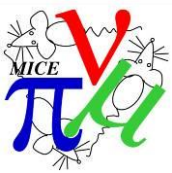




# MICE CM31 Wrap-up

1. The good news
2. The achievements and decisions made
3. The questions
4. Looking forward to MICE CM32 at RAL 8-11 February !



# The good news

Several new MICE at this collaboration meeting! (especially from Amercia)

Steady and very encouraging progress on LH2, Spectrometer solenoid, EMR, FC

Thanks to all technical teams involved!

Big steps forward for Coupling coils

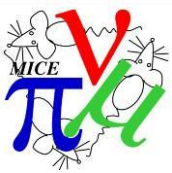
first full size bobbin has arrived to LBNL

test cryostat arrived at Fermilab

Test will be an important milestone - May-June 2012

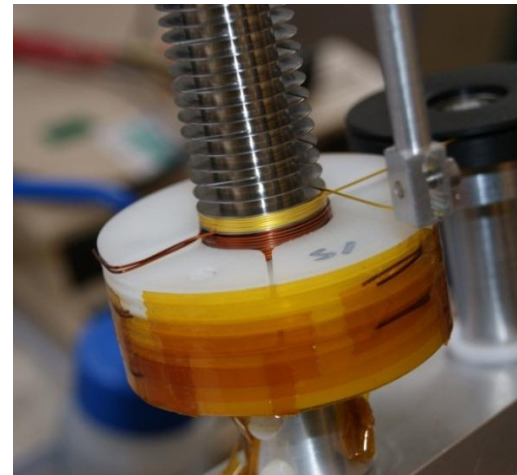
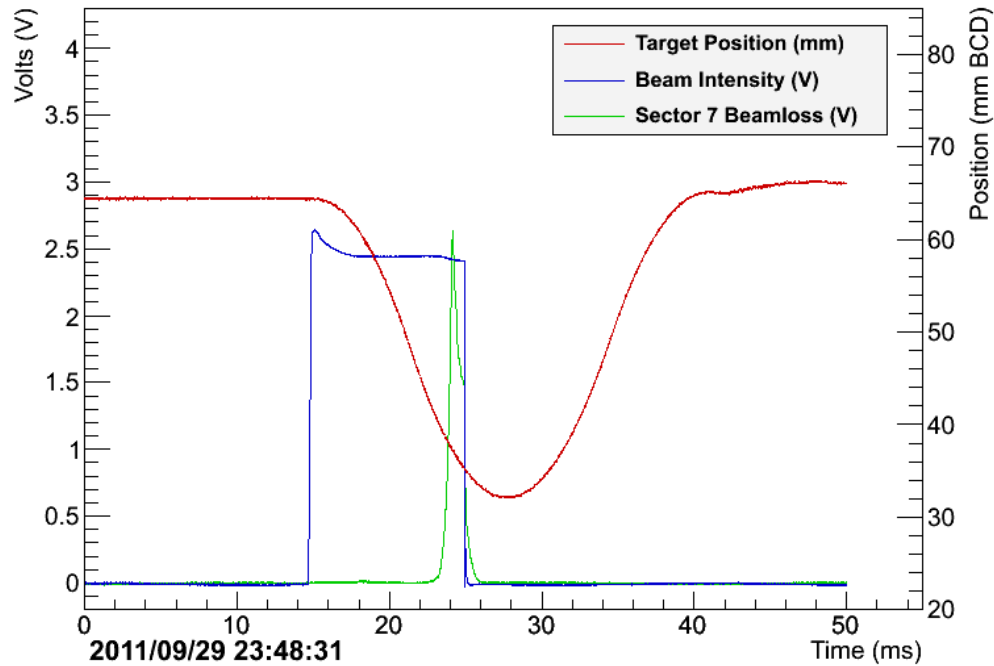
Ckov: progress in understanding: it is likely that poor performance was due to bacground light. Will test again in Dcember 2011

