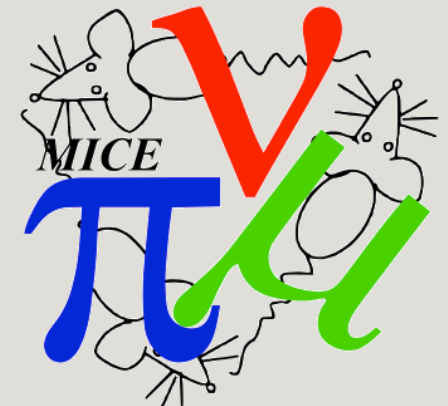


ANALYSIS PARALLEL SUMMARY

V. Blackmore

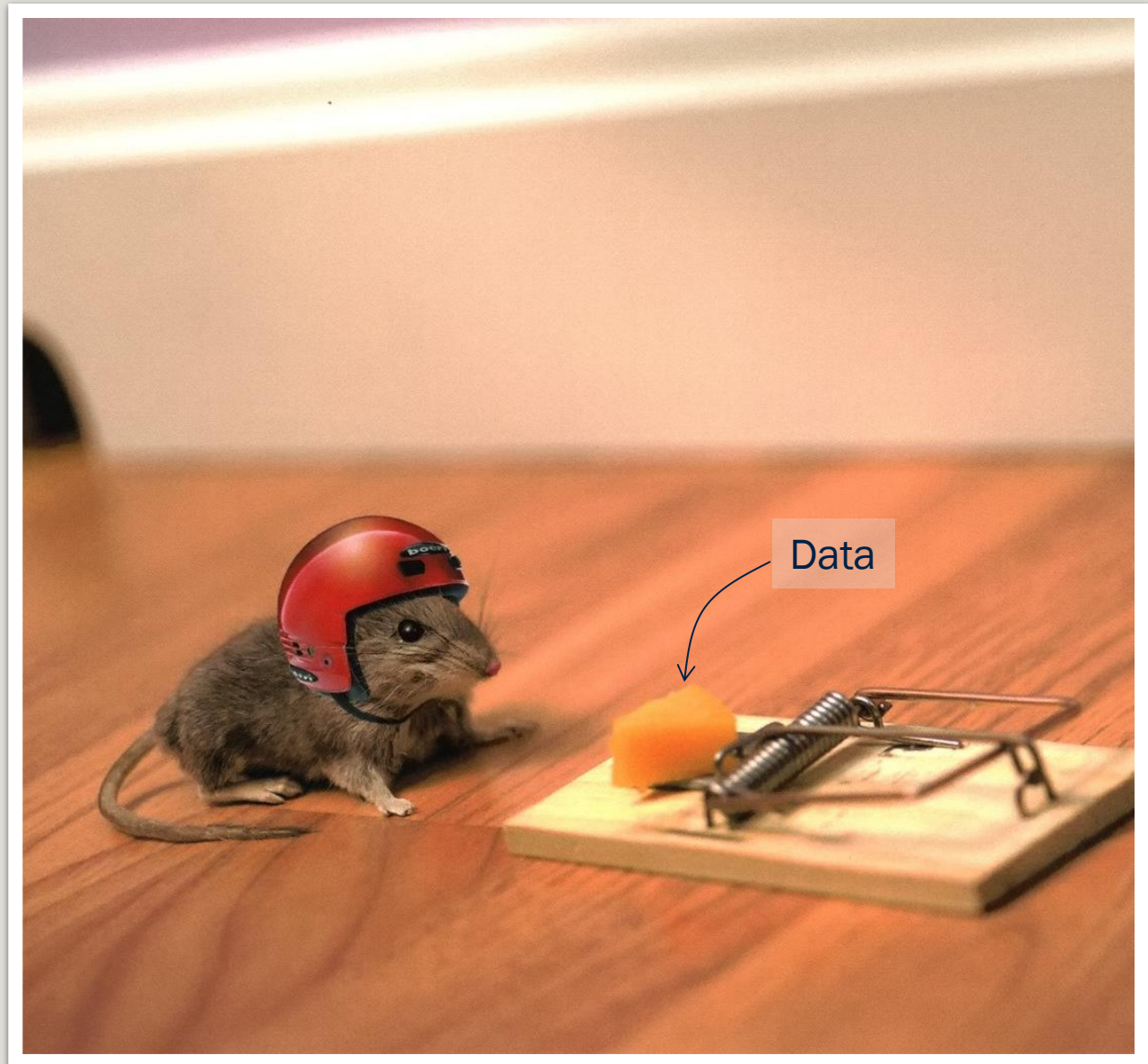
CM39

27th June, 2014



A busy meeting!

- Two papers + Step IV analysis preparation underway!
- Plus lots of conversations about
 - Alignment
 - Easily quantified cuts*
 - Wedge absorbers
 - Beam library*
 - Polarisation*
 - Field maps
 - Step V
 - Beam matching and optimisation*
- Excellent MAUS tutorial by Adam Dobbs
