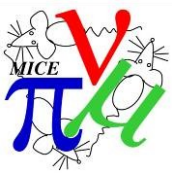


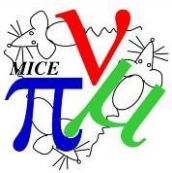
MICE CM30 - Goals and Status





I. what we told the MICE project board

- Steve Gourlay (LBNL head of Accelerator and Fusion Research Div.) at this CM now in charge of the Spectrometer solenoids and Coupling Coil magnets.
 - MICE magnet coordination established: Mike Courthold (RAL) and Roy Preece (RAL)
 - MICE PM Andy Nichols more available:
 - MICE-UK project manager appointed (Alan Grant, DL)
 - MICE schedule review 23-25 May 2011 in presence of internal reviewers Atkinson(DL), Kerby(FNAL), Nessi(CERN)
Strongly endorsed having a significant accomplishment before long ISIS shutdown
 - Gail Hanson (UC Riverside) will support PM as MICE schedule coordinator
- others:
- Linda Coney takes over from JSGrulich as Online Group Coordinator
 - Yordan Karadzhov takes over from JSGrulich as DAQ expert
 - Adam Dobbs takes over from M. Apollonio as beamline expert



As requested by MPB report concentrated on schedule issues

Punchline:

1. **STEP IV** schedule **established**

- much progress on SS, now plan and milestones
- MICE decided to skip step II and III
- run step IV in October'12-March'13

2. Step V

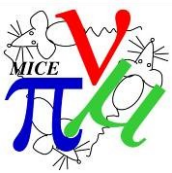
- "**Aspirational**": have a significant running of step V before the long ISIS shut down Aug 2014-Feb 2015.
Priority over more step IV running
Depends critically on RFCC delivery

Today: will review major schedule drivers

- Magnets: Spectrometer solenoids, Coupling coils, Focus coils
- LH2 system
- RF power and delivery system
→ construction schedule
- MICE running

Most of what is shown will be discussed at MICE CM30 in Oxford 6-9 July'11
so it is not totally "**MICE-official**"

(although main decisions discussed at MICE TB,VC and EB)



2.- What MPB told us

-- congratulations

Indeed lots has been achieved!

-- worries

Manpower is thin, and many milestones need to be passed
→ they will watch us!

Can we **really** run step V in 2014?

-- recommendations

'Mother' Project Board...



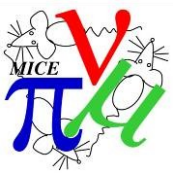
Some recommendations:

Recommendations

(MICE is asked to report at the next MPB meeting 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.



GOALS of the meeting



Towards next meeting in Oxford

- MICE paper submitted
- SS repair under way
- AFC wound - or winding
- MICE solidly rescheduled
- magnetic measurement plan ready
- Substation installed and running
- MICE Software fully MAUSed
- MOM handover updated ☺
- three layers of EMR under debugging in MICE beam

and much more



from concluding remarks at CM29

Towards next meeting in Oxford

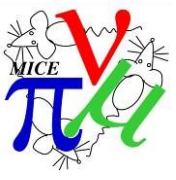
my color coding:

- MICE paper submitted
- SS repair under way
- AFC wound - or winding
- MICE solidly rescheduled
- magnetic measurement plan ready
- Substation installed and running
- MICE Software fully MAUSed
- MOM handover updated ☺
- three layers of EMR under debugging in MICE beam