Effort on tracker software growing back up

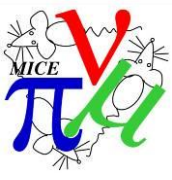


# THINGS THAT ARE GOING WELL

T2.9: Target Position and Beamloss



**Remarkable recovery from broken target  
Beam bump study.**



## THINGS THAT ARE GOING WELL



**Spectrometer solenoid advancing ... Expected at RAL in June 2012.**



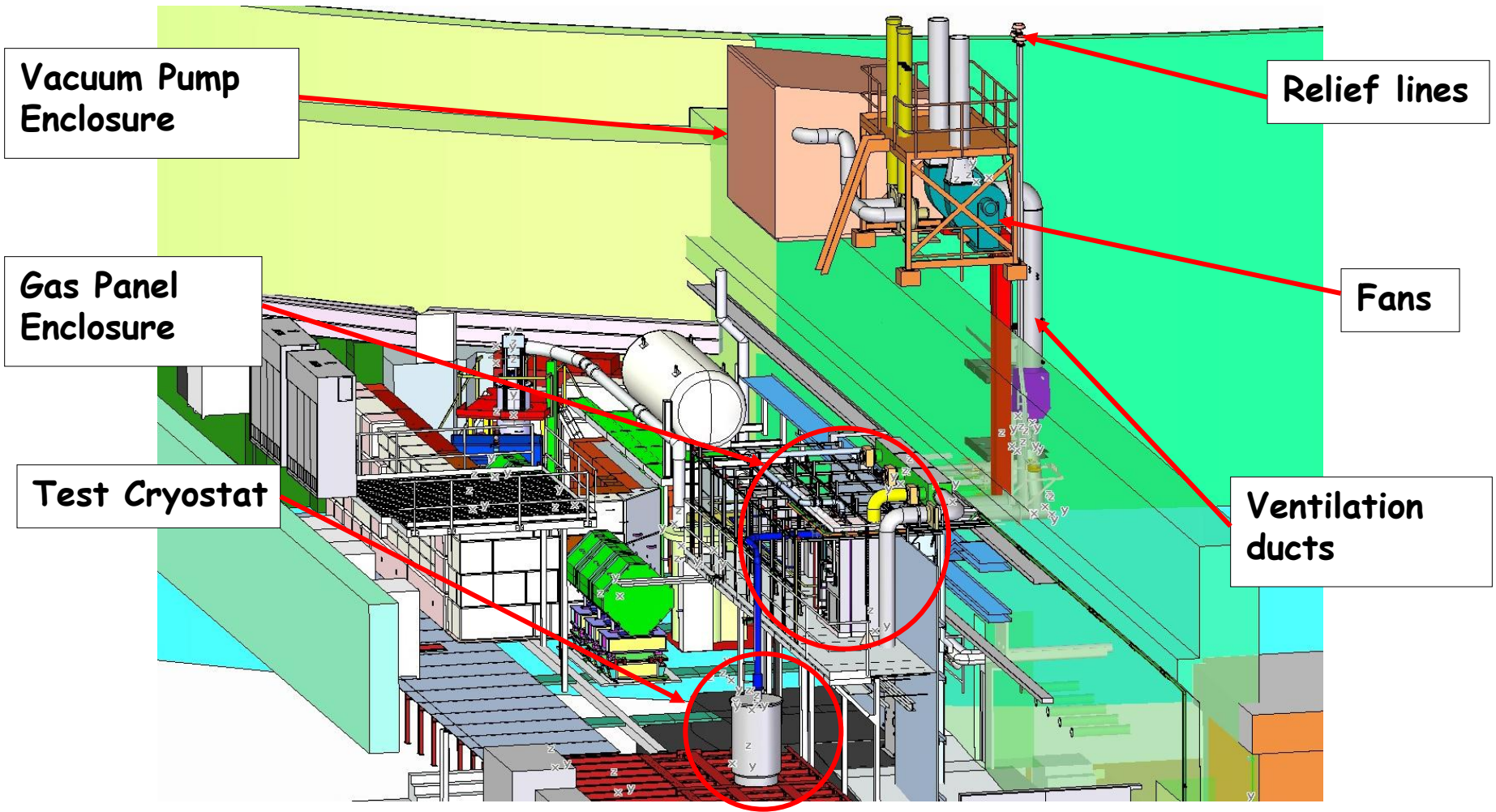
**AFC magnet also advancing (but significant slippage)**

**Expected delivery Feb 2012**





# LH2 system In CAD





# In photos

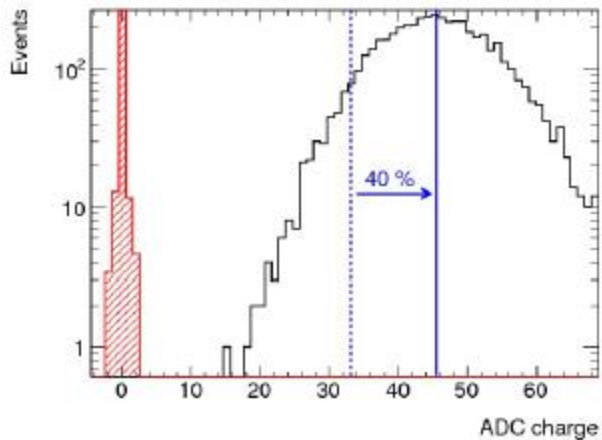
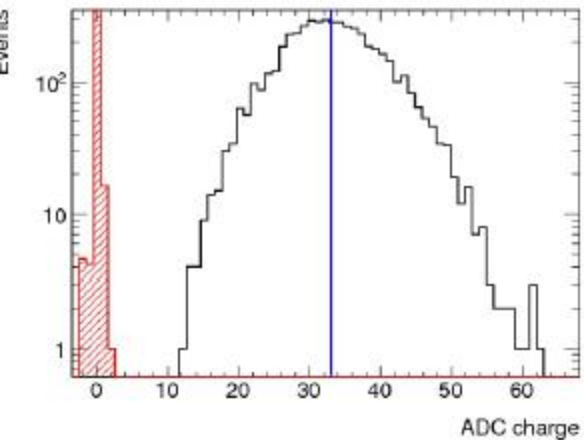
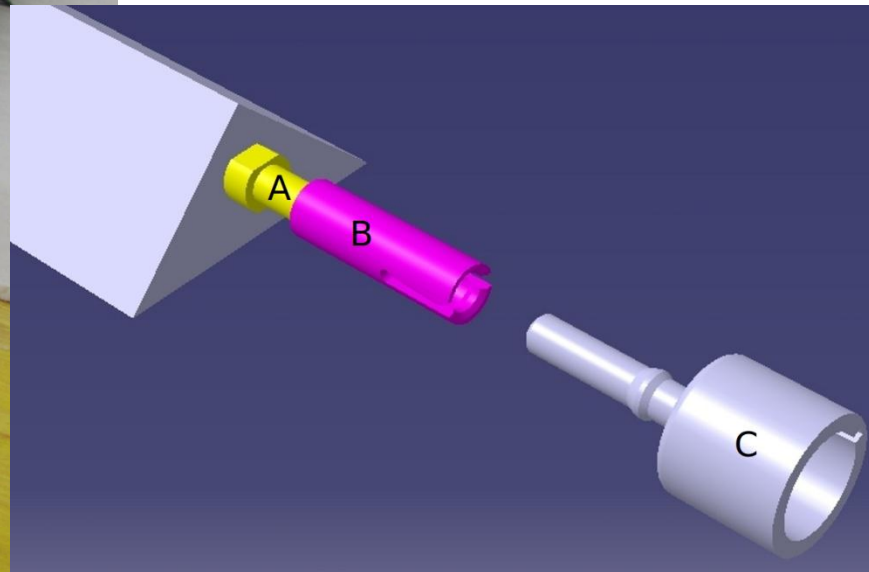
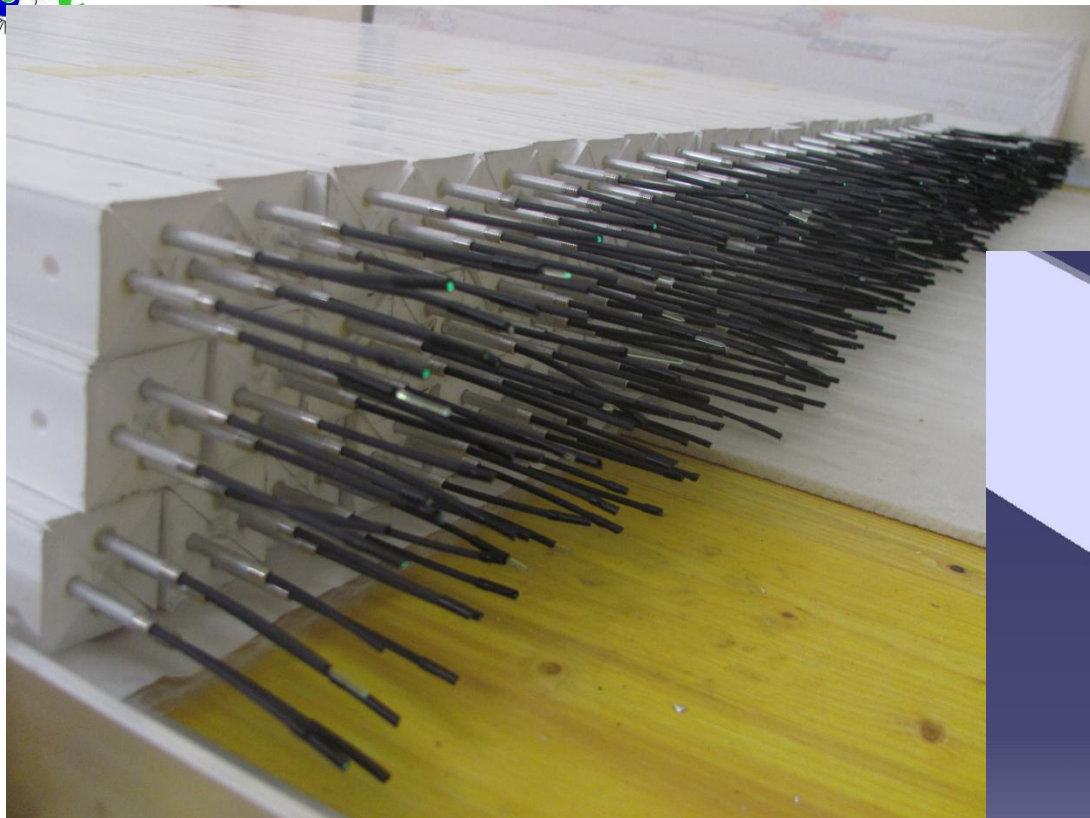


