

# Operations

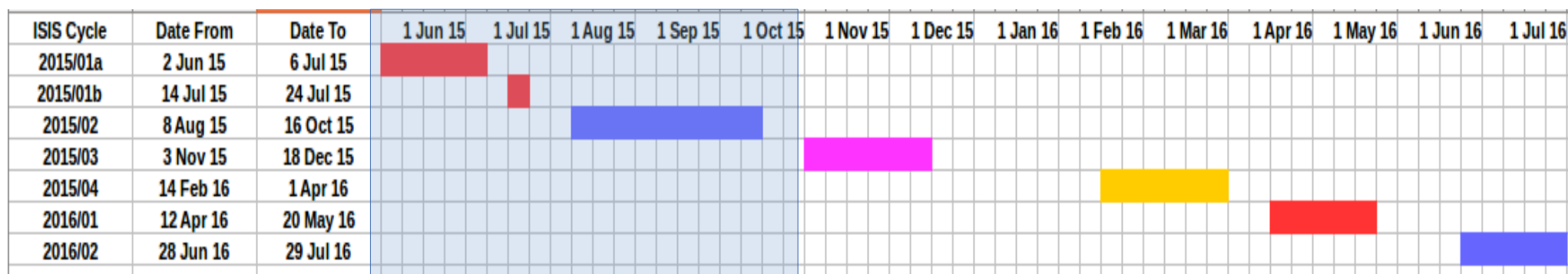
- ▶ Commissioning and Operations (S. Boyd)
- ▶ Tracker Commissioning (E. Overton)
- ▶ Step IV measurements and analysis plans (C. Rogers)
- ▶ Software and Computing (D. Rajaram)
- ▶ Development of cooling channel lattice (J.B. Lagrange)

pictures?

# Operations

- ▶ Running periods and system performance
- ▶ Shifts and shift allocation system
- ▶ Shift Training
- ▶ Operations Management team
- ▶ MICE/ISIS Coordination

# ISIS Schedule



▶ Cycle 2015/01 (June 2015 – July 2015): Magnet installation and commissioning; Tracker commissioning, calibration and alignment studies, PID detector studies;

▶ Cycle 2015/02 (Aug 2015 – Oct 2015) : Magnet commissioning; Tracker commissioning and calibration ; Further development of controls and monitoring systems

# Cycle 2015/01

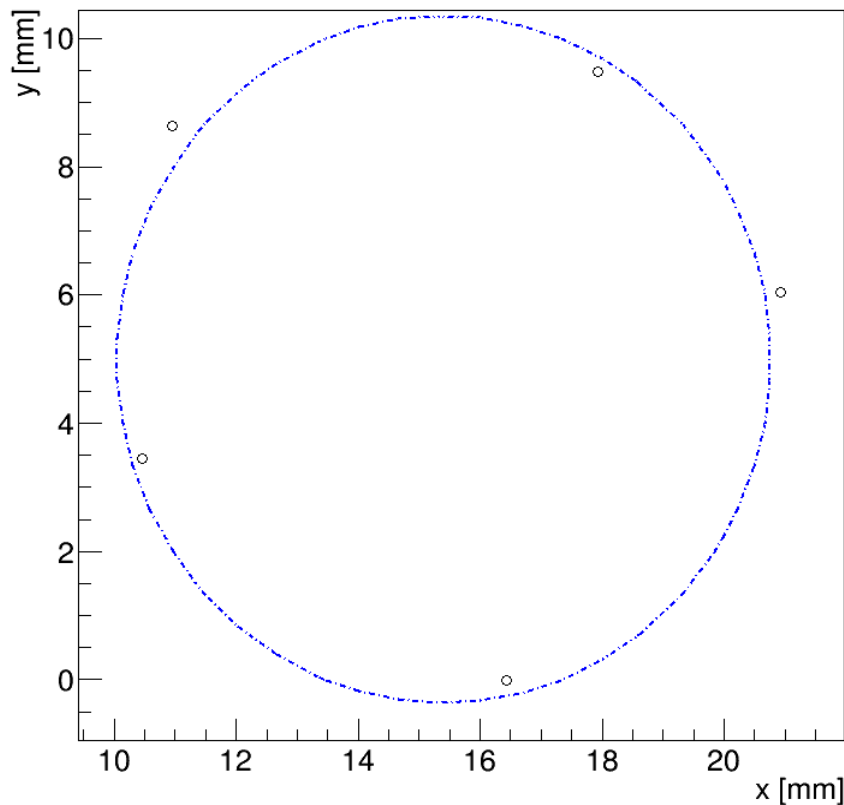
User cycle 2015/01 focussed on :

