



Science & Technology
Facilities Council



Ionisation Cooling Test Facility @ STFC (ICTF@STFC) WP8

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EuCARD2 Steering Group meeting, May 2014



Content

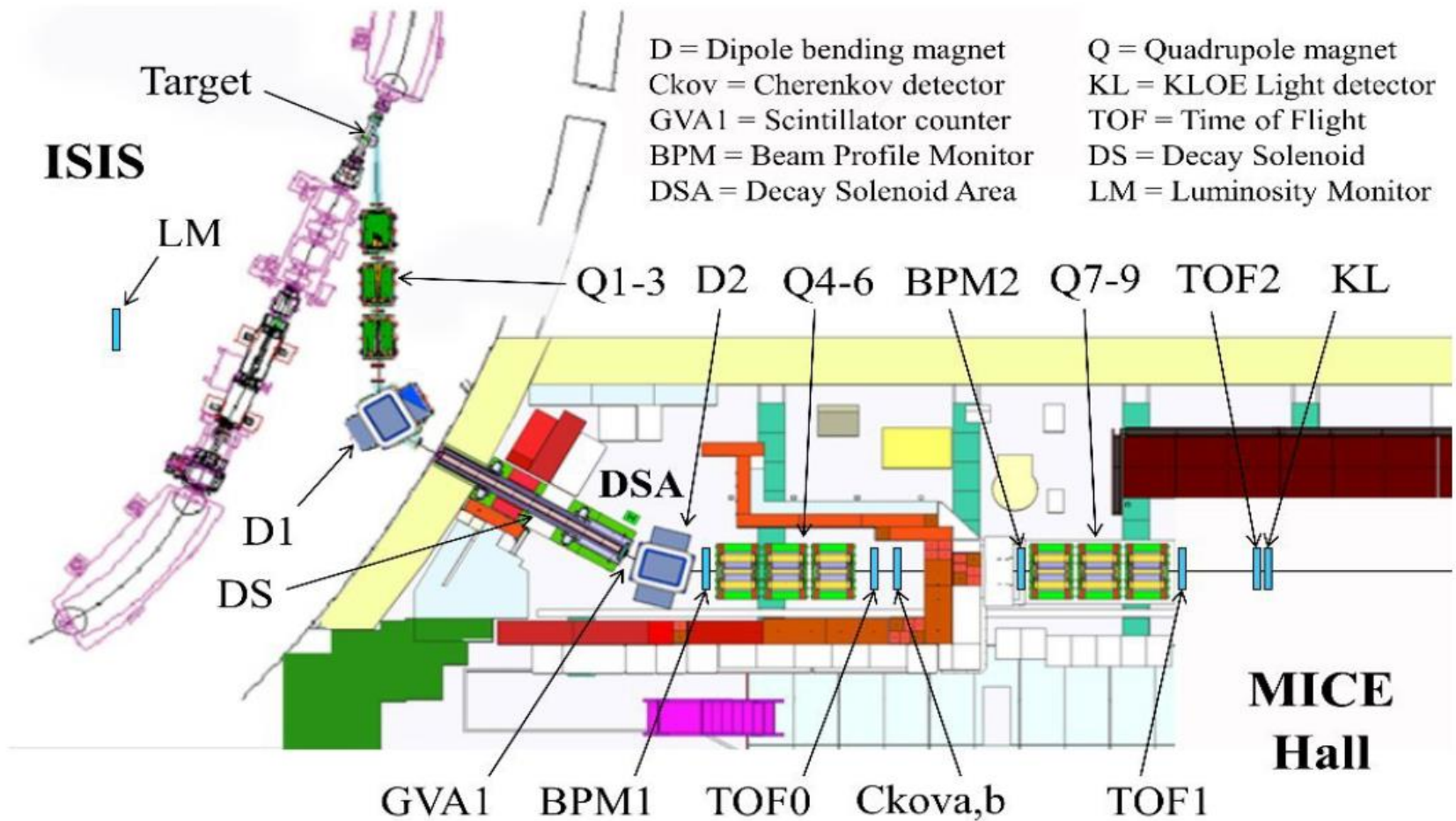
- ICTF – Reminder of what it is
- Users Update – How is the ICTF being used
- TNA Applications / Allocations
- Restrictions for New Users – What are the boundary conditions
- New Users

ICTF@STFC – REMINDER OF WHAT IT IS

ICTF

- The Ionisation Cooling Test Facility (ICTF) comprises a specially developed target and beam-line at the ISIS proton synchrotron (800 MeV) at STFC's Rutherford Appleton Laboratory.
- The beam-line provides μ , p , n , e at 100 MeV/c to 400 MeV/c. It has been operational for several years, though intensity continues to increase.
- The ICTF infrastructure includes installations to supply radio-frequency (RF) power and liquid hydrogen (LH₂).
- The ICTF beam and infrastructure have been designed for the study of ionisation cooling, and meet the requirements of the Muon Ionisation Cooling Experiment (MICE), which is installed at the ICTF.
- WP8 under EuCARD-2 supports access to the ICTF.