**Successful review held at RAL 4th October - report soon**





EMR in construction Nice solution to get rid of Inefficient channels ... but will mean delay of 3 Months.



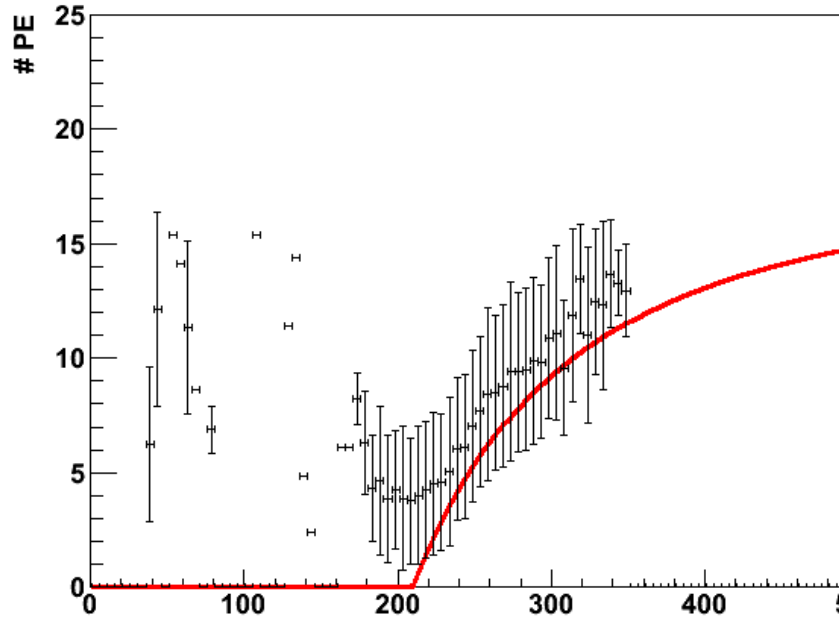
Hope to gain some light  
a large project!  
Help would be very welcome.



