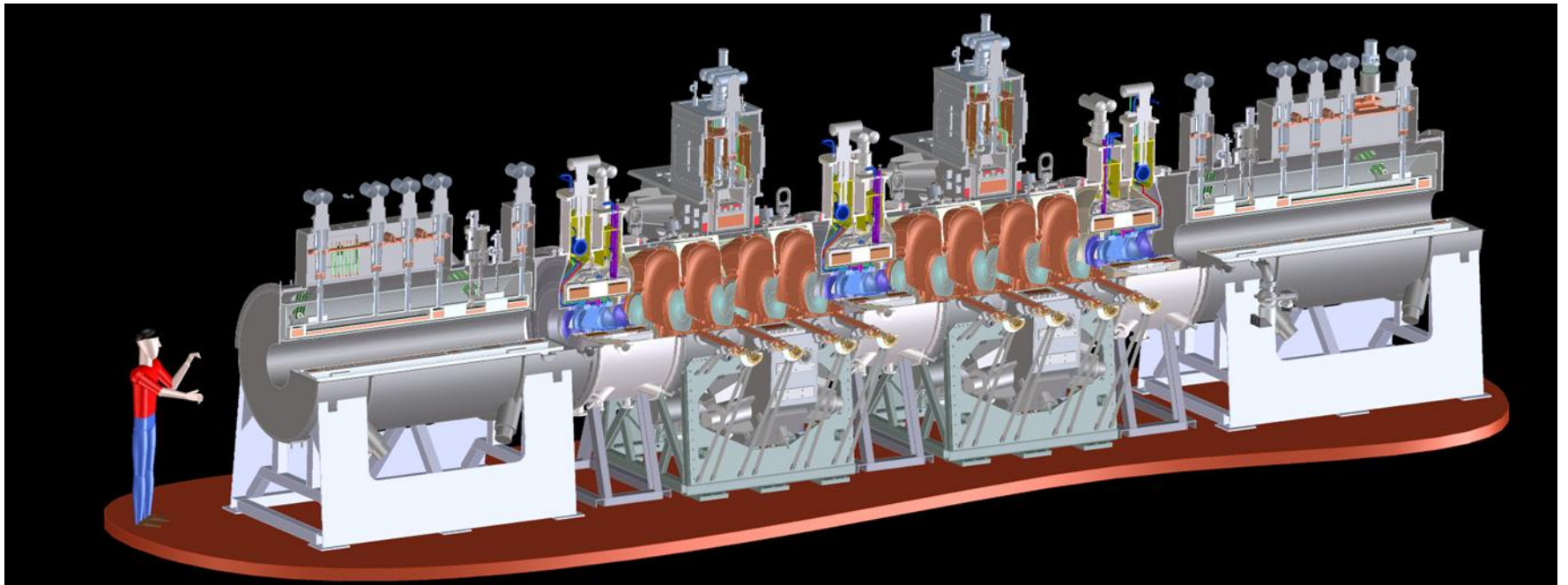




MICE - Overview





Outline



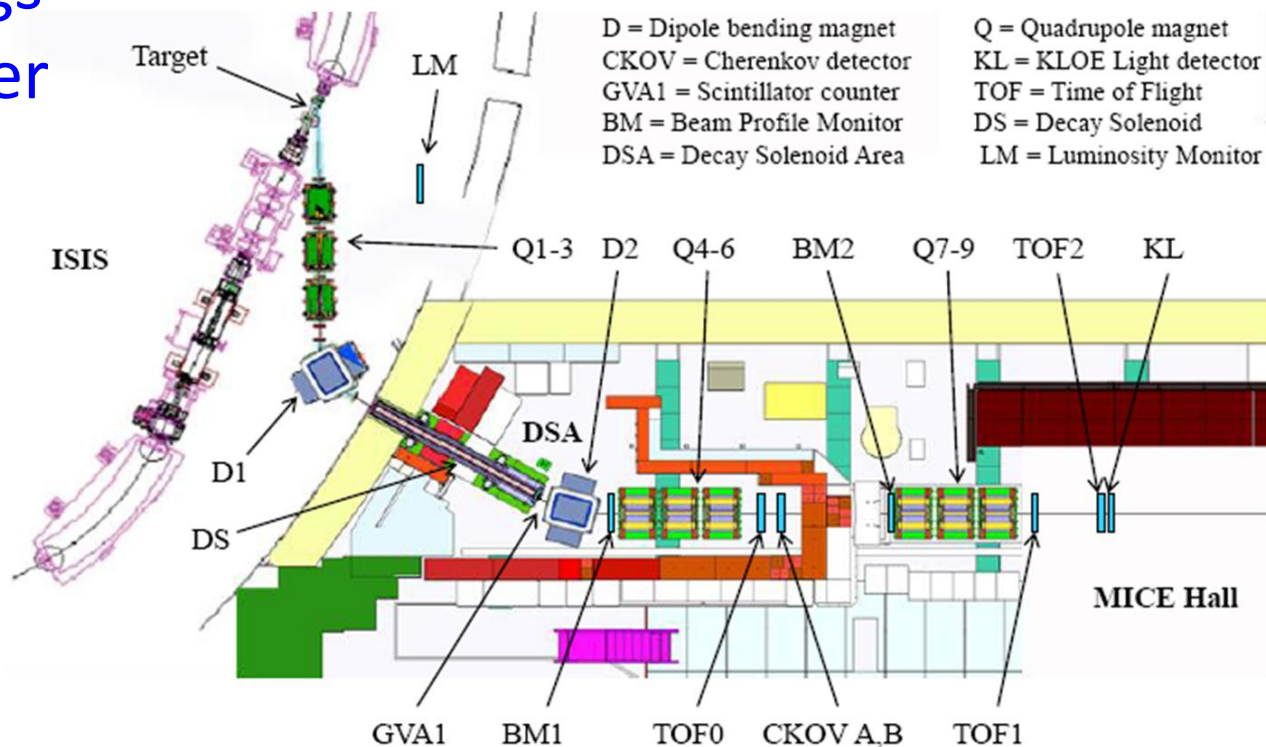
- Beam line
- Instrumentation
- Step I operations, data taking & analysis
- Step IV
 - LH2 system & solid absorbers
 - Magnets
 - AFC
 - Spectrometer Solenoids
- Step VI
 - RF
 - Coupling Coils
- Magnetic mitigation



Beam Line



- Initial beam line optimization studies complete
 - Target operations
 - Magnet settings
 - Proton absorber
 - D1 scan



