



Introduction



C. Rogers, ISIS Intense Beams Group
Rutherford Appleton Laboratory

Reminder – Publication plan



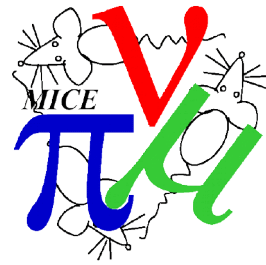
		02-Aug-18	v7
Title	Contact	Target date	
		Final	Preliminary
Direct measurement of emittance using the MICE scintillating-fibre tracker	V. Blackmore	Jun18 CM51	
The MICE liquid-hydrogen absorber	C. Whyte/J. Boehm	Jun-18	Apr18 w/s
The MICE Analysis and User Software framework	D. Rajaram	Jun18 CM51	May18 w/s
Phase-space density/emittance evolution; rapid communication	C. Rogers	Jun18 CM51	Apr18 w/s
Measurement of multiple Coulomb scattering of muons in lithium hydride	J. Nugent	Jun18 CM51?	
Performance of the MICE diagnostic systems	S. Wylbur/P. Franchini		Jun-18
Beam-based alignment	C. Hunt		Jun-18
Muon Ionization Cooling Experiment (h/w)	C. Whyte/P. Franchini		Jun-18
Phase-space density/emittance evolution review paper	C. Hunt		
Phase-space density/KDE/6D-emittance evolution	T. Mohayai		Jun-18
Measurement of multiple Coulomb scattering of muons in LH2	J. Nugent		
Field-on measurement of multiple Coulomb scattering	A. Young		



Emittance Measurement Paper

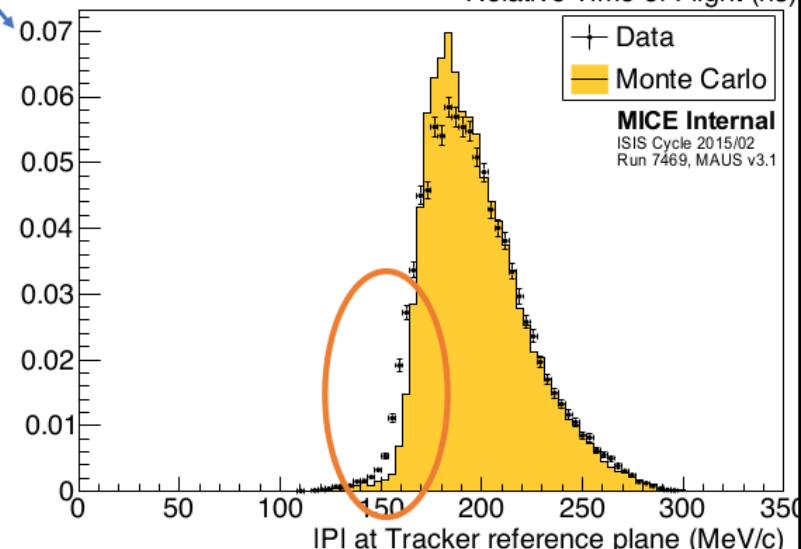
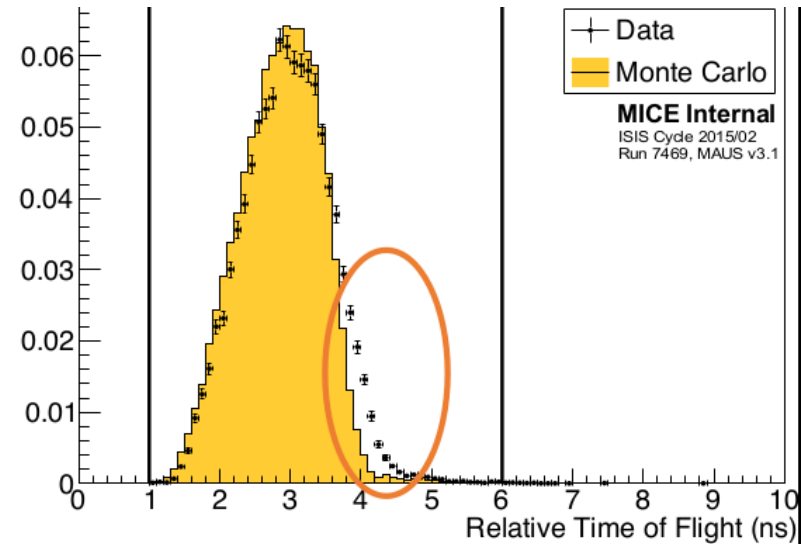
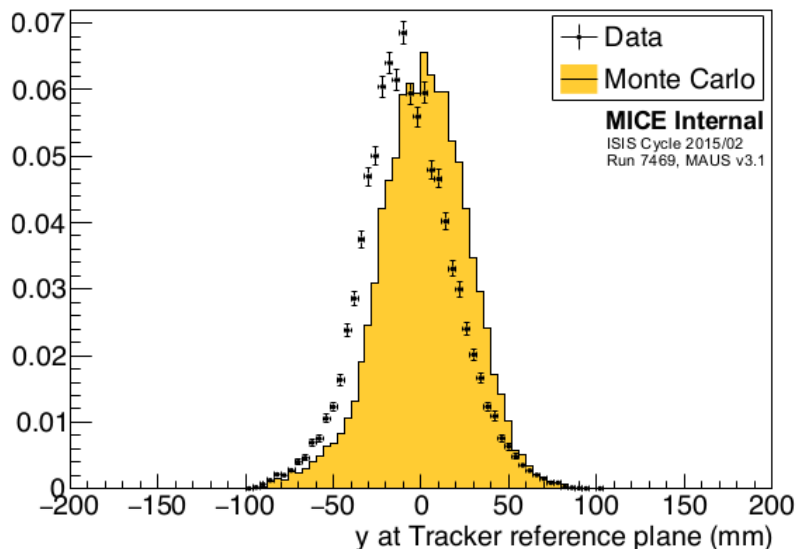