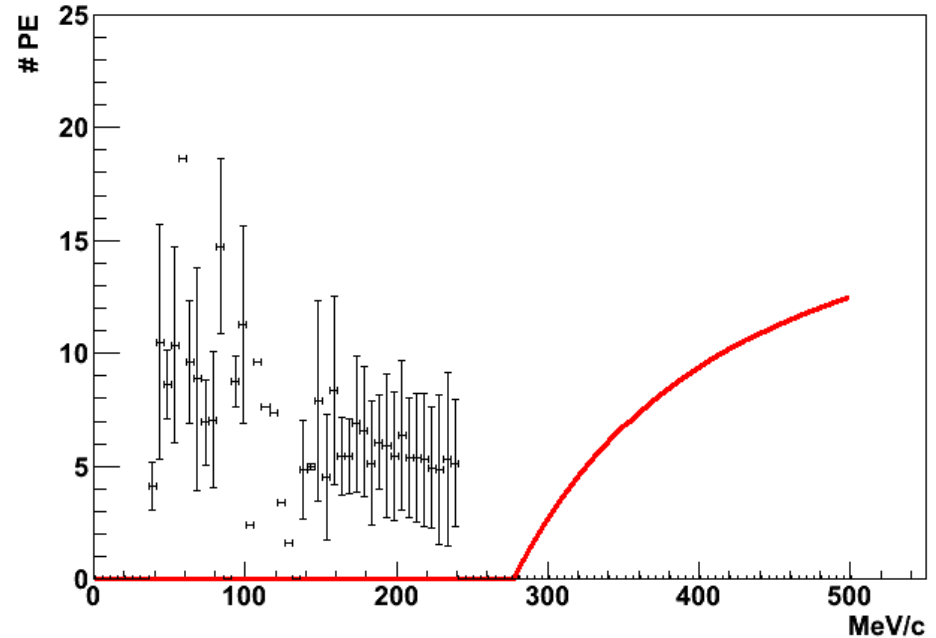


## Progress in understanding CKOV

Graph

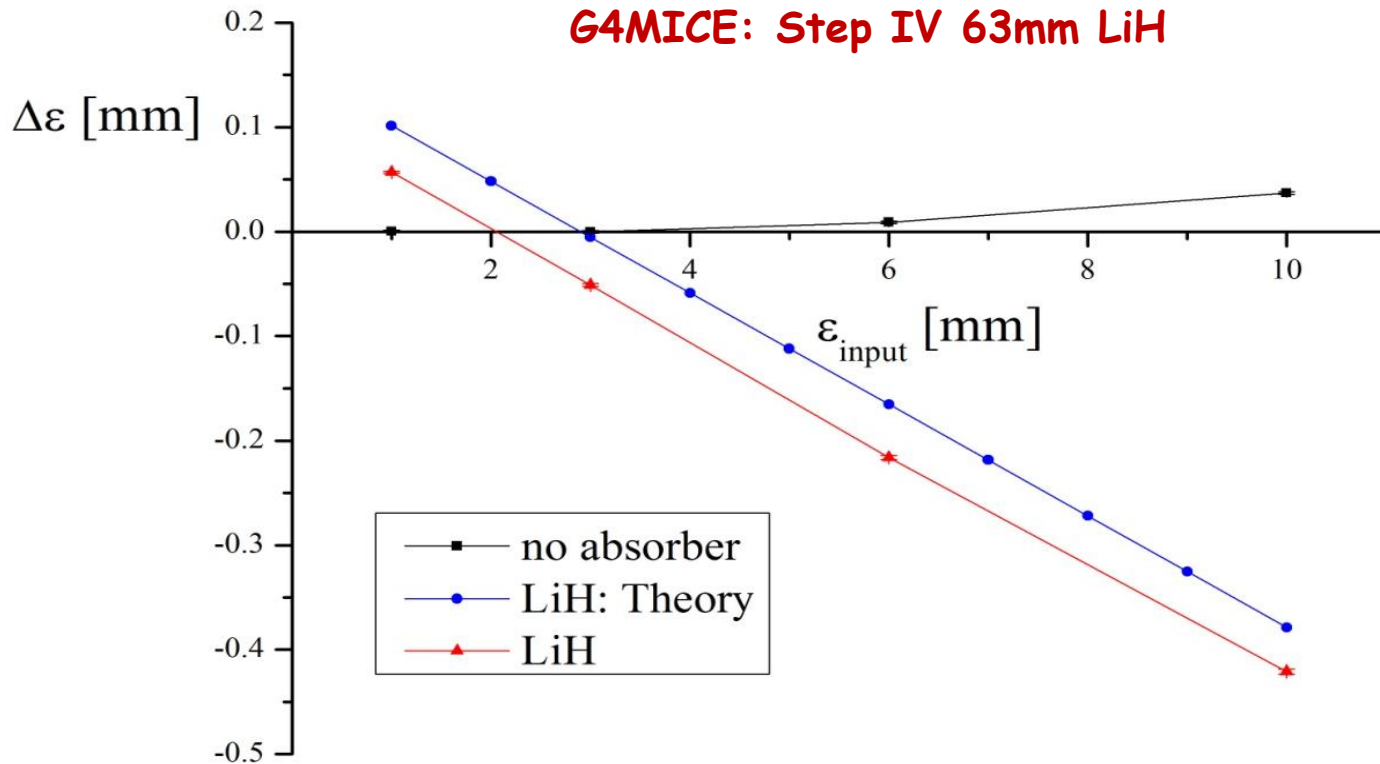


Graph

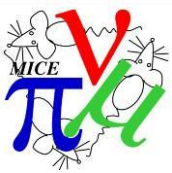


Hope to see these hits below threshold disappear

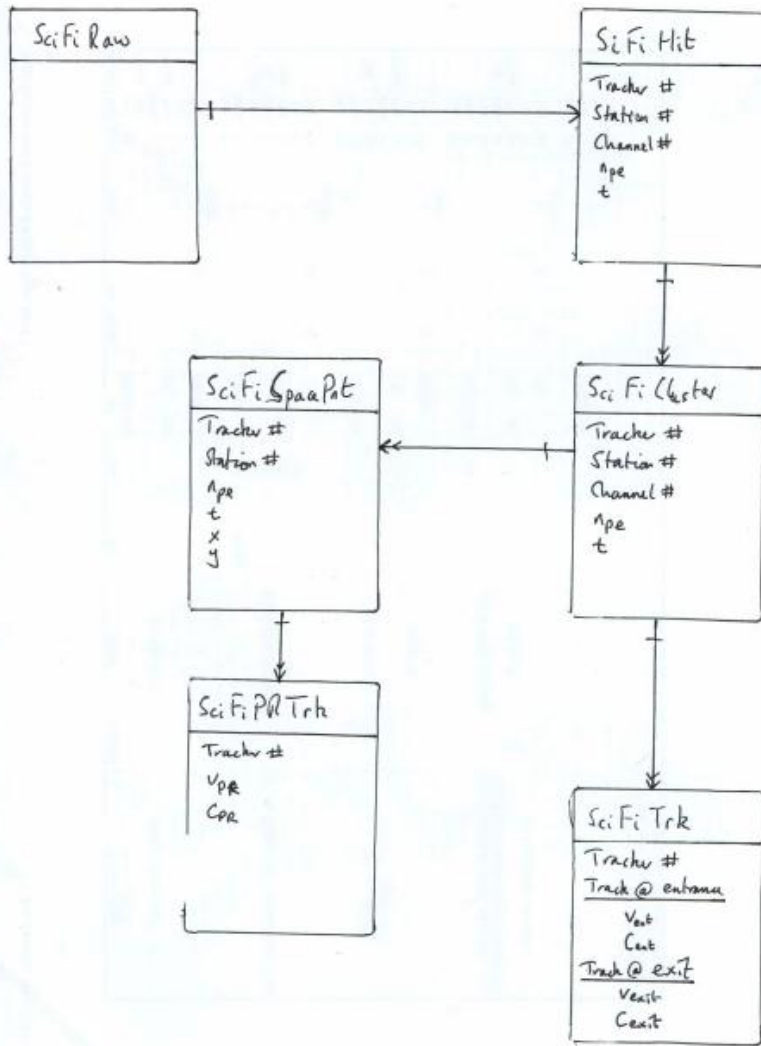
Definitely need pion beam up to 400 or 450 MeV/c (proton absorber permitting)



If this is true MICE may have a pleasant surprise.  