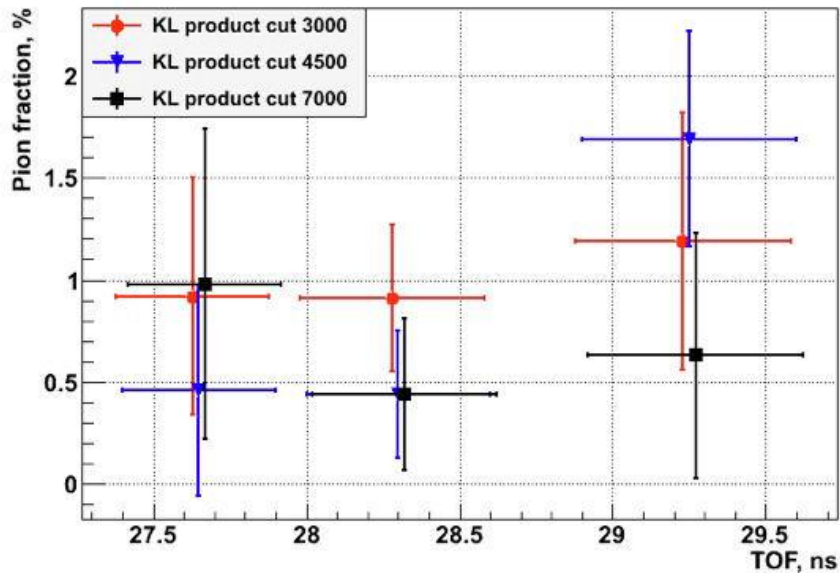


Instrumentation

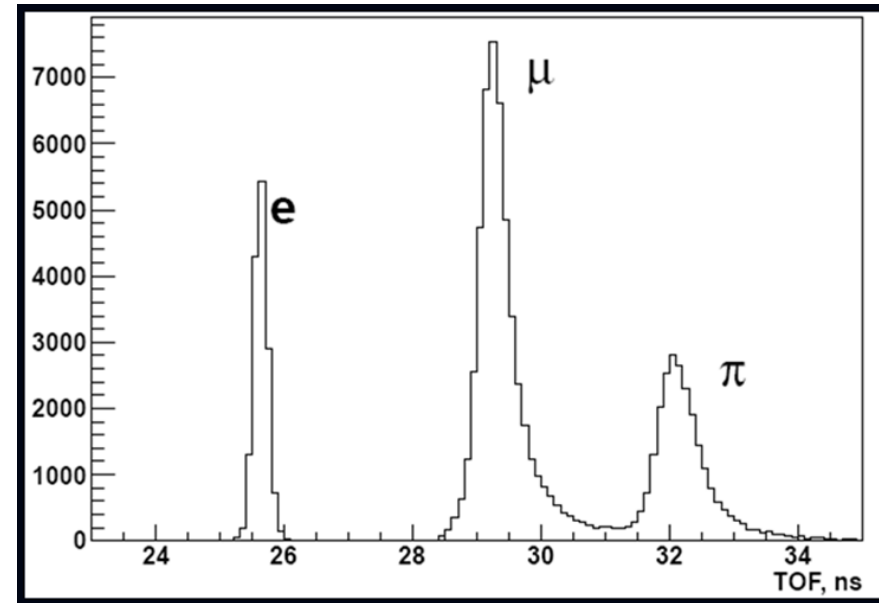


- CKOV, TOF and KL operational
- Emittance measured using TOF detectors
- π contamination in μ beam with KL & TOF
 - Measured and meets spec.
- Tracker single-station test