Emittance Measurement Paper (V. Blackmore)



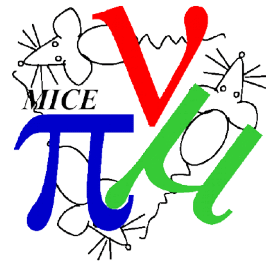
Emittance Measurement: "Problem" plots

Have a "solution" for these, but it
does not help the y-distribution





MC vs data at diffuser



- Dedicated campaign to resolve this issue (and others) for several years
 - Many attempts at tuning dipole fields in MC
 - Measurement campaign on the dipole field in reality
 - Campaign to tune pion production at the target
 - Campaign to measure SSU field in-situ of PRY
 - Campaign to fix significant TOF MC & calibration issues which have existed for a decade
- This is not a new issue and one that analysis team has been battling for a long time
 - Victoria will report
 - Final version of the note will be distributed imminently

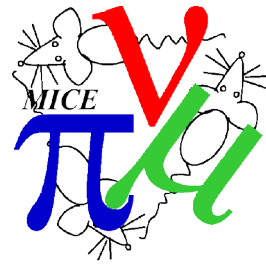


Emittance Evolution Paper





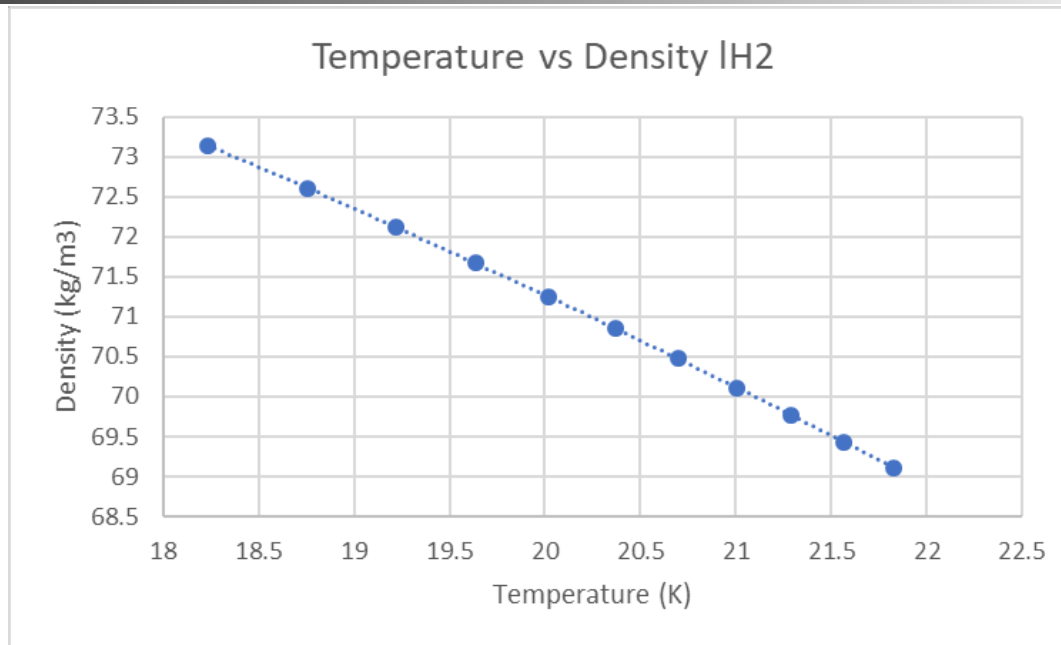
Radius at Diffuser - NEW



First referees meeting last week

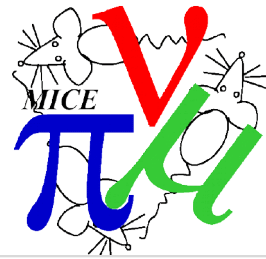
- Issues with tracker reconstruction to be understood
- Talk this afternoon...