Must investigate what experiment this will really be.  
Is there an existing simulation that constains this theory?

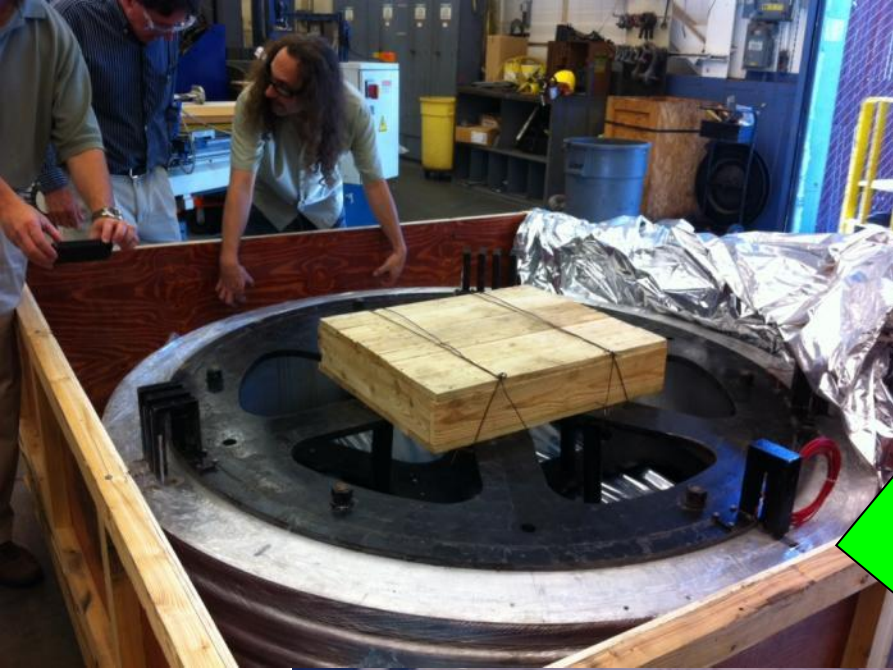


MICE scintillating-fibre tracks: DATA structure 20 Sep 11 ①



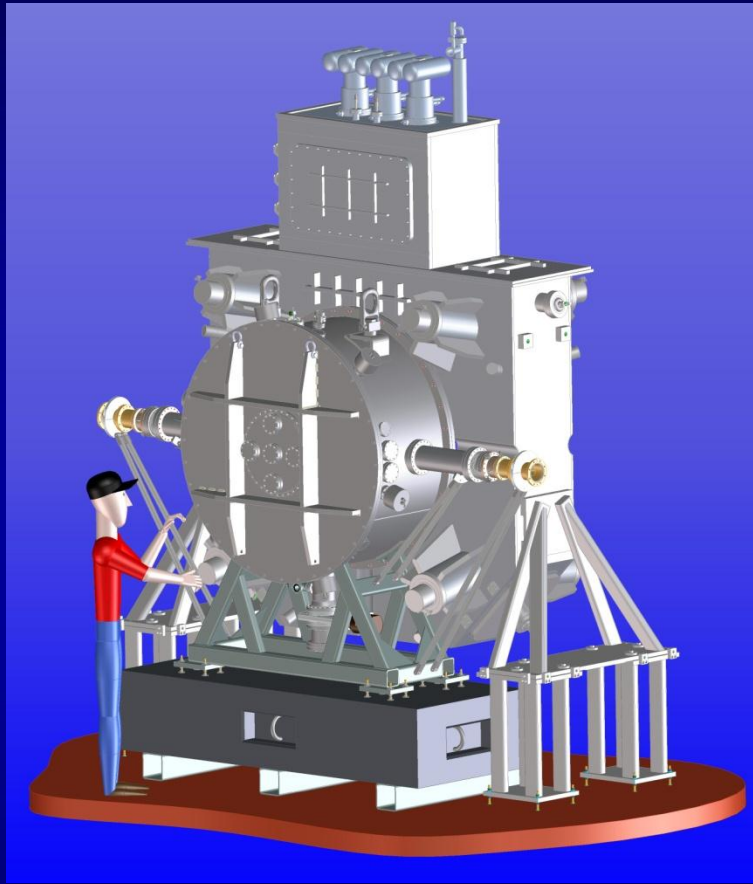
I liked this very much:

Data structure defines what Code does and should be Software independent!