- Not *ready*, but we do know where our helmet is.

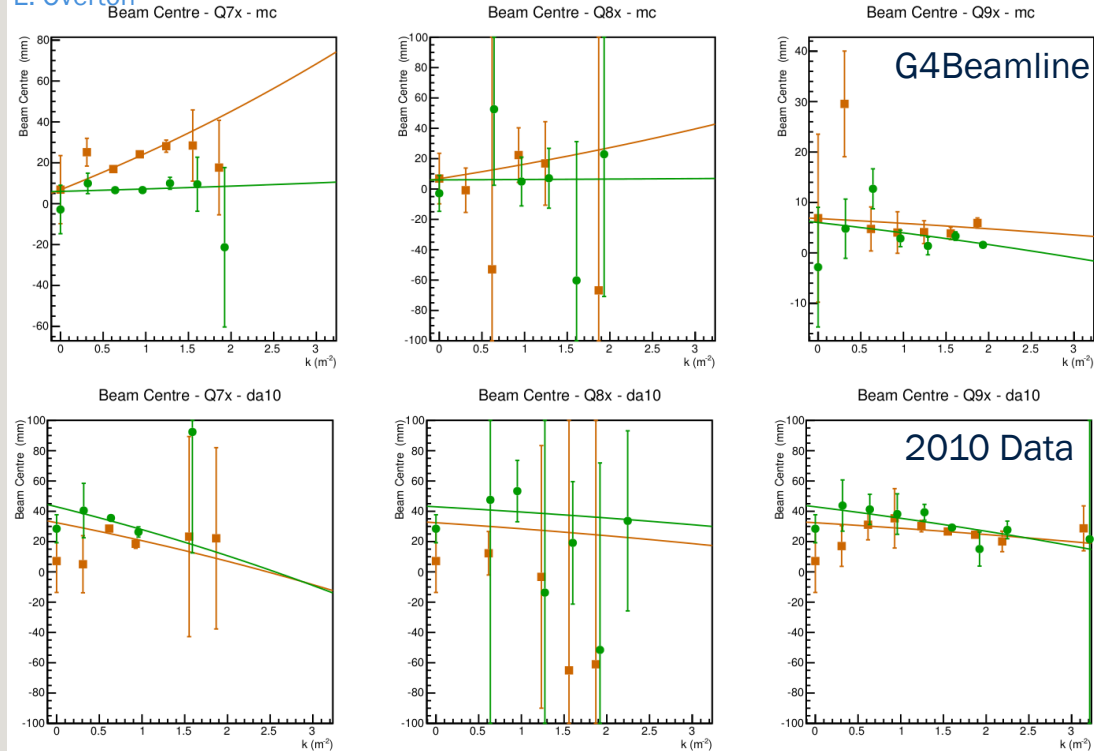


* Excellent work & helpful discussion topics (no plots to show during this summary talk – see talks by C. Hunt, J. Nugent & S. Middleton for more details)

Alignment

- General alignment, tracker alignment
 - AIDA alignment package: sounds suspiciously helpful!
- Alignment of Q789 confirmed, with 4mm resolution, using beam profiles at TOF1
 - G4Beamline and data compatible