Pion fraction



»1%

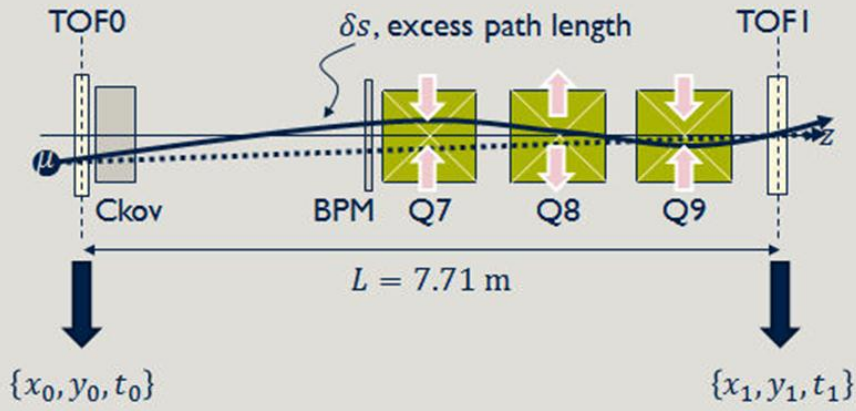




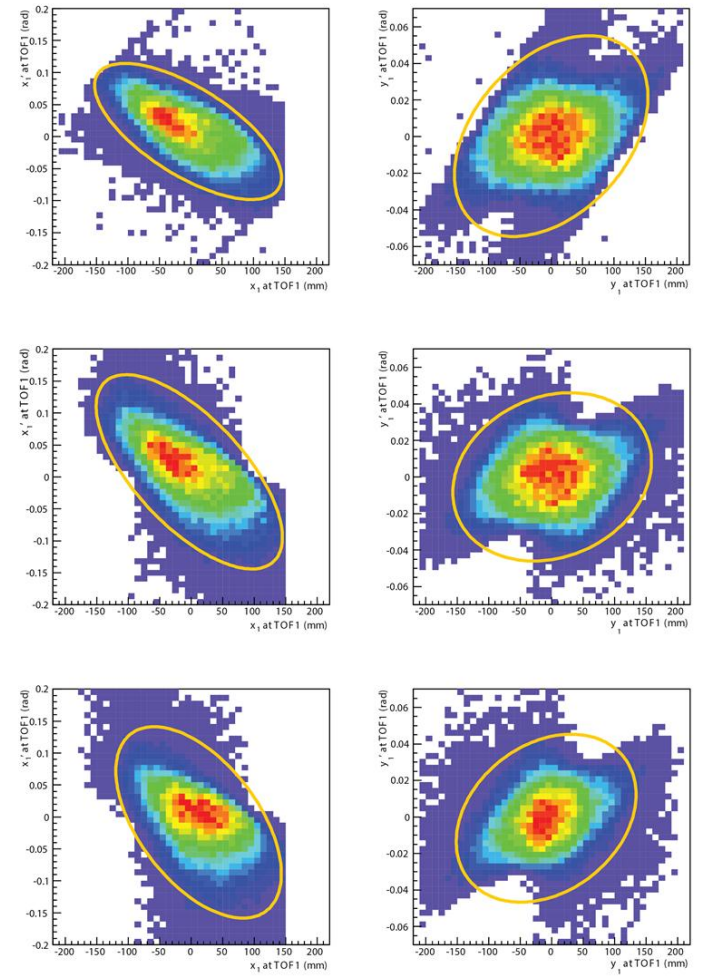
Emittance using TOF



Measurement Technique

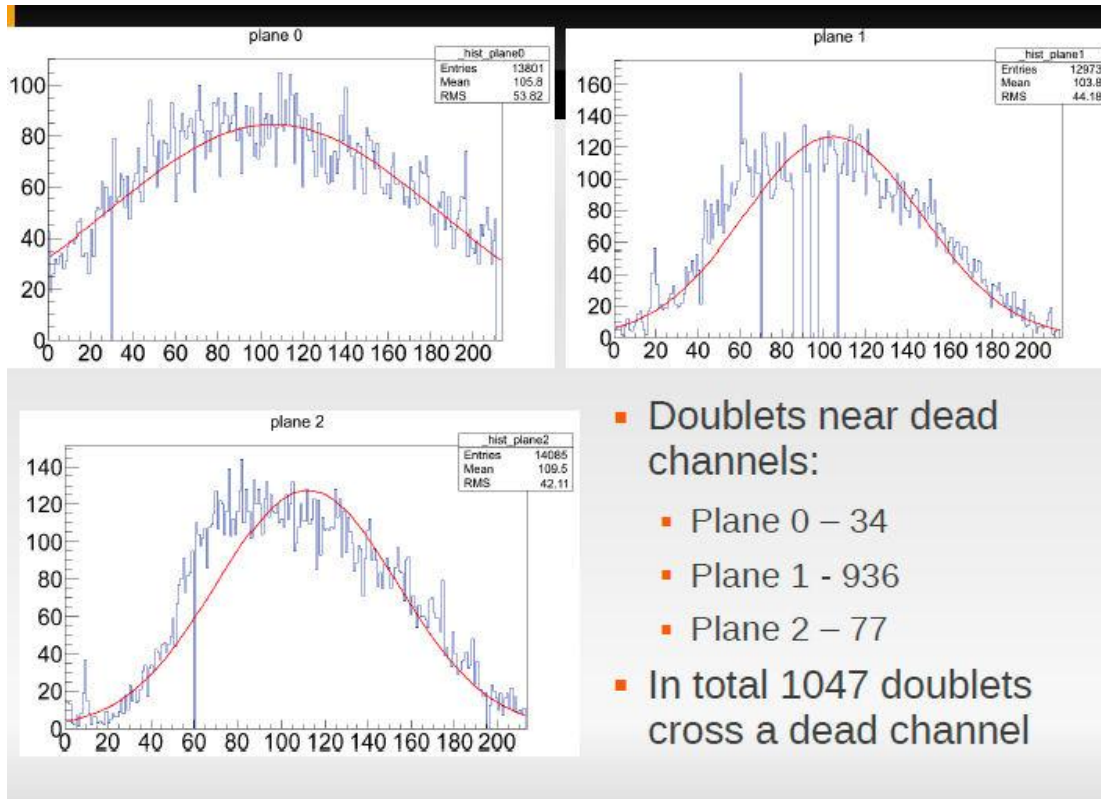


Paper in preparation





Tracker Single Station Test



Chris Heidt

- Successful test with spare station (3 view)
- Timed in with ISIS RF
- Efficiencies look good
 - Some known dead channels
- Some issues with calibration
 - Automated calibration system being developed
 - David Adey

Progress on EMR

- 100% of bars glued (~3300)
- 50% polished



- one plane was assembled in its final configuration
- ... and tested with digital camera