# Single Cavity Vacuum Vessel



Single Cavity Vacuum Vessel and  
MuCool Coupling Coil Magnet



Fabrication of  
the single cavity  
vacuum vessel is  
under way at  
Keller  
Technology in  
Buffalo New

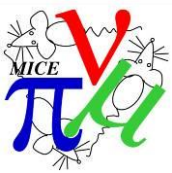


MICE RFCC Module Update MICE CM31 at Oxford, Mississippi  
York

Allan DeMello- Lawrence Berkeley National Lab - October 28, 2011

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# Latest News on the CC Testing at Fermilab

from Steve Gourlay 

subject Fwd: MICE Coupling Coil Electrical Requirements 10/24/2011 10:56 AM

to Derun Li , Soren Prestemon 

From: **Ruben Carcagno** <[ruben@fnal.gov](mailto:ruben@fnal.gov)>  
Date: Mon, Oct 24, 2011 at 6:53 AM  
Subject: MICE Coupling Coil Electrical Requirements  
To: Steve Gourlay <[sagourlay@lbl.gov](mailto:sagourlay@lbl.gov)>, Alan Bross <[bross@fnal.gov](mailto:bross@fnal.gov)>, John Tompkins <[jct@fnal.gov](mailto:jct@fnal.gov)>

**Strong support from Fermilab manager** 

Steve, Alan, John,

Last week I received direction from Stuart and Giorgio to give priority to the MICE coupling coil test over completion of VTS 2&3. I am directing department resources accordingly.

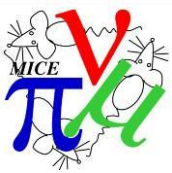
I would also like to prepare a document with the test requirements and then circulate it for your review and approval. I believe I have enough information for the cryo requirements, but I need more input for the electrical requirements such as:

1. Power Supply: is a power supply available for this test? If so, can you provide details? If not, can you specify parameters so we can procure?
2. Voltage Taps: will the coil come with voltage taps? If so, how many and where?

CC magnet Update, D. Li, Lawrence Berkeley National Lab,

October 28, 2011

MICE CM31 wrap up from London



## MORE GOOD NEWS

We also learned that MICE has been approved for funding by STFC by the accelerator review panel in August 2011

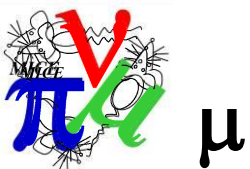
all the way through **STEP VI**  
this is a great breakthrough when official.

**BUT** this will be approved as flat funding-- level to be confirmed

Situation will be reviewed once step IV is well underway

**Keep promoting MICE!**

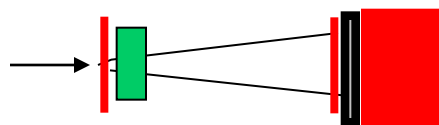
if you know of potential new collaborating institutes...  
please don't be shy and let us know!



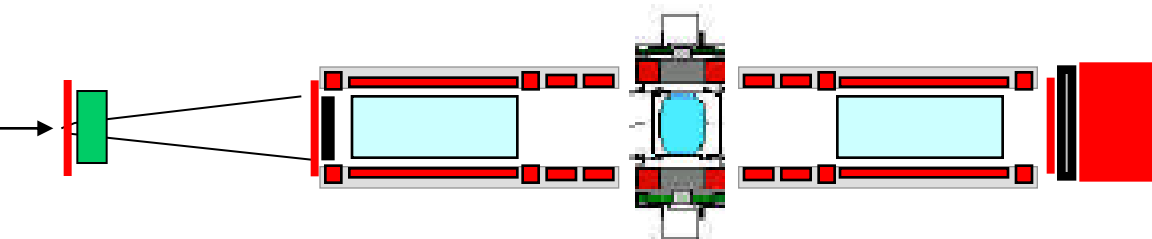
**MICE SCHEDULE**  
update October 2011 V1

Run date:

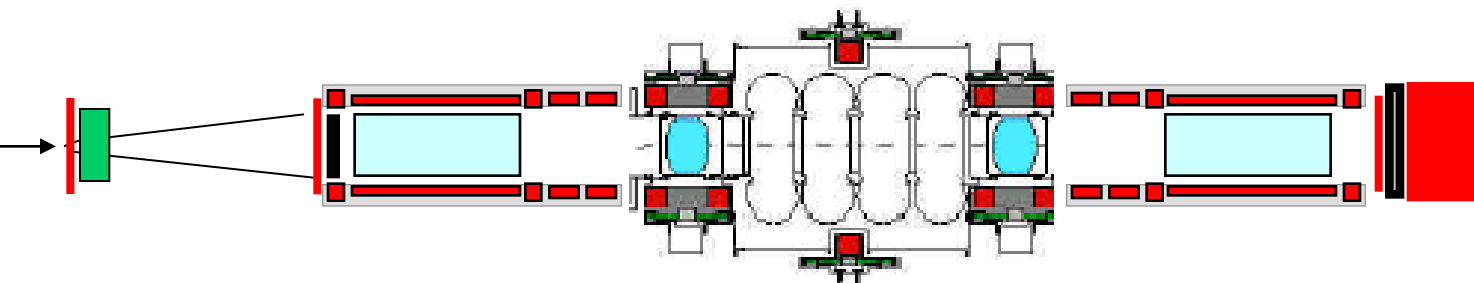
EMR run Q2 2012



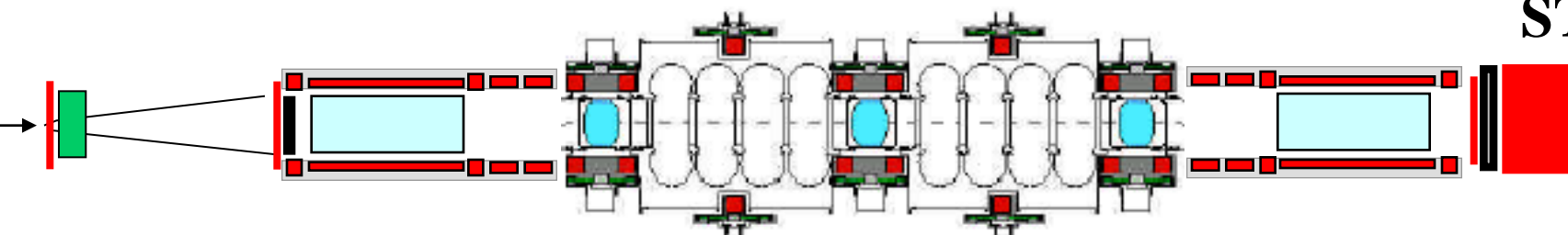
**STEP I**



**STEP IV** Q4 2012  
and 2013



**STEP V**



**STEP VI**

aim:  
2016





## Questions raised

### -- policy for step V.0

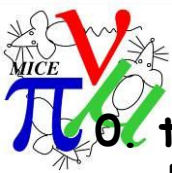
very useful study, it is a good fallback option to have  
and would present a number of advantages for debugging purposes.

but... ONLY if

this is not in the way of the true step V both in time and resources.  
(financial situation is likely to be quite tight)

### -- what is happening with the laser for the TOF?

-- Coupling coils: much progress but next steps after testing of the first bobbin  
is still unclear - propose to have an organized discussion at the time of the  
drawing review in January



# Run plan Overview

0. there is a short shut down 7-13 November for any operation that would require longish access to DSA or vault

0'. Then there is a week of run-up 14-20 November for a possible beam study target study (beam bump) minor intervention in DSA still possible if very urgent.  
**Beam bump study can otherwise be made during user run.**

1. Week of 21-27 November

-- dress rehearsals for beam line, Decay solenoid, DAQ, detectors

2. 28-30 November -- reserve for last adjustments

3. Thursday 1 December -5 December inclusive:

-- DAQ run-up + controls-monitoring run-up and on-line reconstruction  
reference run: 300 MeV/c positive pion beam

4. Tuesday 6 December- 13 December

-- Data taking electron optimized beam mode 100, 200, 300 MeV/c nominal  
**Maurizio to clarify requirement and available dates.**

5. 14+15 December (Friday 16 December in reserve)

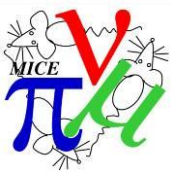
-- CKOV dedicated running momentum scan in "pion" beam mode

6. If time permits : scan of D1 at fixed D2, scan of calibration run at various intensities, solenoid reverse polarity (according to MikeC should not be problem)



**RUN PLAN WILL BE DISTRIBUTED FOR COMMENTS AND FINALIZED  
BY NEXT MICO MEETING**

**We will be looking for Shifters, BLOC and a MOM-deputy  
(who is not already an 'on-call' preferably)  
for the duration of this run.**



## ANALYSIS MEETINGS ORGANIZATION

First date will be

**Thursday 10 November 15:00 GMT by MICE phone meeting.**

**We expect to run the meeting every two weeks**

**Please reply to questions if not done so yet!**

**Expect to report regularly.**

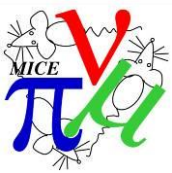




## Conferences

Many thanks to Vittorio for keeping us well represented at conferences!

- some abstracts will be presented with understanding that actual poster will not be submitted if there is not enough new approved content (beam line, Solid absorbers)
- Some abstracts are better suited for instrumentation Conferences (IEE, ELBA, etc..) → to be investigated (EMR, TOF, Tracker cosmics) etc...
- Abstracts should be circulated in collaboration by 22 November for IPAC deadline of 7 december

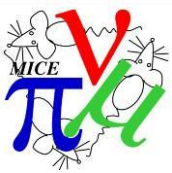


## Software effort

Successful workshop and lots of great ideas, and leadership (milestones!)

First « pudding » chance to demonstrate « proof »:

Data taking in December → online reco G4MICE vs Online MAUS  
and subsequent calibration, reconstruction, analysis



## ONLINE GROUP











As usual with ONLINE groups MICE is under stress

- advice: limit ambition to simple things that work well so that you can be **on call** (and not called) some of the time during running periods.
- group is doing very well but needs to be more of the time at RAL  
Linda to arrange presences.  
MICE management to seek resources to make that possible
-

# December Running - Milestones



Countdown to December running – December 1

Task	Baseline	Status	
Target T2.9 installed on ISIS - Long	14/9/11		
Fix miceraid2 – Coney – fixed, but a MYSTERY	21/9/11		
DAQ w/o EMR – Coney - COMPLETE	28/9/11		
EMR should be out -	15/10/11		25/10/11
Unpacking PID detectors - Rogers	1/10/11		1/11/11 
G4MICE OnRec ready - Rogers	15/10/11		
Step I C&M done - Hanlet	15/10/11		
Data-mover ready - Coney	22/10/11		
TOF spacepoints - Rogers	1/11/11		
OS upgrade done - Coney	1/11/11		
MLCR backups - Coney	1/11/11		
Prototype online histos - Rogers	1/11/11		
Work on proton absorber – Hanlet/Barber	1/11/11		
PPS must be commissioned – Hanson ask Macwaters – Done. PPS is on target.	7/11/11		
Power substations tests complete - Nichols	10/11/11		15/11/11
MAUS on OnRec01a - Rogers	15/11/11		
OnMon running - Coney	Done – want beam test		COMPLETE 
DK solenoid cool-down start - Courthold	14 days before run start		
Check that detectors can be turned on	17/11/11		
People	17/11/11		
Update documentation	23/11/11		
Config DB - Coney	1/12/11		
Computing access - Coney	1/12/11		

- Step I C&M – Pierrick talk
- DAQ
- Data mover
- OS upgrade
- MLCR backups
- Computing access
- MAUS online



# Top 10 Online Group Issues

- DAQ functional for EMR & Tracker
- C&M for Step IV
- Move to MAUS Online Reco/Data Quality
- Easy data access
- Equipment reliability
- MLCR Automatic & comprehensive backups
- Equipment reliability
- OS upgrade
- Agreement with RAL Networking for access to computing information & computers
- ?