LH2 Studies (C. Brown)

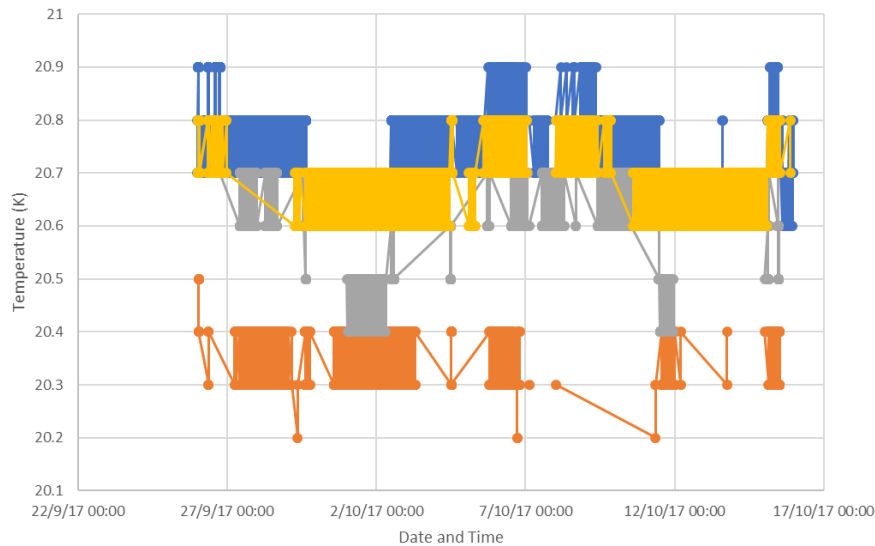


- Determine the factors which can contribute to the systematic uncertainties of energy loss in LH2 absorber and to what extent, including:
 - Change in LH2 density for varying temperatures/pressures
 - Accuracy of temperature/pressure sensors
 - Deflection of absorber windows due to pressure and temperature
 - Smoothness of absorber windows (thickness variance)
 - Ortho/Para Hydrogen

