RUN PLAN SUMMARY

Intro: exposition of what we have for "plans" revealed some incompatibilities that we need to sort out. This was the main goal of the exercize.

Main requests for work in the hall in 2011

1. EMR would like to have a first test in beam in summer 2011
   3 modules = 10cm of plastic

   this (plus TOF2 and KL) will stop muons of 140 MeV/c ---
   but the main goal is to debug the detector (electronics, readout, etc)
   in real beam conditions
   Of course detector is tested in cosmic bench at UNIGE, but real conditions are very different
   > 2-4 weeks of dedicated running in July
   -- parasitic running possible as far as EMR is concerned

2. and a full run with full EMR
   that will be 24 modules or 48 planes = the final detector.
   > 4 weeks of dedicated running when detector is fully operational
   (December 2011 or Feb-March 2012)

Champion ➔ Yordan Karadzhov

Beam commissioning needs

Champion = Marco

not complete from last year
-- retake the M0+ 3,140 point.

Pending from 2010 – could not be done with data we have
-- understand the momentum calibration
-- estimate of pion contamination in muon beam
(both to do with full, working EMR)

special/further beam optics
-- beam for TOF calibration
-- generate a beam with dispersion or dispersion free
-- definite study of the dependence of the energy spread on the D1/D2 ratio

Open to further requests.

i.e. CKOV test run: what is the best momentum and configuration to run to test the mu vs pion separation? pion beam or pi/mu beam?

Champion = Ken Long

Target/Intensity

-- study how to make more efficient use of our system

(get a flat delivery of beam for 1ms and as little else as possible) **1.5-2**

-- beam bump

-- faster dip (to limit particle production and beam loss to 1ms)

-- higher dip rate (1/2.56 → 1.28 → 0.64 Hz) **2-4**

➔ run offline target in (most challenging but acceptable) mode

-- lesser DAQ dead time → ONLINE GROUP

-- take a more significant irradiation run to have a more solid base for extrapolating beam loss data

-- (bring routine (2V) closer to record (10V)) **1-2**

(3-16)

Target shape did we get more – or less -- particles per beam loss with cylindrical (present) target than with the 2008 (flat) target? do we have data that can be used to compare?

Luminosity monitor

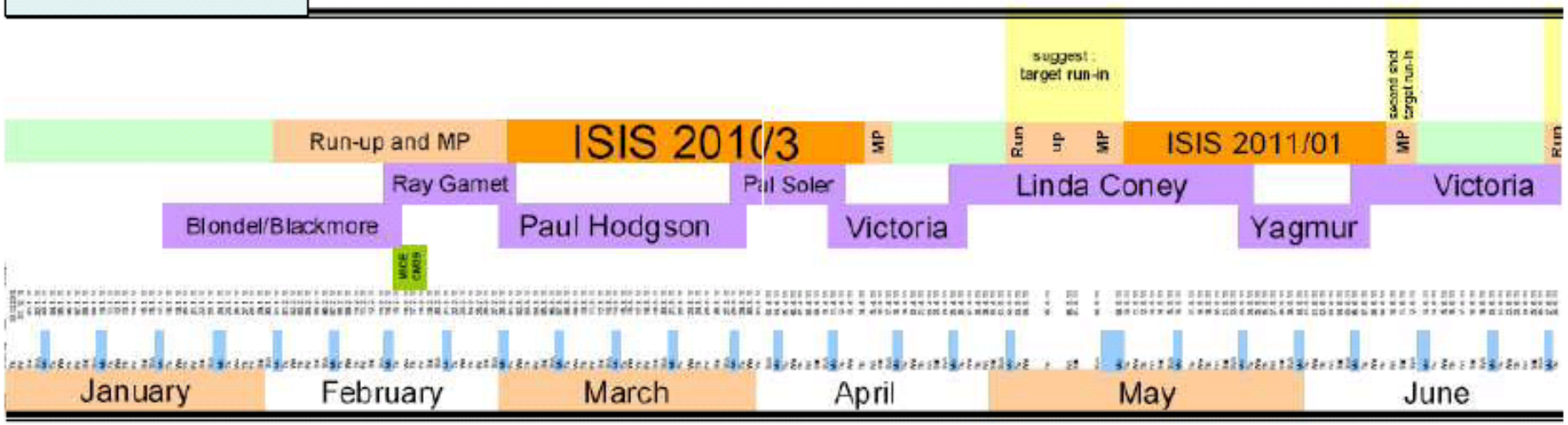
Works very well… but we need to understand