E. Overton



E. Overton

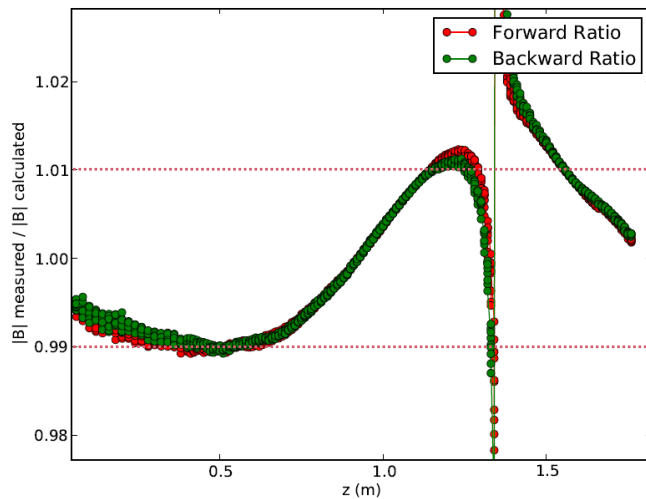
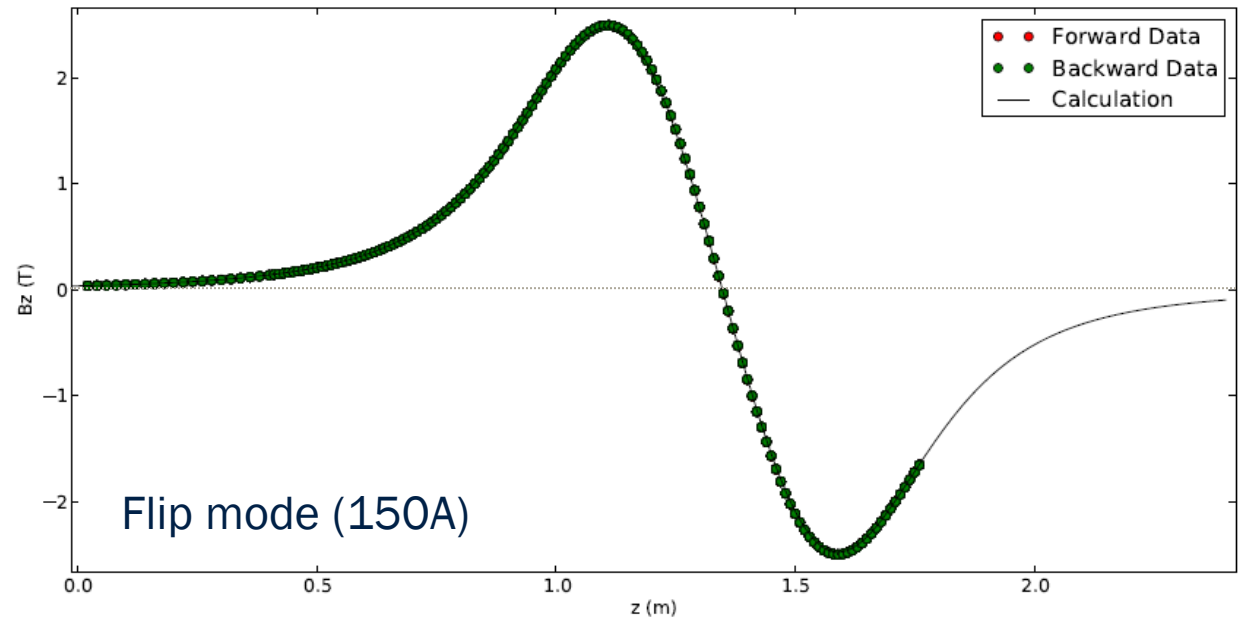
Parameter	Monte-Carlo		Data		Monte-Carlo		Data			
	Truth	Fit	2010	2013	Truth	Fit	2010	2013		
z_t (mm)	μ	-	6.8 ± 2.6	32.5 ± 4.6	36 ± 11	μ	-	-2.1 ± 2.5	14.6 ± 6.8	23 ± 11
	π	-	6.0 ± 1.8	43.0 ± 5.0	36.3 ± 7.2	π	-	-2.6 ± 2.0	-3.1 ± 8.2	-15 ± 10
z_7 (mm)	μ	-4.1 ± 0.9	-7.0 ± 1.2	4.6 ± 2.5	3.0 ± 5.8	μ	-0.2 ± 1.0	3.1 ± 5.1	20 ± 70	15 ± 13
	π	-2.0 ± 0.7	-0.4 ± 0.8	5.9 ± 2.7	2.5 ± 4.4	π	-4.1 ± 0.7	-1.1 ± 6.9	-1.3 ± 7.1	-6.1 ± 5.7
z_8 (mm)	μ	0.9 ± 2.0	-5.4 ± 8.2	2.3 ± 9.3	9 ± 16	μ	-2.4 ± 2.0	-1.1 ± 1.4	0.4 ± 3.9	12 ± 5.7
	π	3.0 ± 1.7	-0.1 ± 6.3	2.0 ± 7.8	-5 ± 75	π	-1.8 ± 1.4	-1.6 ± 1.1	-10.6 ± 4.7	-6.7 ± 6.5
z_9 (mm)	μ	5.4 ± 2.9	1.1 ± 1.8	4.2 ± 3.1	14.9 ± 6.7	μ	-1.4 ± 2.8	-8 ± 11	12 ± 12	43 ± 26
	π	2.0 ± 2.1	2.4 ± 1.3	8.8 ± 3.6	13.5 ± 4.9	π	-2.5 ± 2.0	1.1 ± 6.9	8 ± 29	21 ± 64
ChiSq/NDF	μ	-	15/14	12/17	2.9/7	μ	-	8.5/14	14/17	2.4/7
	π	-	11/14	10/17	3.6/7	π	-	8.1/14	13/17	2.5/7