and much more

Lets update our status,
Understand the critical points
and act if needed



MUCH PROGRESS



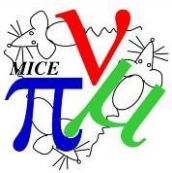
RF and power supply testing 24 June

System pushed to 1MW RF output

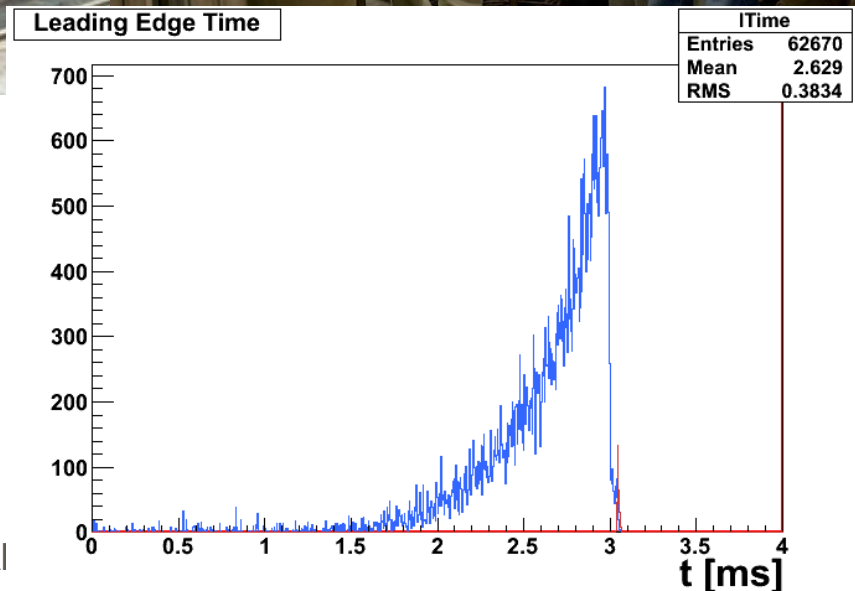
Relatively quiet:

No evidence of significant X-ray production





EMR installed in MICE hall

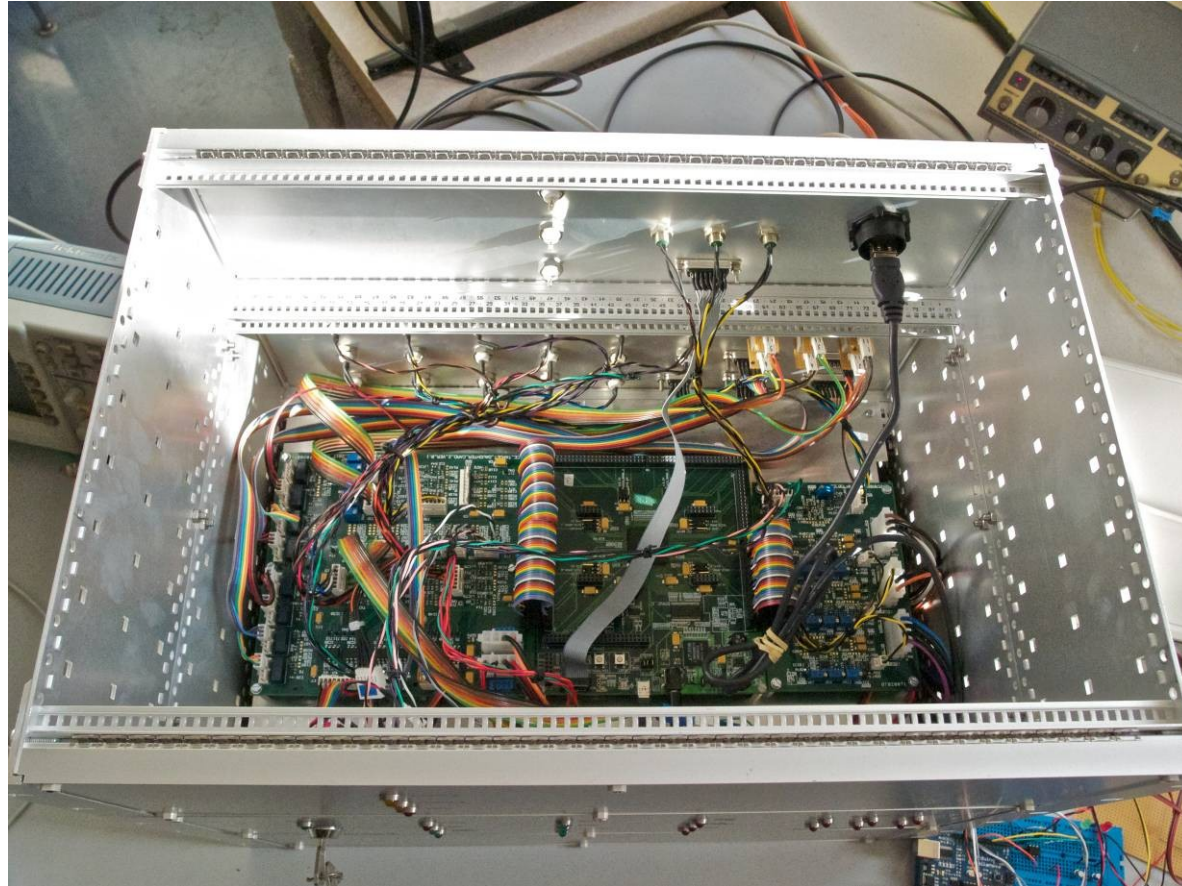


First 3 modules,
run started on 30 June!