- next two months will be dedicated to the firmware revision and finalization

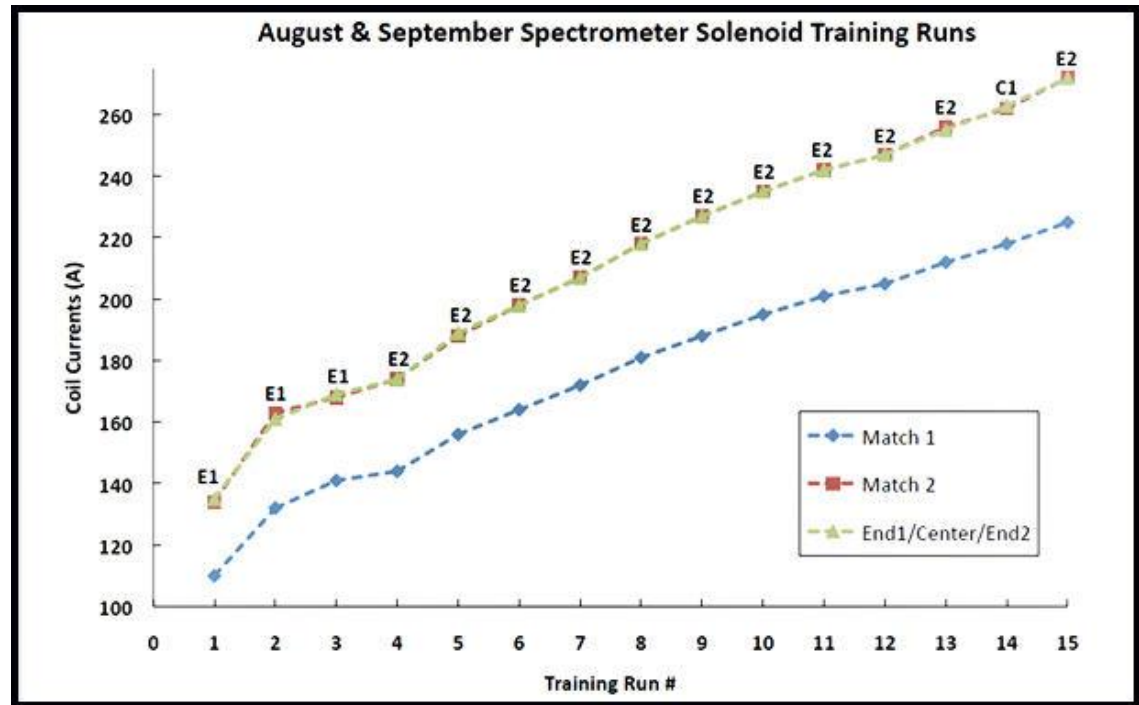
Expect construction to be complete in 3 months



Moving towards Step IV



- First Spectrometer Solenoid has reached op. current (+1%)
 - Issue with controls has prevented 24 hr. soak test
 - More From **Steve Gourlay**





1st AFC Magnet at RAL

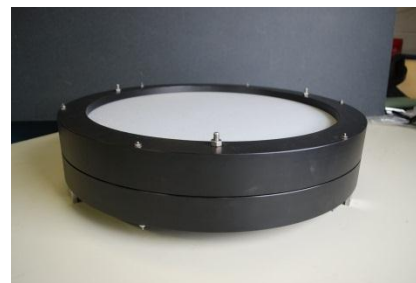




LH₂ System



- Successful test – satisfied goals & safety procedures
- Cryogenic efficiency is good
- Control system largely debugged
 - Integrated into MLCR controls
 - Temperature control
 - Heaters critical when H₂ flow slows
 - Hydride bed needs more instrumentation
- Successful characterization of major system components
 - Integration with AFC and LH₂ vessel
- LiH absorber complete
 - At Fermilab
 - DOE field office working on shipping