-- what causes the detector to go dead (i.e. beyond saturation) at high intensity

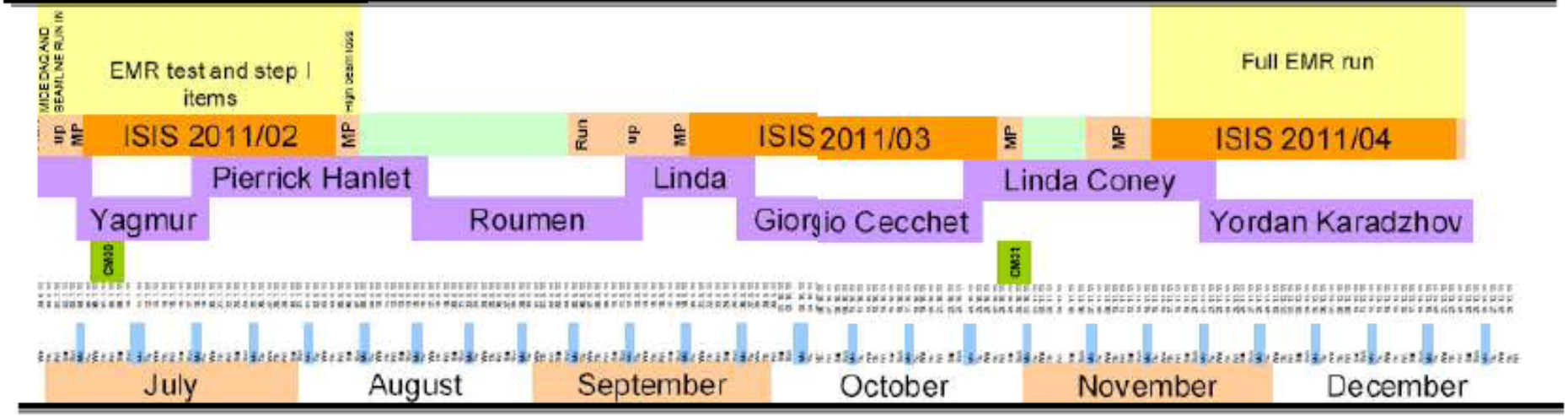
-- how to measure the dead-time/saturation from the data themselves and correct for it.

ISIS running periods, MICE CM29/30/31 and MOM Rota proposed MICE runs in 2011 ➔ to be finalized at CM29