X axis results

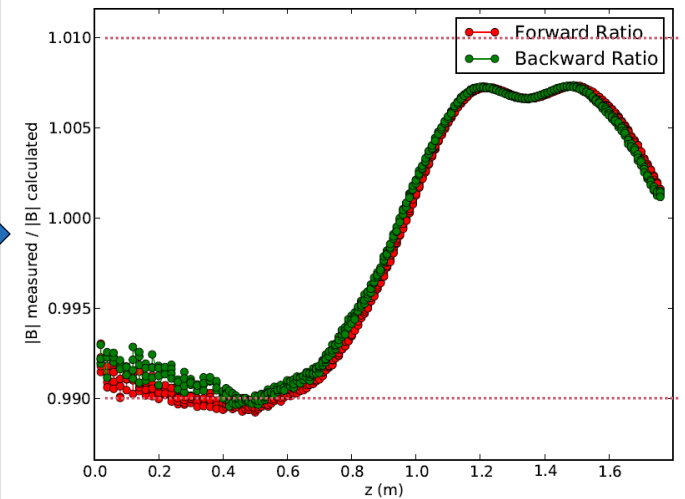
Y axis results

Focus Coil 1: Field Maps

- Flip mode: 0, 50, 100, 150, 180A
- Sol mode: 0, 50, 75, 100, 114, 120A
- Data analysis underway



$$\frac{|B|_{\text{measured}}}{|B|_{\text{calculated}}}$$



Flip mode (150A)