- ▶ commissioning and calibrating the tracker
- ▶ channel element alignment studies
- ▶ PID detector calibration

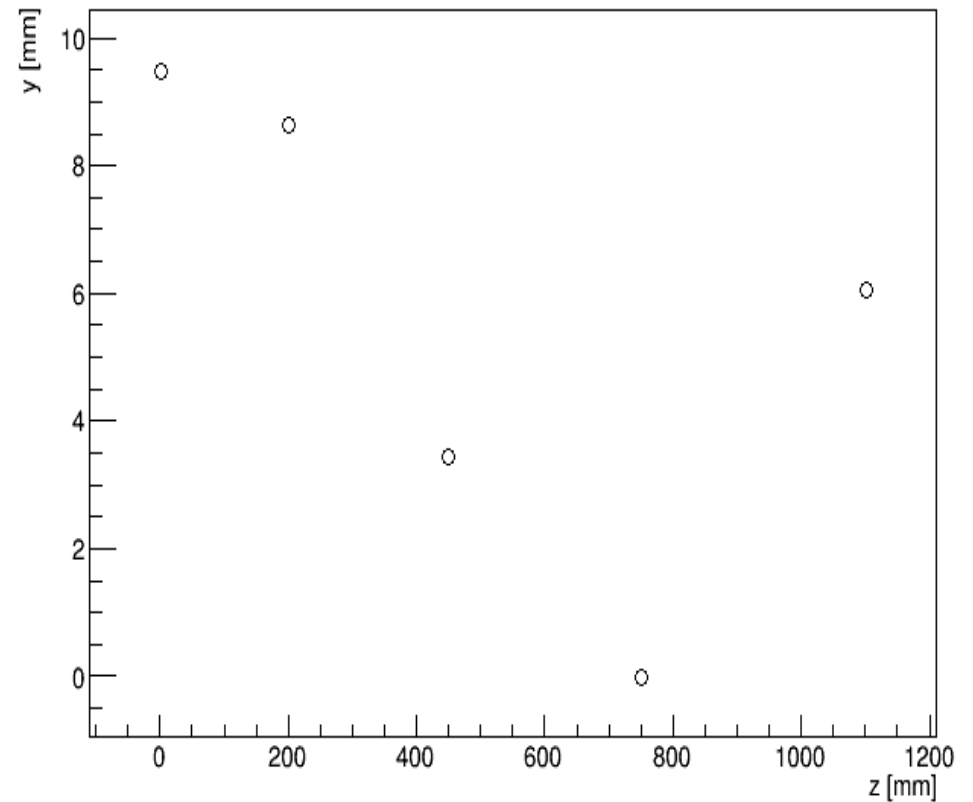
Regular night runs coordinated through daily run meetings  
Included a run taken with the downstream spectrometer  
solenoid (SSD) at half current