First semester

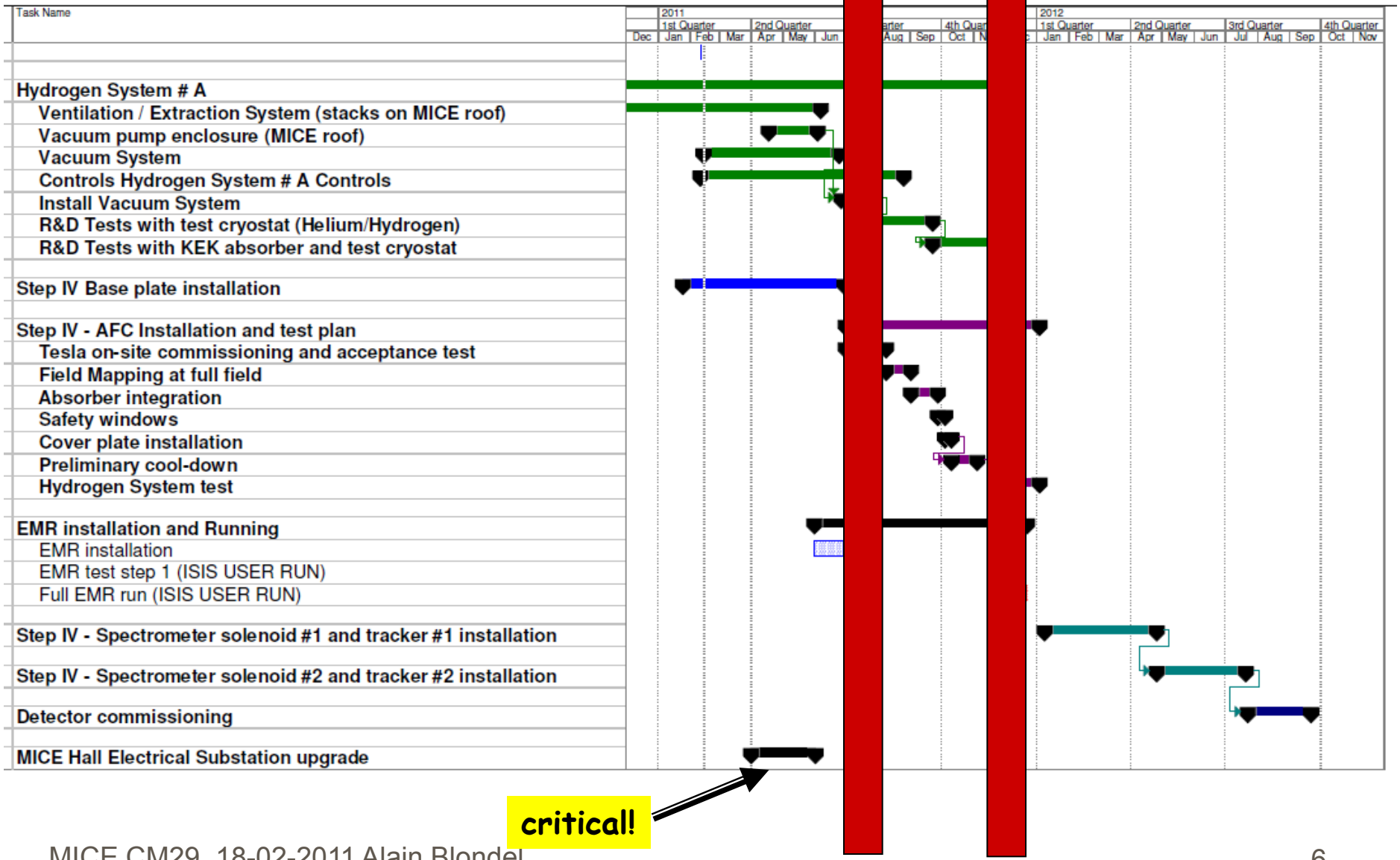


Second semester



Schedule of installation & work in the MICE Hall
2011 -2012

potential hall conflict
will need to be worked out
(and don't panic until conflict is *real*)



critical!

dedicated vs parasitic

Preference was expressed for running in "dedicated mode"
(blocking a few weeks at a time and running 5-9 during week days)
rather than in parasitic mode (physicists take beam on evenings and week-ends)

This does not strike me as being the most powerful way from the point of view of understanding what we are doing especially in debugging mode.
(we need time to pause and think)
In order to work this requires a well prepared campaign
(as was the case in 2010 June-July for the beam demonstration)
What fraction of the data taken in summer 2010 will actually be used?

Target, TOF detectors DAQ etc were debugged in parasitic mode in 2008/2009 and without that, the 2010 campaign would have been impossible.

The main motivation for running in dedicated mode seems to be that at RAL experts on call have to be specially paid.