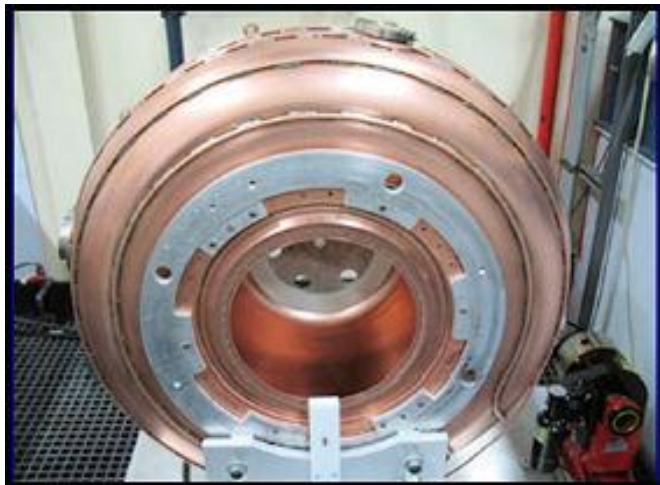




Moving towards Step VI RF Cavities

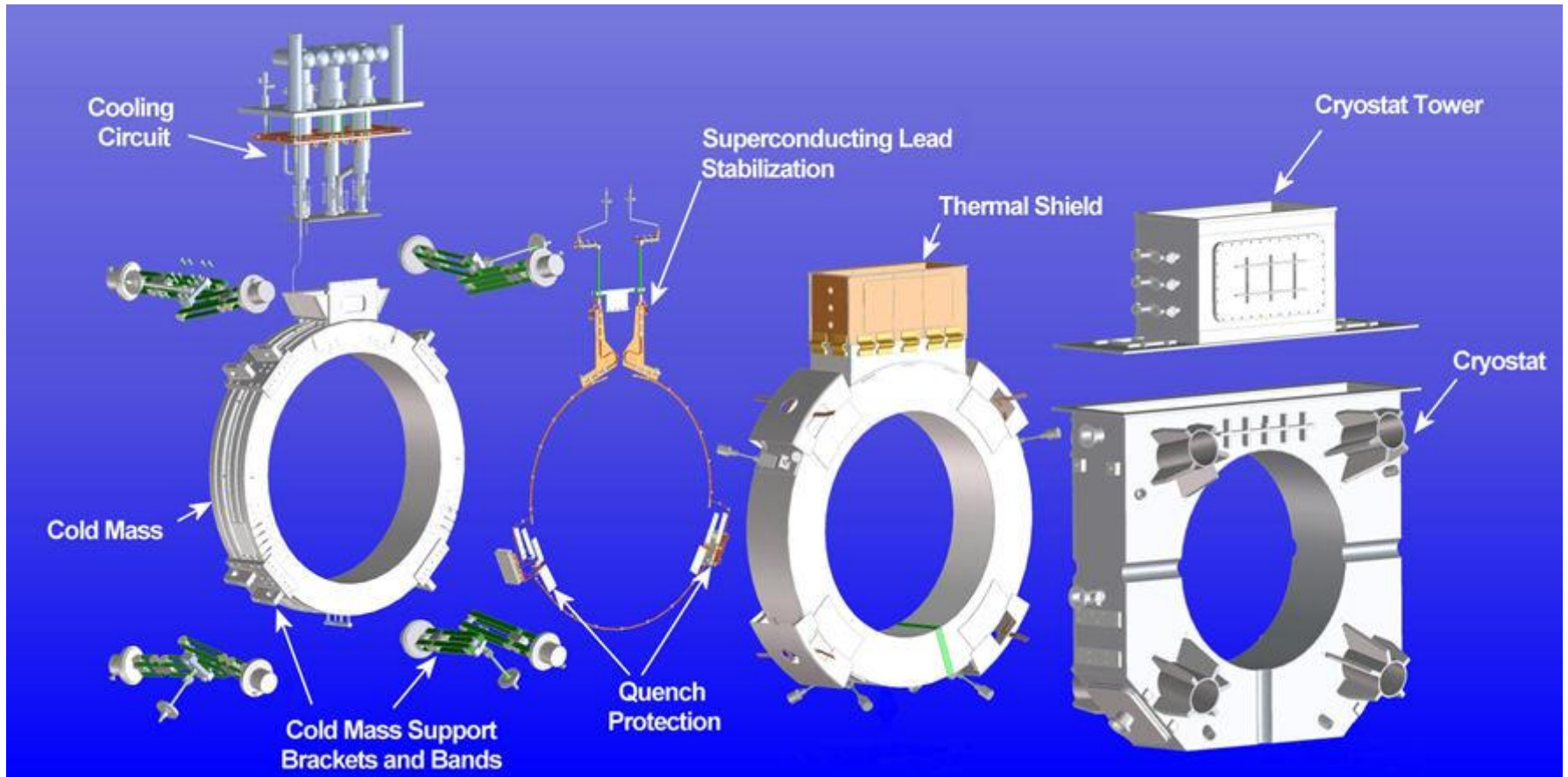


- 201 MHz Cavities
 - All complete - First cavity electro-polished
 - Single cavity test stand completed & at Fermilab
 - Automated actuator driver to tune cavity being developed
- Full MICE 201 MHz RF production cavity test in MuCool Test Area at Fermilab