*pix courtesy
K.Long*



new target controller in operations



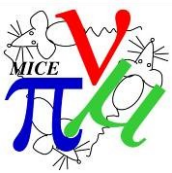
*pix courtesy
K.Long*



H2 system in the MICE hall
already liquefying He



*pix courtesy
K.Long*



IMPORTANT THINGS TO DISCUSS AND UNDERSTAND

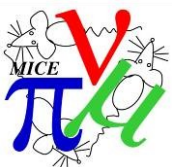
SCHEDULE OF DATA TAKING

NOW \rightarrow STEP IV and including STEP V

STATUS OF CONSTRUCTION

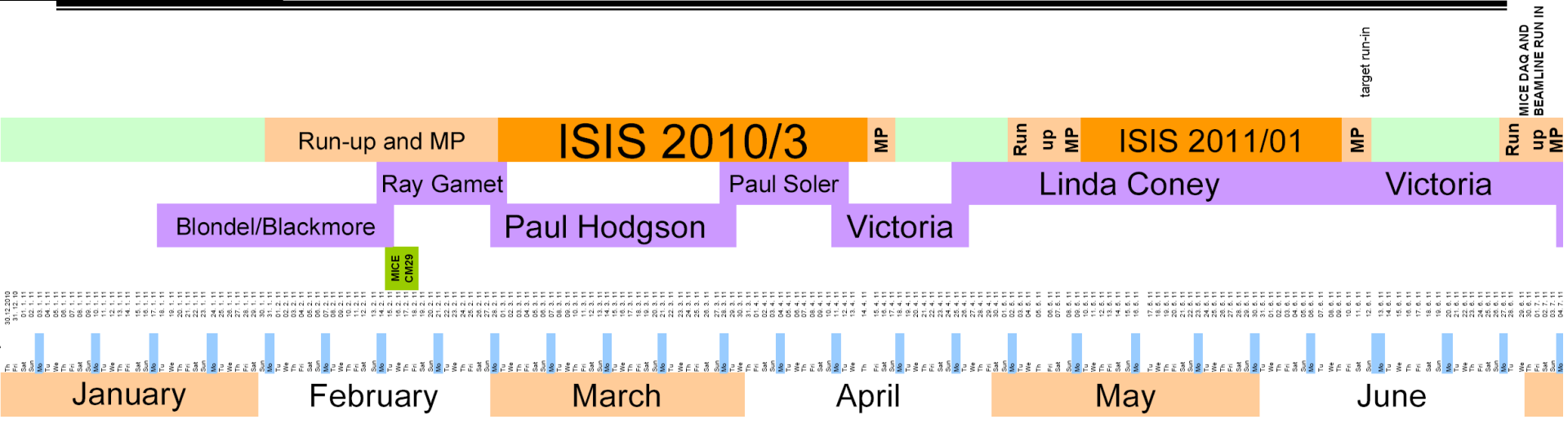
STATUS OF MICE FIRST PAPERS

STATUS OF SOFTWARE

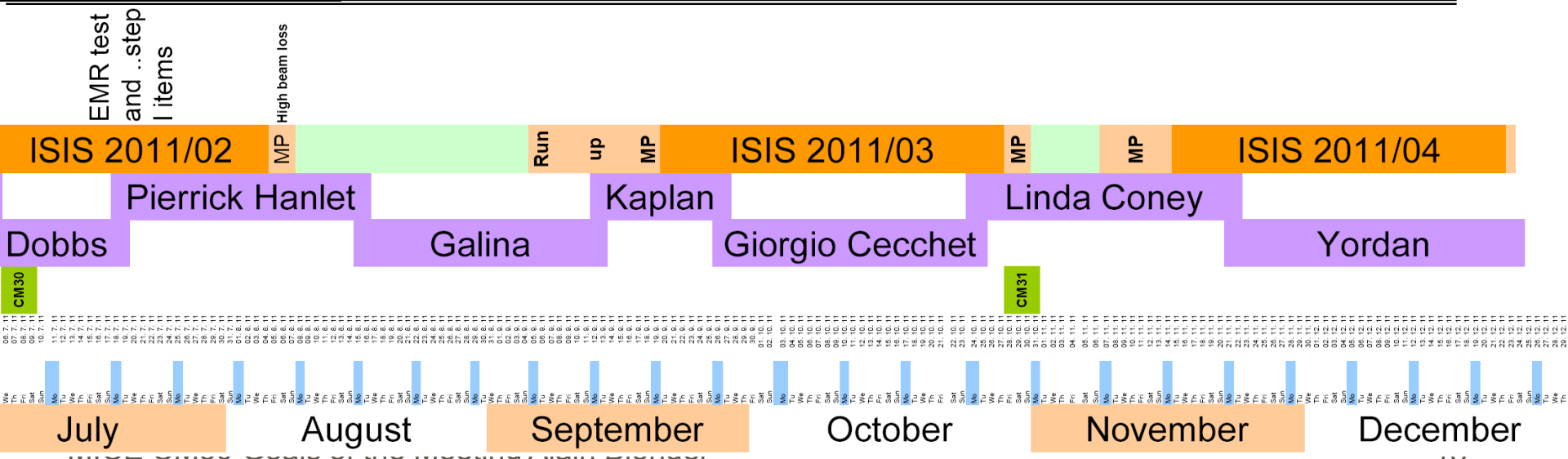


ISIS running periods, MOM Rota and MICE runs in 2011

First semester

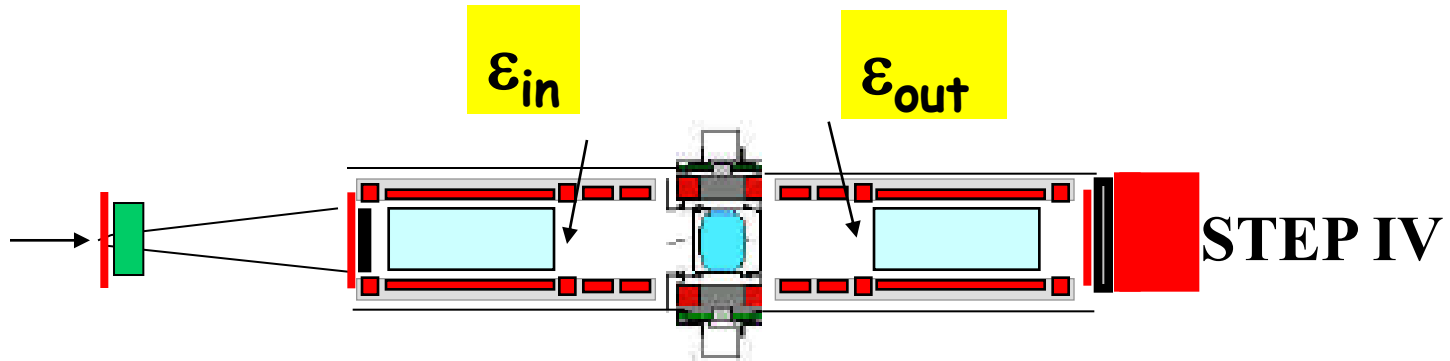


Second semester





STEP IV configurations



1. liquid H₂ absorber, empty
commissioning (tracker, magnets, full DAQ and controls)

2. liquid H₂ absorber, full

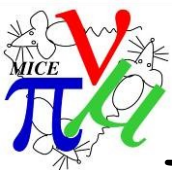
3. Vacuum (only He and window for trackers)

4. Solid absorbers LiH flat and wedge

5. Other solid absorbers

We will be ready...
Hardware and software.
-- problems?

Principle: 1.-4. will take 3 ISIS user runs
This corresponds to the absorbers used for NUFAC
iff step IV can be extended without delaying step V then will do more



ISIS running

Typical year consists of 5 ISIS 'user runs' of ~35 days each + run-ups, MP.