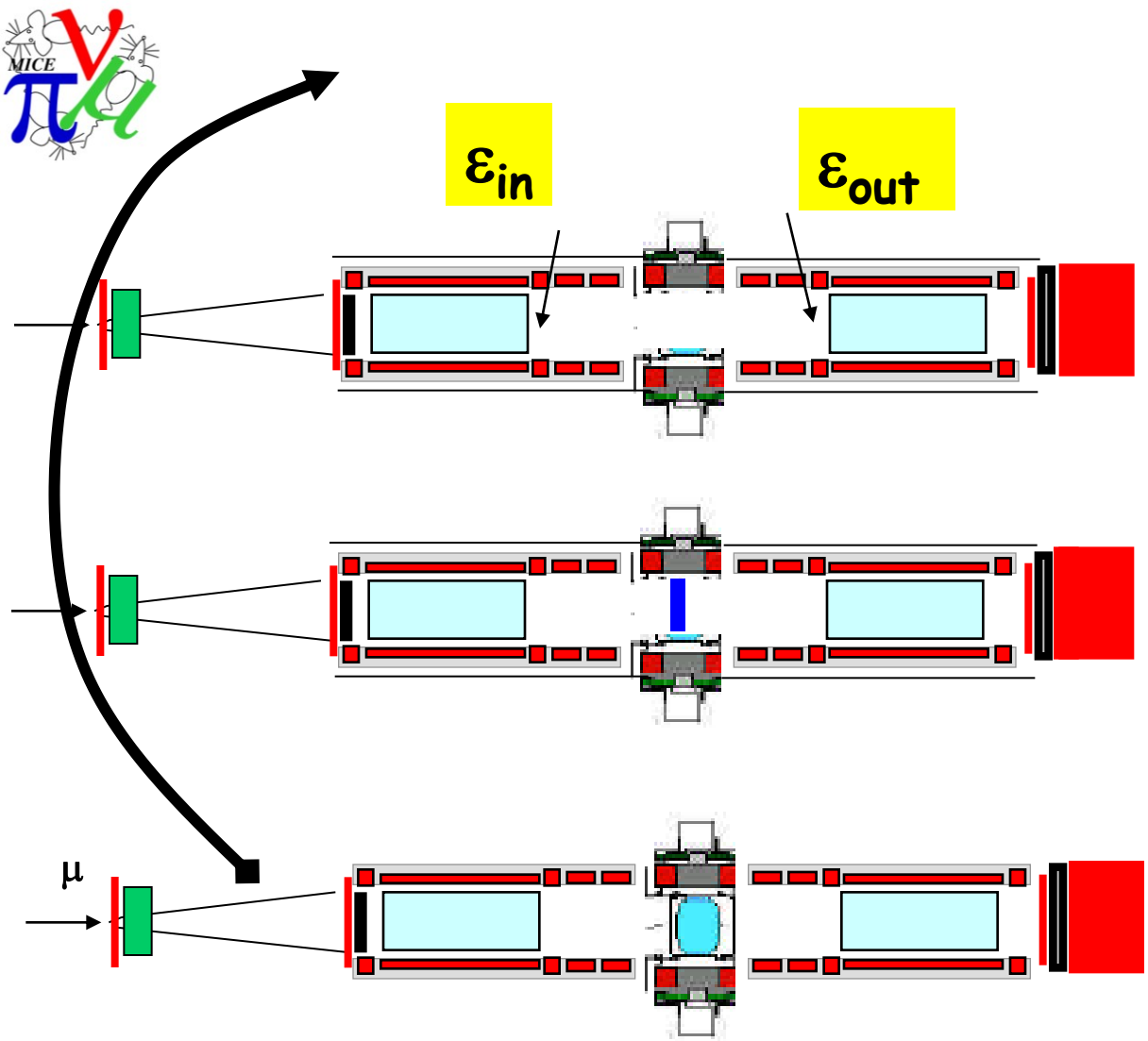
We should quantify this aspect of things with respect to other aspects if necessary and find the mode that best suits the needs of the experiment.

Data taking must be prepared to be successful

MOMs will ensure that the **champions** provide sufficiently ahead of time

-- detailed data taking plan and indications on how to interpret results
-- Beam files
-- online monitoring and online reconstruction requirements

must be satisfied beforehand so that the unknown is "perturbative"
(= one problem at a time)