More from
Kevin Ronald

Coupling Coils





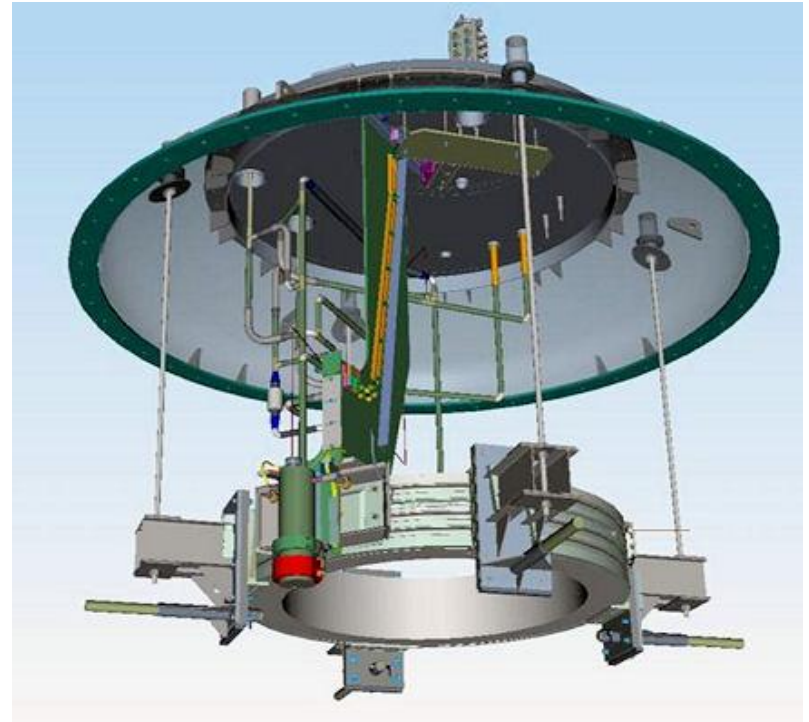
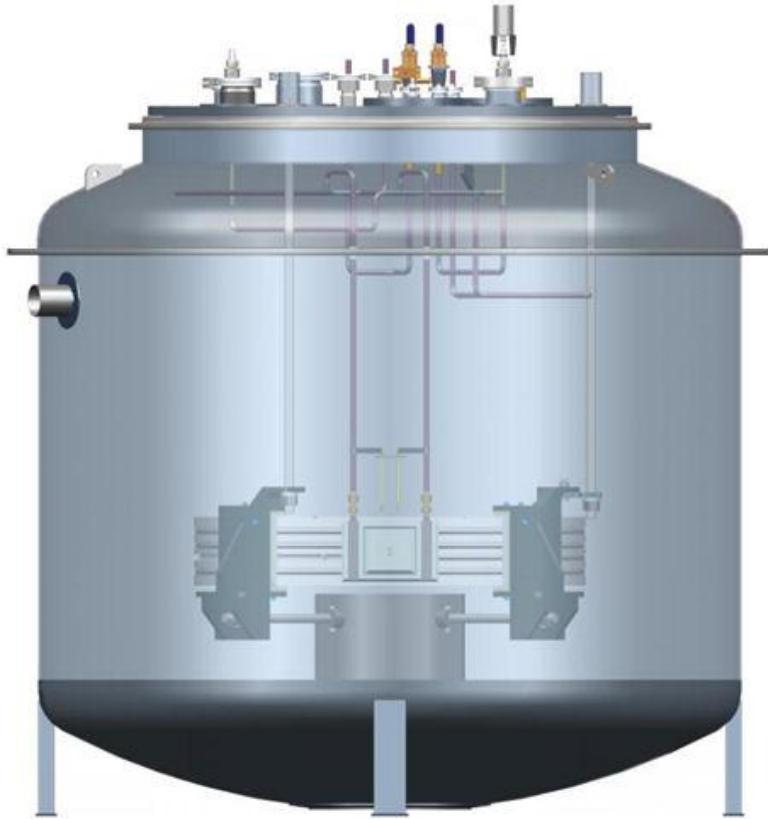
Coupling Coils II