2011/05	lundi	20.févr.12	lundi	20.févr.12	1			Beam line permits
	mardi	21.févr.12	jeudi	29.mars.12	37	37.6	160.1	Cycle 2011/05 — provisional
	vendredi	30.mars.12	dimanche	01.avr.12	3			Machine physics
	lundi	02.avr.12	dimanche	29.avr.12	28	98.9		Shutdown (incl. TS-1 moderator change) [Easter 06-09-Apr]
	lundi	30.avr.12	dimanche	13.mai.12	14			Run-up + machine physics [May Bank H. 07-May]
	lundi	14.mai.12	lundi	14.mai.12	1			Beam line permits
2012/01	mardi	15.mai.12	jeudi	14.juin.12	30	30.6	30.6	Cycle 2012/01 [Spring Bank H. 28-May] — very provisional
	vendredi	15.juin.12	dimanche	17.juin.12	3			Machine physics
	lundi	18.juin.12	dimanche	01.juil.12	14			Shutdown
	lundi	02.juil.12	dimanche	08.juil.12	7			Run-up + machine physics
	lundi	09.juil.12	lundi	09.juil.12	1			Beam line permits
2012/02	mardi	10.juil.12	jeudi	09.août.12	30	30.6	61.3	Cycle 2012/02 — very provisional
	vendredi	10.août.12	dimanche	12.août.12	3			Machine physics
	lundi	13.août.12	dimanche	16.sept.12	35			Shutdown [Summer Bank. H. 27-Aug]
	lundi	17.sept.12	dimanche	30.sept.12	14			Run-up + machine physics
	lundi	01.oct.12	lundi	01.oct.12	1			Beam line permits
2012/03	mardi	02.oct.12	jeudi	01.nov.12	30	30.6	91.9	Cycle 2012/03 — very provisional
	vendredi	02.nov.12	dimanche	04.nov.12	3			Machine physics
	lundi	05.nov.12	dimanche	11.nov.12	7			Short shutdown
	lundi	12.nov.12	dimanche	18.nov.12	7			Run-up (one week per month off)
	lundi	19.nov.12	lundi	19.nov.12	1			Beam line permits
2012/04	mardi	20.nov.12	jeudi	20.déc.12	30	30.6	122.5	Cycle 2012/04 — very provisional
	vendredi	21.déc.12	dimanche	23.déc.12	3			Machine physics
	lundi	24.déc.12	dimanche	03.févr.13	42	122.5		Shutdown (incl. TS-1 moderator change)
	lundi	04.févr.13	dimanche	17.févr.13	14			Run-up + machine physics
	lundi	18.févr.13	lundi	18.févr.13	1			Beam line permits
2012/05	mardi	19.févr.13	jeudi	21.mars.13	30	30.6	153.1	Cycle 2012/05 — very provisional
	vendredi	22.mars.13	dimanche	24.mars.13	3			Machine physics
	lundi	25.mars.13	dimanche	28.avr.13	35			Shutdown (incl. TS-1 moderator change) [Easter 29-Mar-01-Apr]
			Checks:	1127	1114			

new target,
full EMR

no running

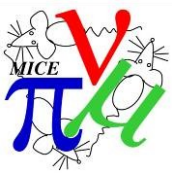
Step IV
Installation

Step IV:
empty/LH2/(LHe)

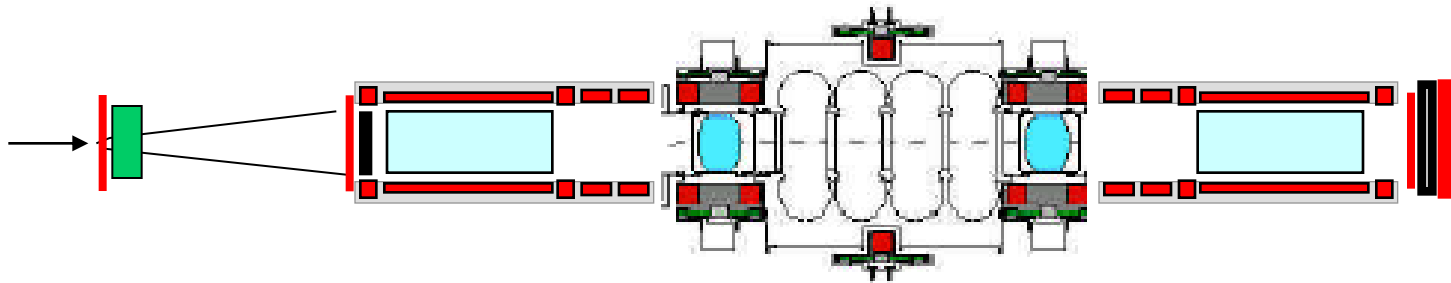
no absorber
flat LiH

LiH wedge
+ reserve

5 periods April 2013 to April 2014 → priority to Step V installation
Some additional step IV running not ruled out but lower priority
Next Long Shut Down envisaged: Aug. 2014 to February 2015