STEP IV.0

Vacuum

Diffuser
Spectrometers
Trackers
EMR
Focus coil

STEP IV.1

Solid absorbers

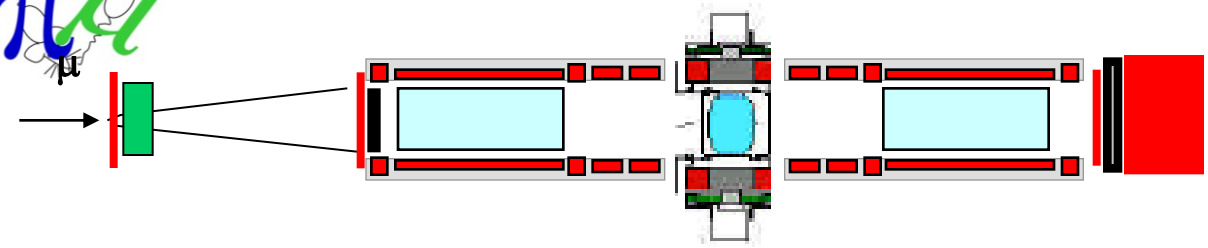
Plastic	50 mm
LiH	65 mm
Be	34 mm
Al	23 mm
Fe	9 mm
Cu	8 mm
Wedge	

STEP IV.2

Liquid absorbers

LiqH2	350 mm
LiqHe?	

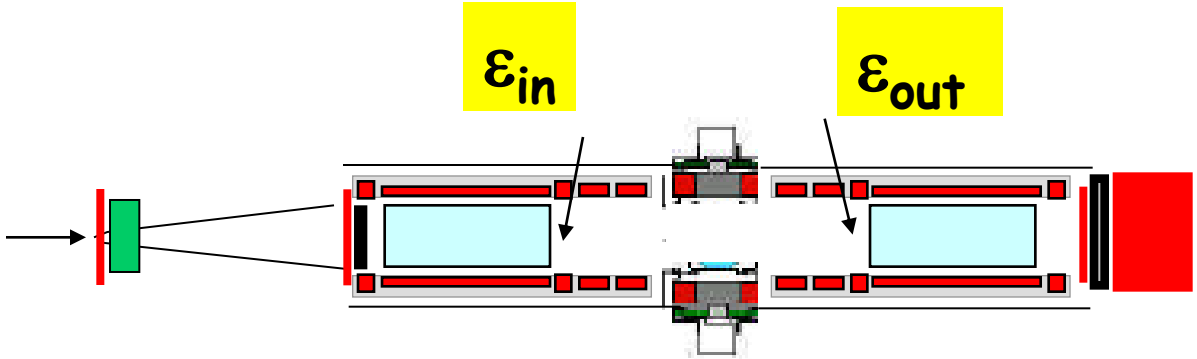
PREMIUM ON FAST and ROBUST PUSH-PULL OPERATION OF FC MODULE



STEP IV.2

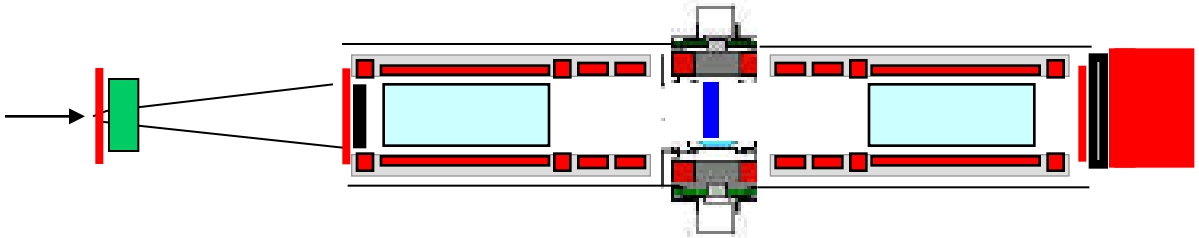
Liquid absorbers

Empty	
LiqHe	350 mm
LiqH2	350 mm
Empty	



STEP IV.0

Vacuum



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PREMIUM ON FAST and ROBUST PUSH-PULL OPERATION OF FC MODULE

More on step IV

Comment 1:
multiple scattering and energy loss will be measured on
particle by particle basis.

need: tool that calculates kick and DE in the absorber for each muon

also: need to integrate tracker and TOF/EMR measurements ot |P| to get rid of large tails of dP/P from the tracker.
Or use only large angle muons for detailed verification of MS and dE/dx laws.

Comment 2:
construction of the AFC module will finish with a module that
has LiqH2 absorber (empty) in it.

Are we happy to run step IV.0 with absorber and safety windows?

Are we happy to begin run with liquid absorbers and then switch to solids?
Any strong reason to go otherwise?


MICE