# A helical muon

A muon moving in the downstream tracker during the half-field run



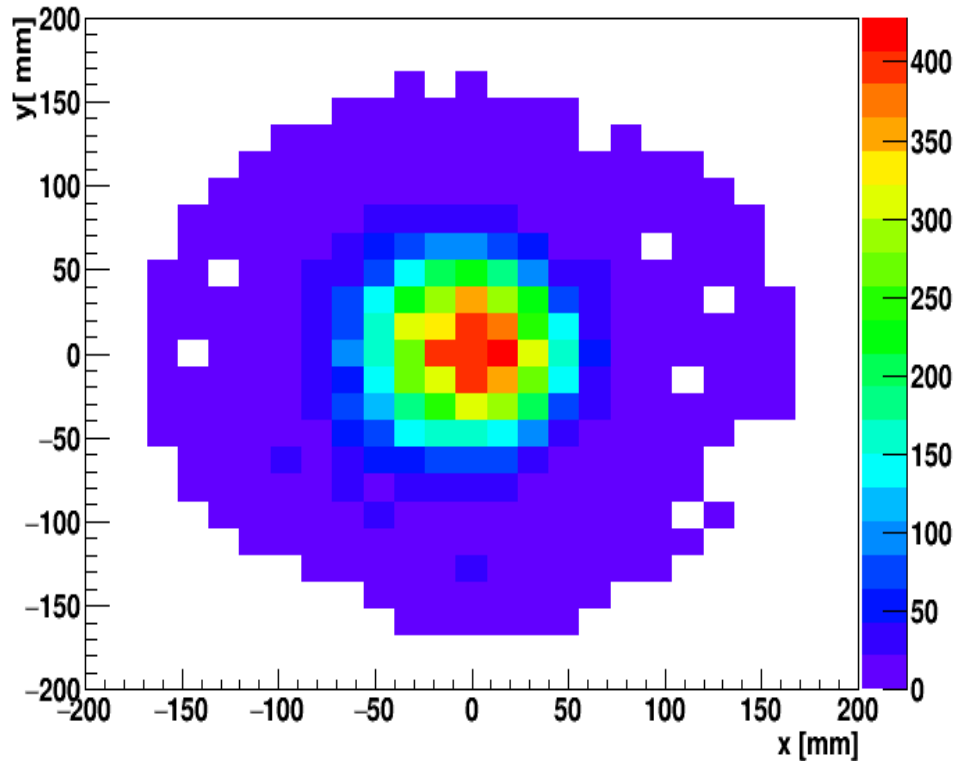
XY - view



YZ - view

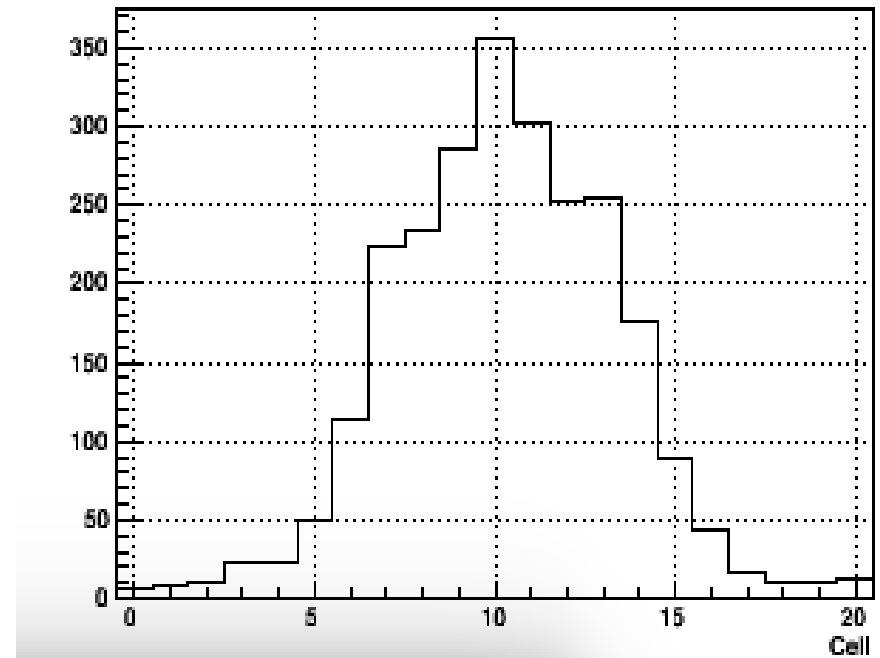
# Online Reconstruction

Run 7469 Spill 614 tracker 0 station 5 (station 1 is innermost)



Near real-time beam spot in upstream tracker from online reconstruction

Beam Y-profile



Downstream y-profile of beam from KL detector

# Cycle 2015/02

User cycle 2015/02 was focussed on solenoid and focus coil magnet commissioning, and further development and testing of controls, online reconstruction and online monitoring

Data-taking opportunities were limited, but utilised when they arose. Most data was used to:

- ▶ further tracker commissioning
- ▶ study the alignment of the trackers and the magnetic field axes for SSU
- ▶ study PRY remnant field from magnet energisation
- ▶ develop the online reconstruction and monitoring systems
- ▶ SSU E-C-E @ full current run

# Future Cycles

**Cycle 2015/03 (Nov 2015 – Dec 2015)** : Expected to be largely focussed on magnet commissioning with some running possible towards the end of the cycle.

