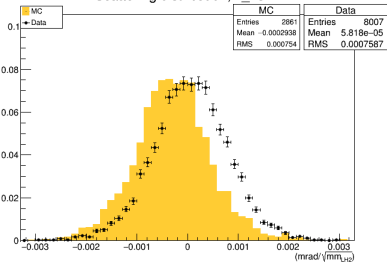
Scattering Distribution, x



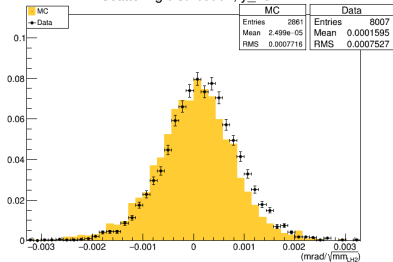
Scattering Distribution, y



Scattering distribution, x_norm



Scattering distribution, y_norm



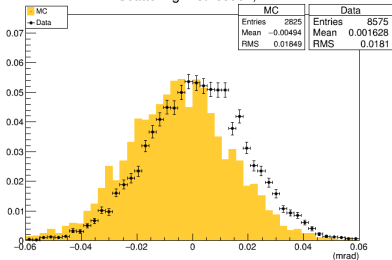
$$\theta * \frac{1}{\sqrt{LH_2(mm)}}$$

Scattering distributions, 200 MeV/c Full

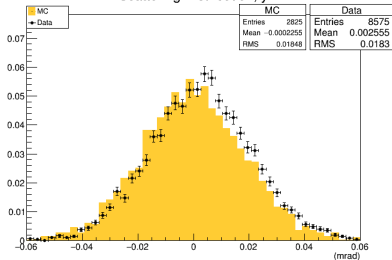


no normalisation

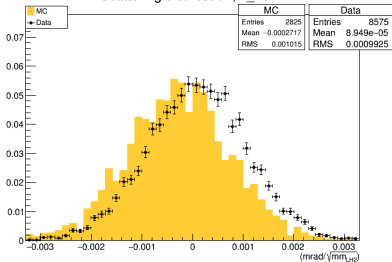
Scattering Distribution, x



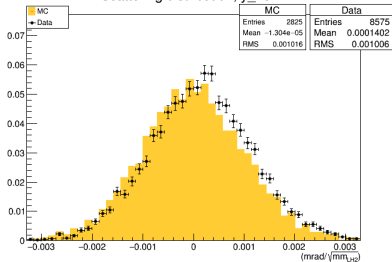
Scattering Distribution, y



Scattering distribution, x_norm



Scattering distribution, y_norm



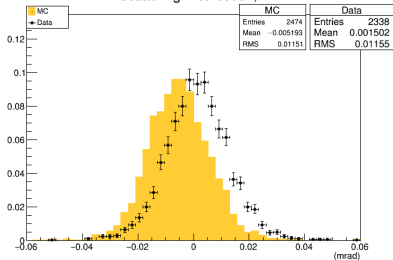
$\theta * \frac{1}{\sqrt{LH_2(mm)}}$

Scattering distributions, 240 MeV/c Empty

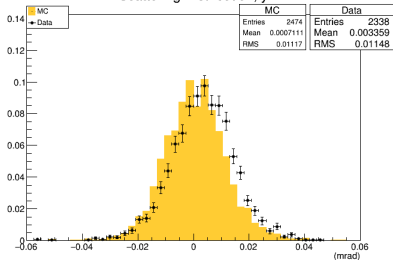


no normalisation

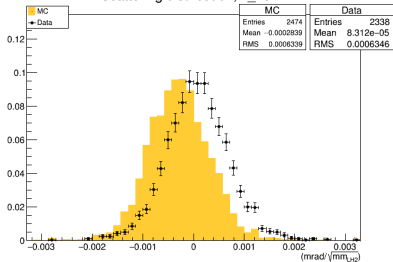
Scattering Distribution, x



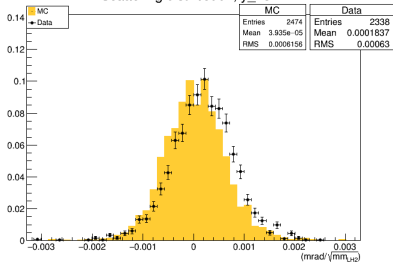
Scattering Distribution, y



Scattering distribution, x_norm



Scattering distribution, y_norm



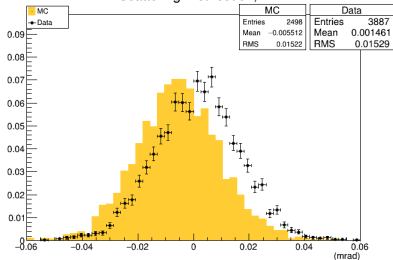
$$\theta * \frac{1}{\sqrt{LH_2(mm)}}$$

Scattering distributions, 240 MeV/c Full

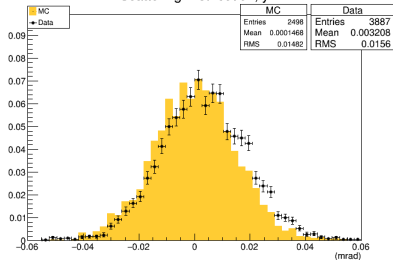


no normalisation

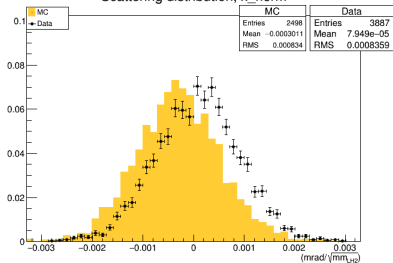
Scattering Distribution, x



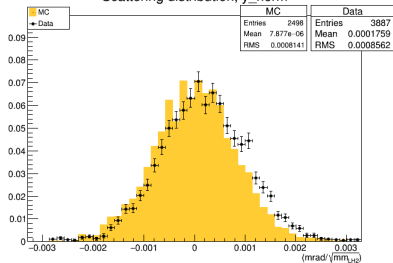
Scattering Distribution, y



Scattering distribution, x_norm



Scattering distribution, y_norm



$\theta * \frac{1}{\sqrt{LH_2(mm)}}$