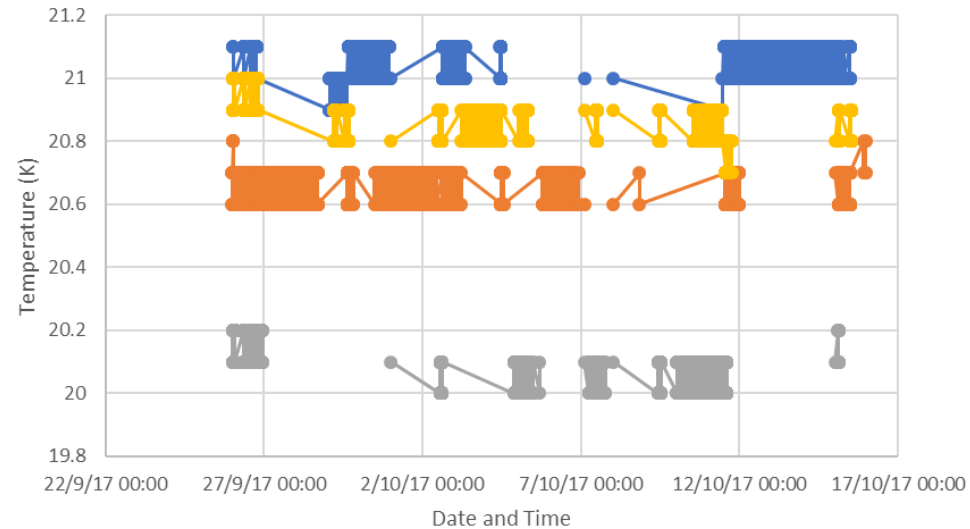
Temperature sensors



Level Sensors Temperatures during IH2 data taking



Temperature Sensor Temperature readings during IH2 data taking



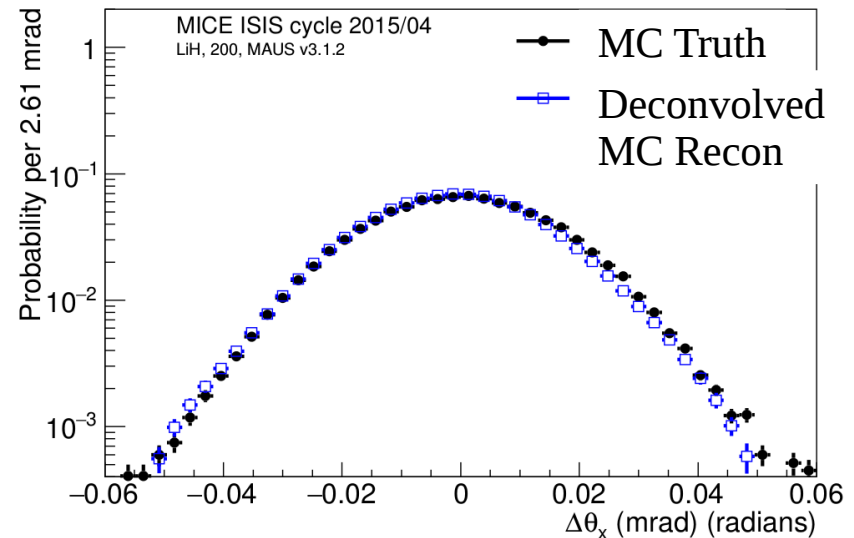
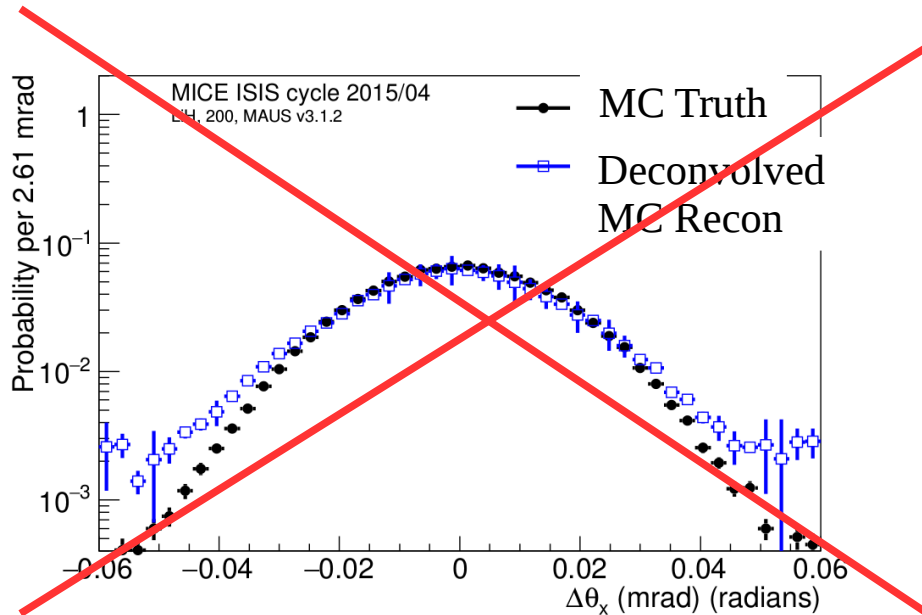
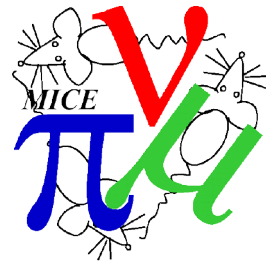
- Temperature and level sensors exhibit systematic offset in measured temperature
 - Some correlation with height
 - But suspect calibration issue
 - $\sim 1 \text{ K} \rightarrow \sim 1\text{-}2 \%$ uncertainty in density



Scattering Paper



Radius at Diffuser - NEW



Resolving issues in MC deconvolution

- Understand ~ 2 mrad systematic, asymmetric shift
 - i.e. blue points don't line up with black points
- May assign a systematic error instead

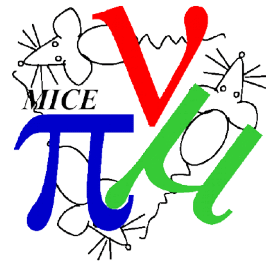


Looking Forwards



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Other Papers - Measurements



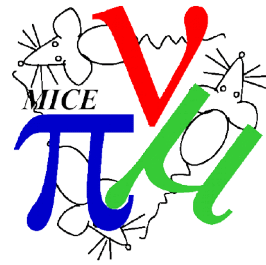
Scattering
In LH2

Field on
Scattering

6D
Emittance
Evolution

Detailed
Emittance
Evolution

Other Papers and Techniques



Tracker
Performance

PID
Performance

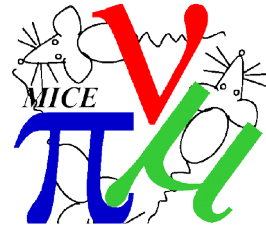
System Performance Paper

Transfer Map
And Optical
Heating

Optical
Alignment



Comments



- We have a **great data set**
- We have a **great analysis team**
- There are **great opportunities**

Now is the time to make it happen!