ICTF : Ionisation Cooling Test Facility Beamline



USERS OF THE ICTF@STFC

Users of the ICTF@STFC

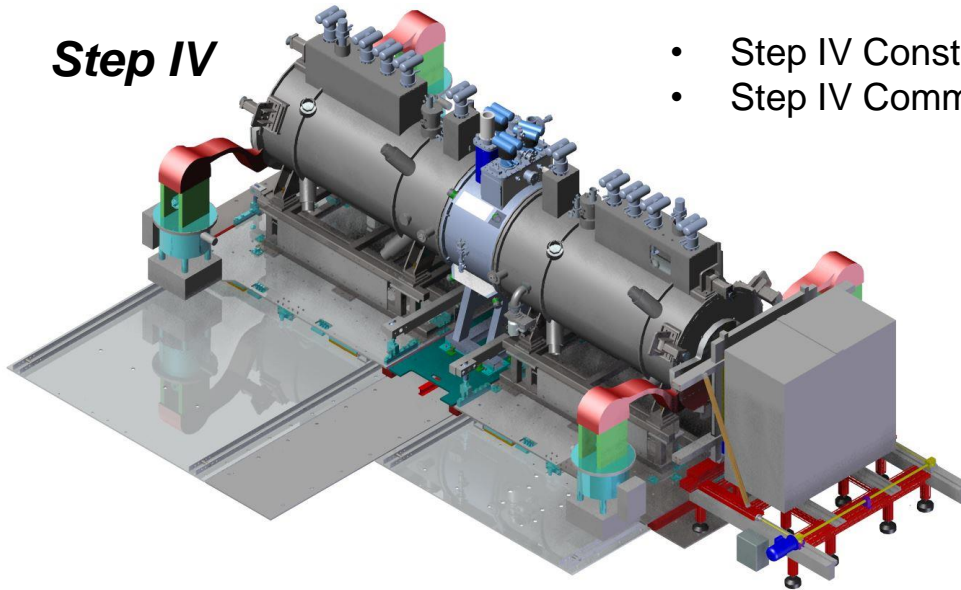
- To this point the MICE Project has been the user of the ICTF
- I hope this will change and I will be able to report on an additional experiment utilising the ICTF

MICE

- Muon Ionisation Cooling Experiment (MICE)
- MICE is a key step for evaluating the feasibility of ionisation cooling for a neutrino factory and possible μ -collider.
- An international project with many collaborators around the world
 - European Collaborators – UK, Switzerland, CERN, Bulgaria, Netherlands, Italy and Belgium.
 - USA, China and Japan
- The ICTF was originally built to supply beam for the MICE experiment

MICE SCHEDULE

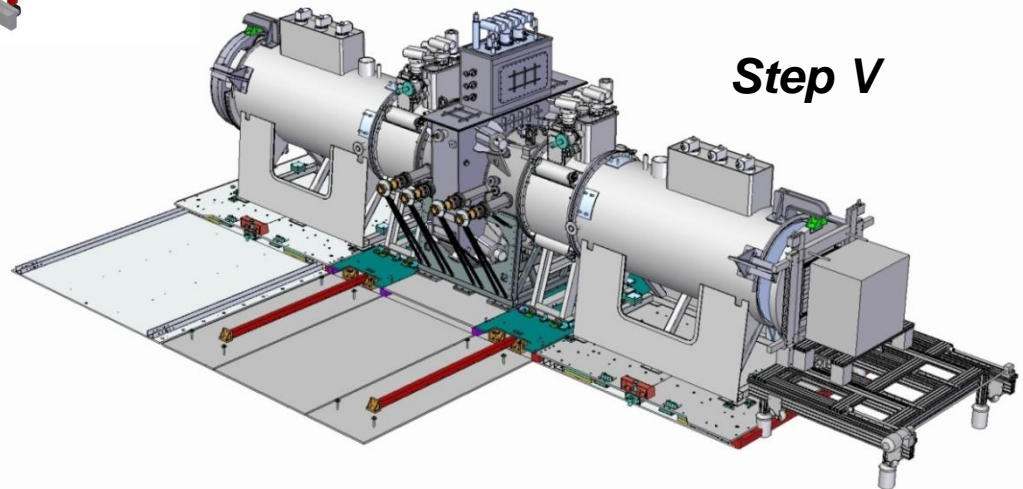
Step IV



- Step IV Construction complete March 2015
- Step IV Commissioning complete May 2015