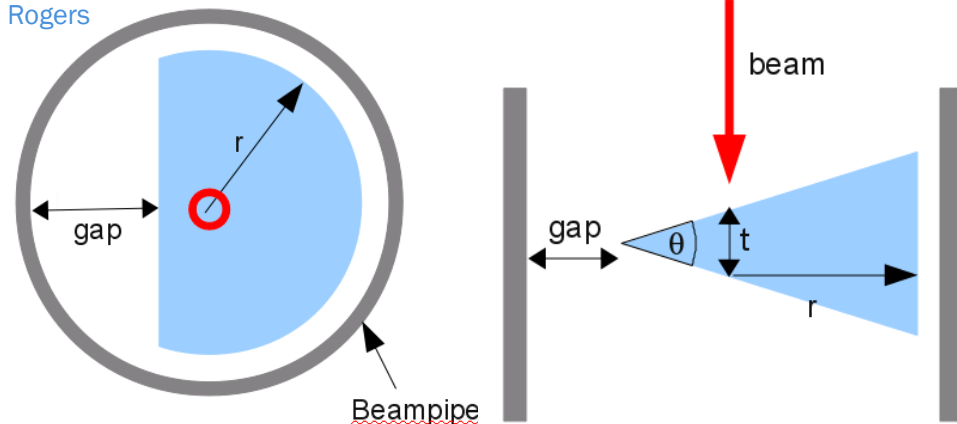
Solenoid mode (100A)

Wedge Absorber

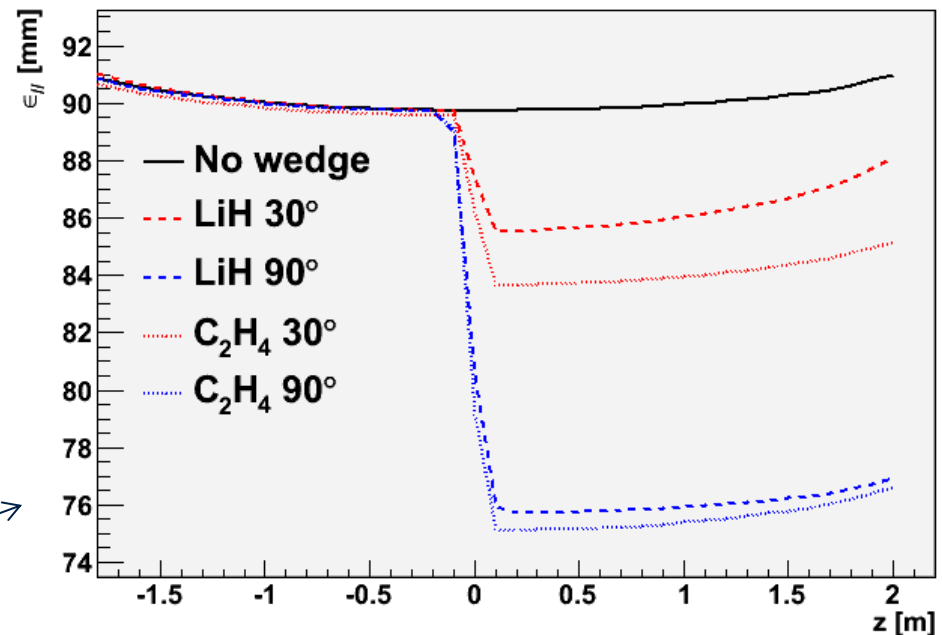
- Objectives
 - First priority is to observe longitudinal cooling
 - Second priority is to observe longitudinal and 6D cooling
 - Third priority is to observe transverse, longitudinal and 6D cooling
 - Fourth priority is to get cooling over a broad range of conditions
- Tests our knowledge of cooling channel beam optics

$p_z = 200 \text{ MeV}$	$\epsilon_{\parallel} = 90 \text{ mm}$
$\epsilon_{\perp} = 6 \text{ mm}$	$\beta_{\parallel} = 10 \text{ ns}$
$\beta_{\perp} = 420$	$\alpha_{\parallel} = 0$
$\alpha_{\perp} = 0$	$D_x = 200 \text{ mm}$