**Cycle 2015/04 (Feb 2016 – Mar 2016)** : Production data-taking with Hydrogen absorber. Detailed run plan is in preparation.

**Cycle 2016/01 ( Apr 2016 – May 2016)** : Production data-taking with LiH absorber.

**Cycle 2016/02 ( Jun 2016 – July 2016)** : Possible contingency run period, but delays the start of construction for the next phase of the experiment.



- ▶ In general, data-taking has been straight-forward, complicated by the intermittent nature of data-taking in last two user cycles.
- ▶ Mitigated by :
  - ▶ having expert led start-up runs before data-taking occurs (provided notice for data-taking is given)
  - ▶ implementing change control procedures for online software during production running
  - ▶ having a roll back plan for emergencies

# System Performance

System	System Health	Issues
DAQ/Trigger	Good	Rare EMR crate communication issue
Run Control	Good	Some stability issues
Online monitoring & reconstruction	Good	
PID detectors	Good	
Tracker	Good	Calibration needs integration into RC
Conventional magnets	Good	
Decay solenoid PS	Warning	A number of small issues which took some time to diagnose and fix

# Shifts

- ▶ Shift allocation tool (CHEESE) was rolled out and used successfully by collaborators to sign up for shifts
- ▶ Shifters sit a 5-day block of 8-hour shifts in a team of 2
- ▶ **2015/01** : 2 8-hour shifts per day (over-night) + 1 on-call shifter during the day. 159/159 shifts offered and assigned.
- ▶ **2015/02** : Full 24-hour / 7-day a week shift staffing. 6 8-hour shifts per day. 218/228 shifts offered and assigned.
- ▶ **2015/03** : 2 on-call shifters from 8 am to 12 pm + small on-site team to help with magnet commissioning when necessary.

# Shift Training

- ▶ Shifters currently receive training in PPS operation and principles, magnetic field safety, beamline and target operation and control room familiarisation and shift responsibilities.
- ▶ Shift training is now offered in the 2 days prior to the start of each shift block. Shifters are required to arrive at RAL at least 2 days in advance to sit shadow-shifts and re-familiarise themselves with the system and activities.
- ▶ Training status is recorded on CHEESE with each collaborators personnel record. This is under the control of the Operations Co-ordinator.
- ▶ The intent (and reality for Cycle 2015/02) is that the training plan is developed as the shifts are filled and collaborators informed well in advance of what training they need

# Operations Management

- ▶ Experience from the last two user cycles indicates a gap in the operations management team.
- ▶ Ops Co-ordinator cannot be on-site full time.
- ▶ MOM is on-site and is on-call 24 hours a day. MOM is a rotating position to manage data-taking.
- ▶ Need a set of experienced, respected on-site people who are not on-call, but have deep knowledge of the experiment and who have responsibility for the safe execution of data-taking and commissioning activities. These *Run Co-ordinators* will get safety training from STFC SHE and report to the GLIMOS.
- ▶ V. Blackmore and P. Hodgson have agreed to be Run Co-ordinators. Other names are under consideration.

# MICE / ISIS Co-ordination

- ▶ We now have monthly Operations meetings with ISIS. Those attending are the MICE Ops Coordinator and MOM, and Dean Adams and Alan Stevens from ISIS
  - ▶ Discuss MICE running plans and their interaction with ISIS Operations
  - ▶ Discuss ISIS requests and any issues arising from MICE runs

# Summary

- ▶ Data has been taken in each of the previous user cycles to commission the trackers, calibrate the PID detectors and perform alignment and magnetic field remnant studies.
- ▶ MICE data-taking is now a generally smooth procedure if systems are unchanged. Regular expert-led start-up runs are held before each user cycle to ensure systems are ready. Need to carefully manage online developments during this commissioning period.
- ▶ Shift policy, shift allocation and shift training formats have been rolled out and tested successfully over the last two user cycles.
- ▶ Operations management bolstered by addition of the Run Coordinators.