- *Due to funding difficulties Step V will be the final step*
- Construction Complete Q2 2018
- Planning for expedited RFCC delivery being investigated
- Step V outside of the EuCARD-2 Project period

Step V



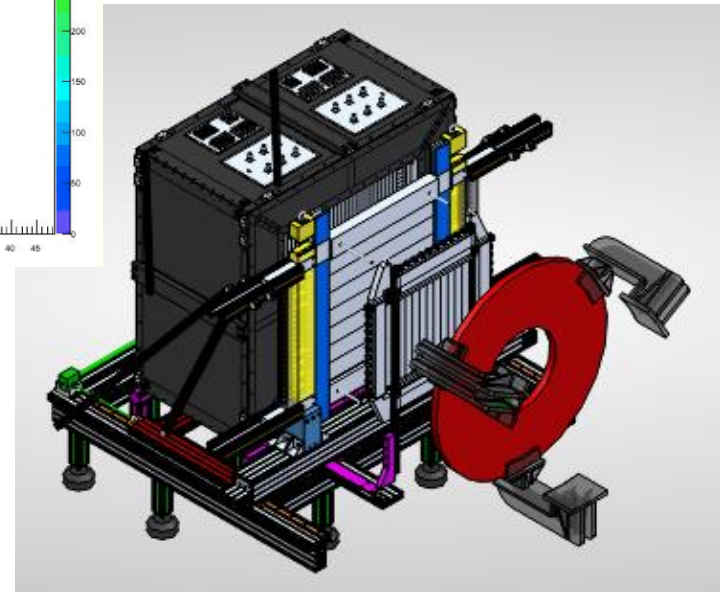
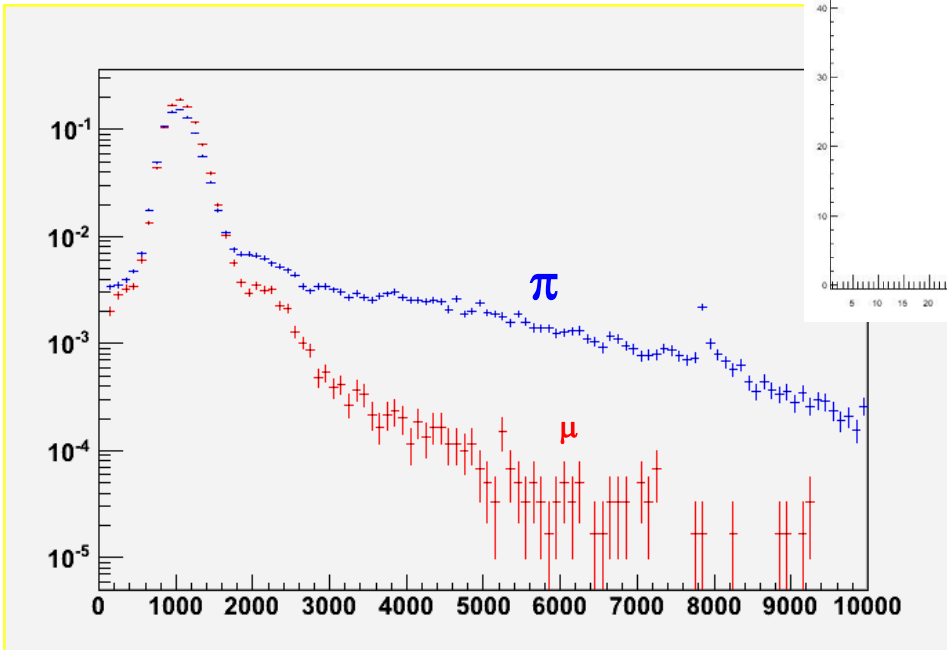
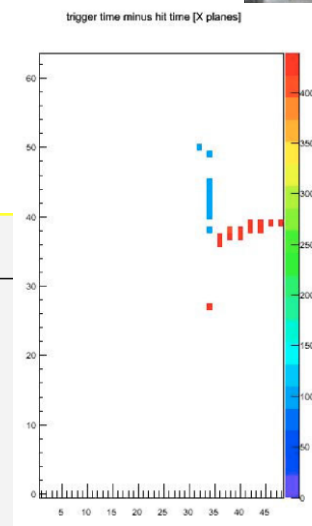
MICE Update

- Spectrometer Solenoid Magnets
 - Upstream magnet in position in the hall
 - Downstream magnet having the tracker detector installed
- Focus Coil Magnets
 - Field mapping of the magnet to be carried out before the end of May
- RF
 - First amplifier installed into the hall successfully tested to 500kW (2MW at DL)
 - Work on the second amplifier build has started
- Coupling Coil Magnet
 - Testing of the first coil was completed yesterday
 - Reaching a stable current of 194A



MICE Update

- EMR, KL and TOF
 - Data runs complete
 - The main area that the access has been used for.