Thinking ahead... Step V



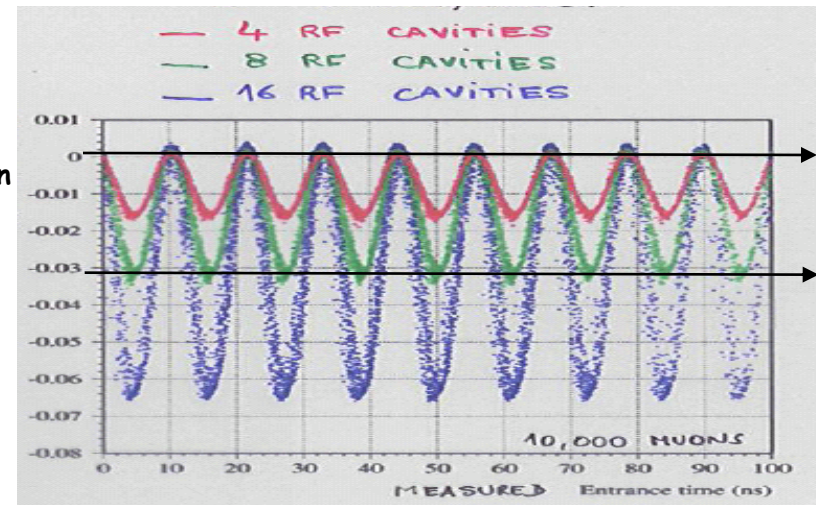
STEP V

“sustainable” cooling:
cooling happens in the
absorbers but production
of cool beam requires
acceleration with RF cavities

old simulation, Janot (at 88MHz)

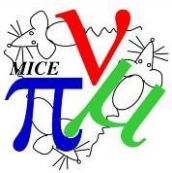
- 1- running with shutters to commission RF cavities (no beam needed)
- 1'- running with LH2 and RF
first with no beam to check RF noise
- 2- running with beam with no RF and no LH2 to check optics
- 3- running with beam with LH2 no RF
- 4- running with beam with LH2 and RF
- 5- or running 2-3-4- with solid absorbers?

$E_{out} - E_{in}$



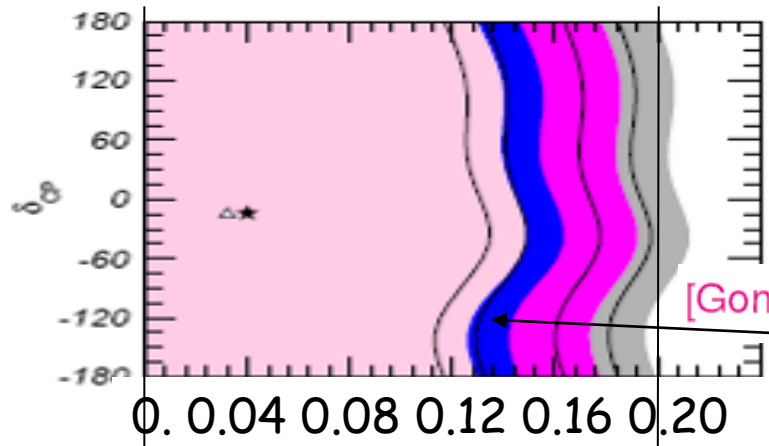
RF phase

limited in optics and performance → step VI!



new results from T2K (13 June) and MINOS (24 June) on $\nu_\mu \rightarrow \nu_e$ appearance \rightarrow indications that $\sin^2 2\theta_{13}$ is > 0