C. Rogers



C. Rogers

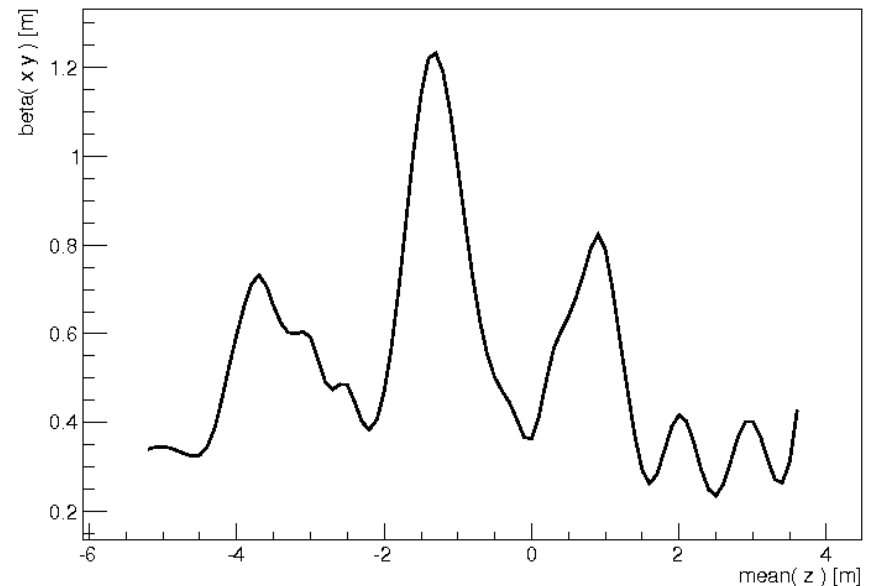
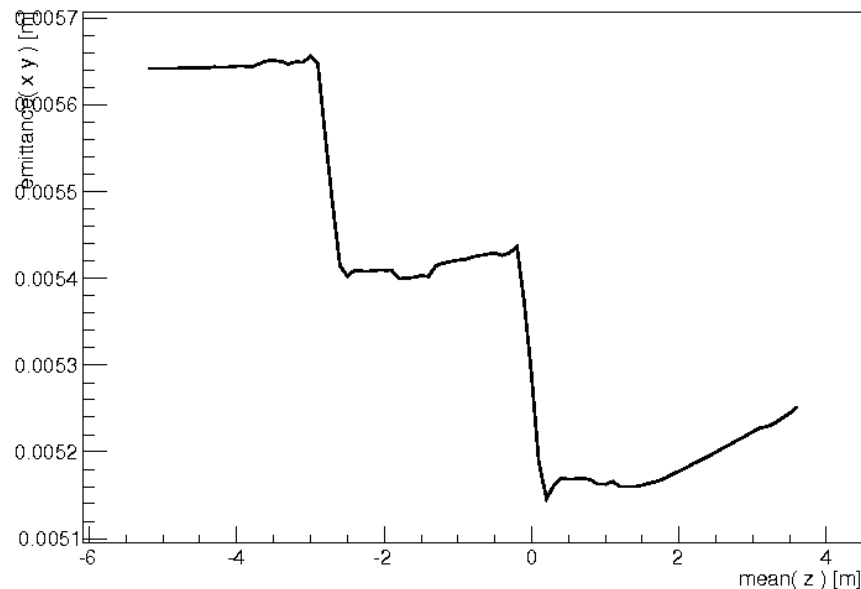


Can do something very good in *just two weeks running*.

Step V Studies

- Baseline Steps V and VI being studied
 - First MC truth, then reconstructed tracks, then systematic studies
- First Step V MC results in quite some time!
 - Some common features with Step IV analysis work
 - Lead to an “online” beam tuning session

D. Speirs



Finally...

- Wonderful tutorial on using MAUS and tracker reconstruction by [A. Dobbs](#)
- Highly recommended as a “beginners guide”
- One regret: We didn’t record him!

- Has been a productive meeting
- Still many things to do, but
 - Much progress made
 - Identified analysis gaps in beam optimisation and cooling channel tuning, now being addressed and/or thought of more seriously

- By CM40:
 - Pion contamination & EMR paper draft
 - Muon polarisation & field map MICE notes
 - Step IV with reduced FC currents expanded to other matrix elements
 - Tracker (and general) alignment plans underway
 - Step V studies of reduced FC currents
 - Plus.....