TNA APPLICATIONS / ALLOCATIONS

TA (WP8): application process

- Applications are assessed by TA Panel:
 - *Ken Peach (Oxford, Chair)*
 - *Francesco Terranova (Milan)*
 - *Steve Geer (Fermilab)*
 - plus technical and administrative input as needed.
- Panel works on cycle of two calls per year, advertised on the web pages of:
 - EuCARD-2 (<http://cern.ch/eucard2>)
 - PPD – STFC (<http://www.stfc.ac.uk/PPD/Experiments/EuCARD2/44060.aspx>)
- Contact has been made with the Research Directors of PSI, KEK and TRIUMF who have been asked to advertise the access to the ICTF throughout their communities.

Allocations

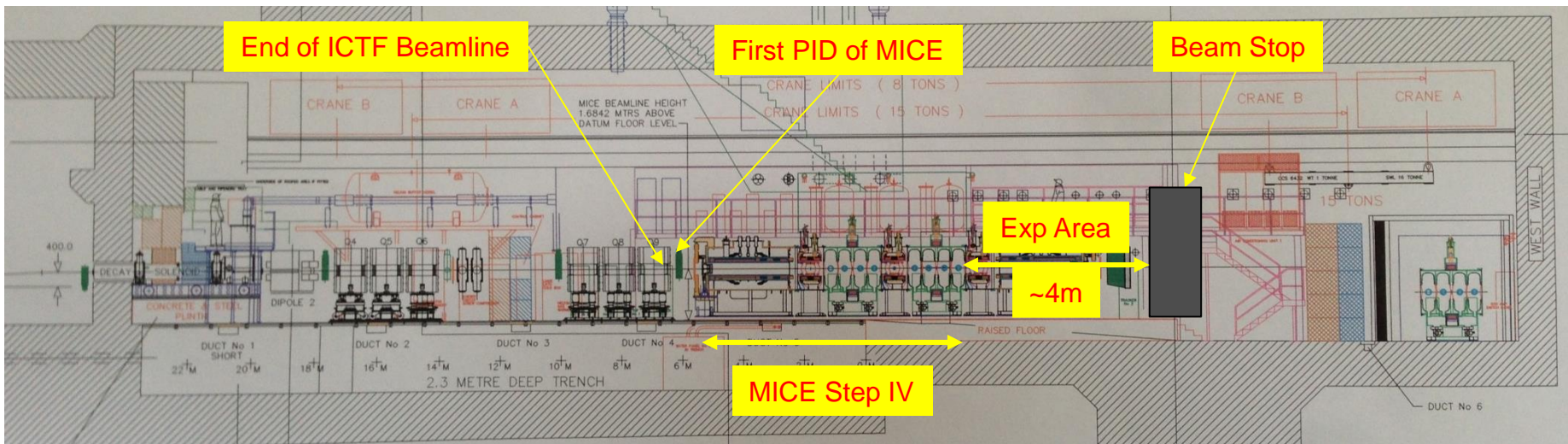
- Applications were received (in first call, Sept 13) from University of Geneva, University of Sofia and INFN
- No applications received from the second call (March 14).
- Funding allocated for the 12 month (Geneva) and 18 month (Sofia and INFN) periods requested.
 - Proposed – 1153 access units
 - Actual (Allocation in Sept 13) – 723 access units
 - 2280 access units required for the project
- Next call deadline will be September 2014
 - CERN courier and Accelerating News will run advertisements.
 - Expectation for MICE users to submit applications
 - Data taking (commissioning and scientific) during the period.



RESTRICTIONS FOR NEW USERS – WHAT ARE THE BOUNDARY CONDITIONS

Restrictions for Users – What are the boundary conditions

- From December meeting – “How much space would be available for other experiments”
 - MICE will take the majority of the experiment space after the end of the ICTF beamline
 - Very little space before first MICE magnet due to (~200mm)
 - Time of flight detector
 - Iron shielding
 - There is space after MICE and before beam stop
 - How much disruption of the beam because of MICE ?
 - Definition of available space and time to be put on websites and application document



NEW USERS

New Users

- With the restrictions described
 - Space before MICE $\sim 0.2\text{m}$
 - Space after MICE $\sim 4\text{m}$
 - Reduced beam due to MICE – Particle detectors, Absorbers
 - Construction and data running of the MICE experiment
 - Construction complete March 2015
 - Commissioning complete May 2015
- Very difficult for new users to fit into the already tight hall and schedule
- A possible area for new user is in the Security field – material identification
 - μ , p , n , e at 100 MeV/c to 400 MeV/c
 - Field on / off
 - With / Without absorber
- Investigation of the other uses of the beamline outside of the Neutrino community
- Any suggestions or insights for possible use of the ICTF@STFC are very welcome