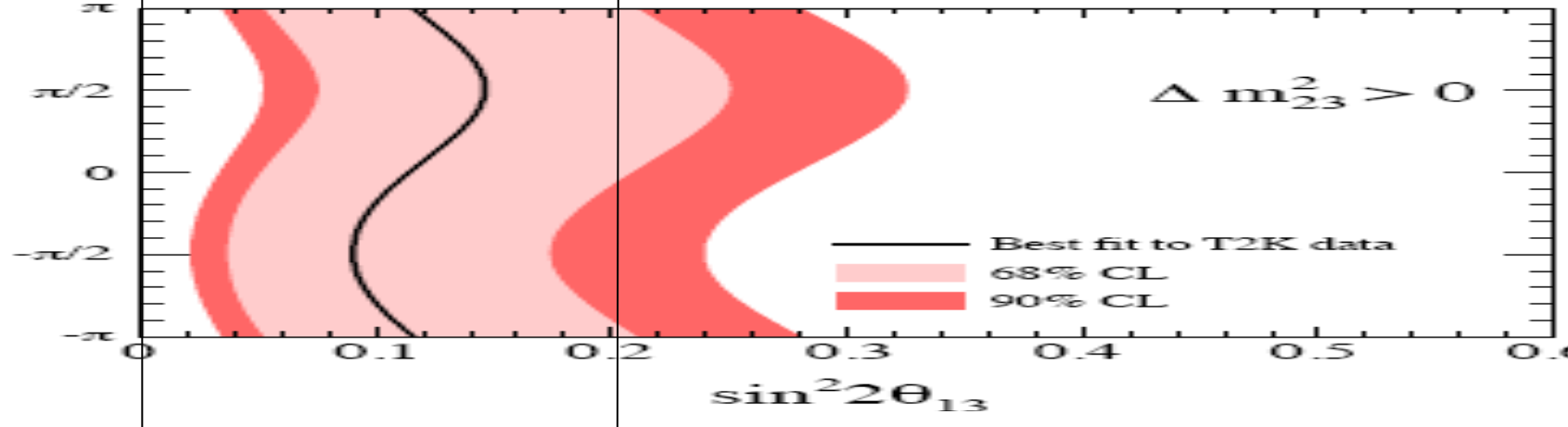
old fit



[Gonzalez-Garcia, MM & Salvado, arXiv:1001.4524]

90% C.L.

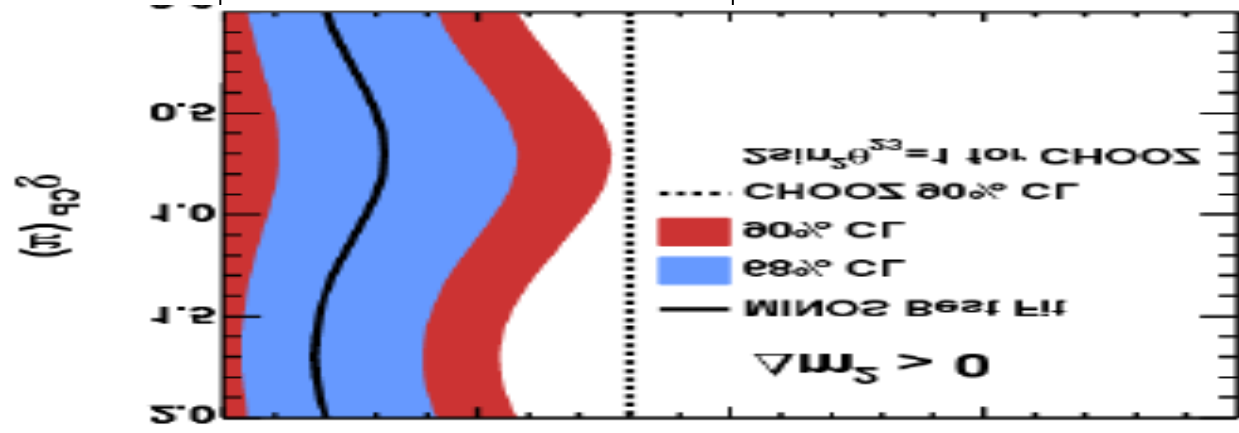
T2K



$\Delta m_{23}^2 > 0$

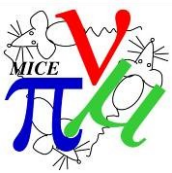
Best fit to T2K data
68% CL
90% CL

1



$\Delta m_5 > 0$
MINOS Best Fit
68% CL
90% CL
CHOOZ 90% CL
CHOOZ fit for $\theta_{13} = 0$

different δ_{CP} axes!



Needs confirmation but this is exciting for neutrino long baseline physics!

Large values of $\sin^2 2\theta_{13}$ would give a chance for superbeams to have a shot at CP violation,

but Neutrino Factory remains most precise and only device able to test oscillations very precisely

- precision measurements of angles and mass differences,**
- tau appearance and unitarity tests**
- detailed study of matter effects**
- etc...**

→Physics is moving forward,

no time to waste,

Ionization cooling must be demonstrated