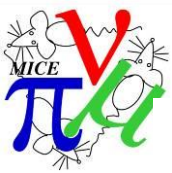
# Some recommendations by MPB in July 2011:

## Recommendations

*(MICE is asked to report at the next MPB meeting 8 March 2012 on these)*

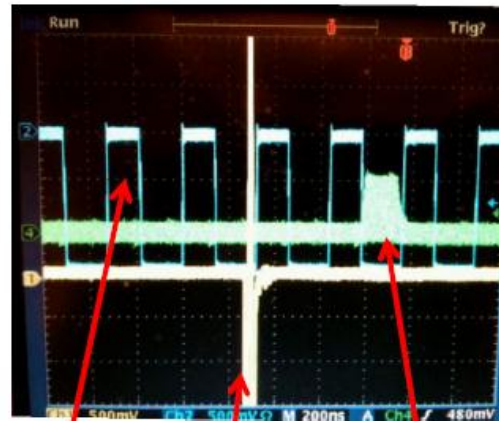
- Engage Chinese manufacturing partners during CC magnet testing and cryostat construction in the US
- Monitor 2011 Milestones and report to the next project board on their follow up and achievement
- Encourage project to evaluate more thoroughly step IV running
- Continue to recommend priority to be given to RF cavity tests well before commissioning step V to reduce project risks
- Recommend early soak test of RF power sources
- Recommend incorporating enough instrumentation to minimize occurrence and consequences of system-wide quench

**NB we don't have to do everything they say, but we have to take it seriously and report on it.**



# Integration window and timing

- Integration window based on ISIS RF clock. In MICE this will synchronise incoming particles to the alive window of the AFE board.
- The triggers must be synchronised to the internal 51MHz AFE clock.
  - The readout triggers must not straddle two integration windows.
  - New firmware prevents this.
- Trigger sweeps performed using LED pulser to find optimum trigger delay.



3Mhz RF  
clock

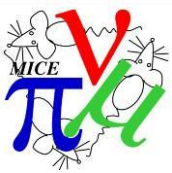
LED Pulses

Readout  
Triggers to  
AFE board

**Issue of MICE time reference came up from various parts of the experiment**

**(from ISIS? From our own? From target dip? From RF frequency?)**

**need to be worked out in long lasting way by small working party  
(DAQ + RF + Tracker + Target)**



# Screen preview FOR NEXT MEETING (not exhaustive list)

Spectrometer solenoid cold mass is closed and about to be testing.

FC magnet completed (cooled) and in time for delivery end of February

CC drawings review passed. First scenarios for construction of CC magnets

LH2 system tested with Liquid Hydrogen

Results from December run:

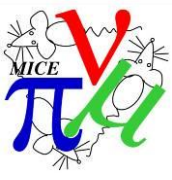
- is CKOV telling pi/mu reliably at 300 MeV/c?

- is MAUS working on real data?

Analysis group producing results, tracker reconstruction software

Report from Magnetic shielding WG and reference time WG

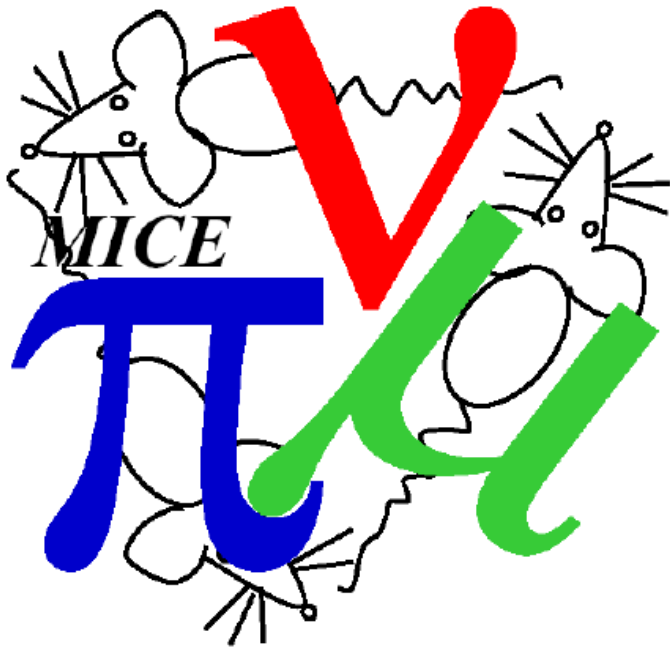
Establish run plan for step IV!



Would like to thank all MICE who attended,  
prepared presentations  
participated in discussions

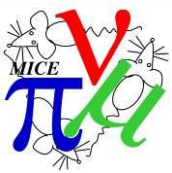


Played catfish and mouse on Old Tailor Road



And keep making progress to

**DEMONSTRATE IONIZATION COOLING**



**THANK YOU LUCIEN, DON, DAVID FOR HOSPITALITY**

**AND THE OPPOTUNITY TO VISIT OLE MISSISSIPPI !**

**We have lots to look forward to for our next CM**

**See you at RAL 8-11 February!**