- First cold mass complete
 - Cooling tubes welded
 - Epoxy impregnation done
 - LHe reservoir
 - QP circuitry
- However, cooling tube developed leak
 - Repair plan being developed
 - More from **Steve Gourlay**



Fermilab Solenoid Test Facility





Fermilab STF



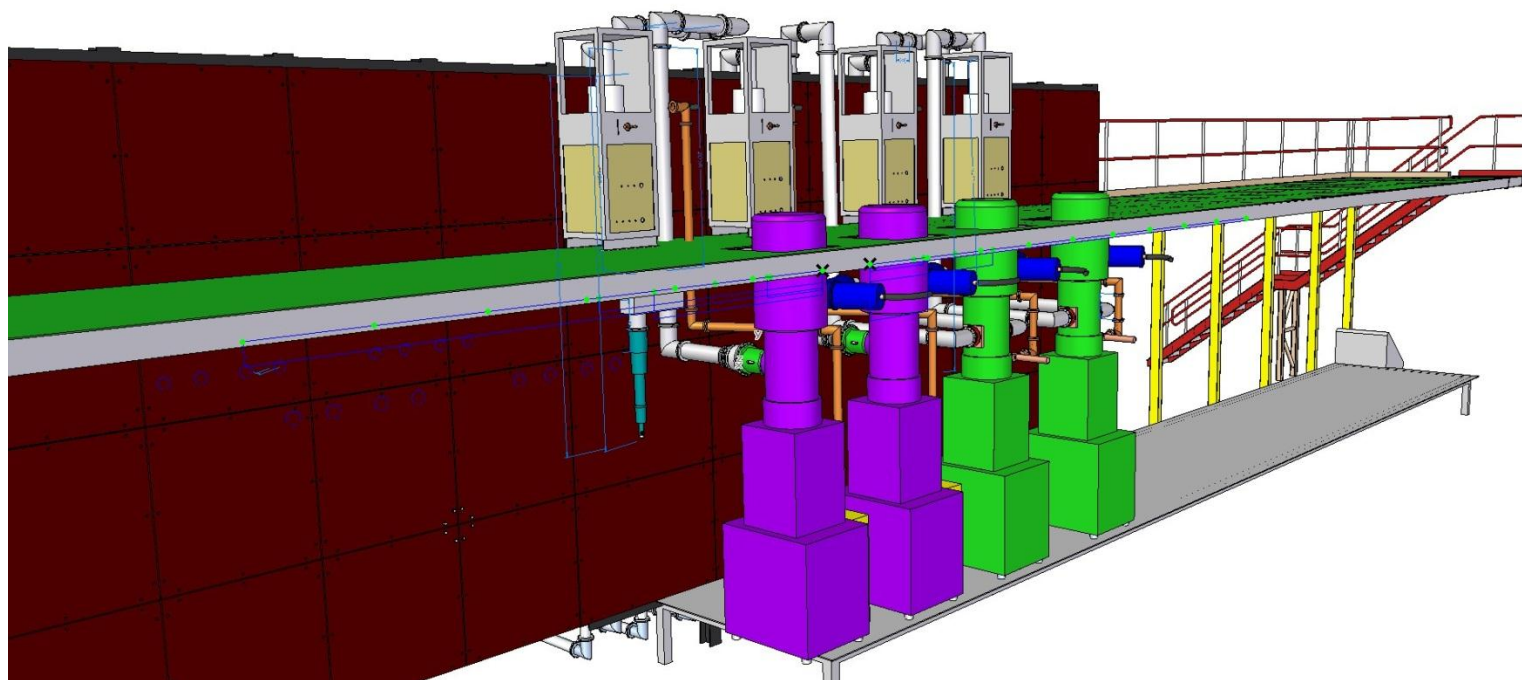
- A new Solenoid Test Facility at Fermilab is being constructed at the repurposed Central Helium Liquefier, with the first test stand intended for MICE Coupling Coil Solenoids testing
- Test Stand design is complete, fabrication and installation is nearing completion
- Delivery of the first coupling coil cold mass to be tested to Fermilab is expected in November 2012
- Testing is expected to start in late January 2013 and last for approximately two months



Moving towards Step VI



- Progressing on RF layout
 - No coax under wall
 - Modified coax going over wall – simplified
 - Improved access for amplifier installation



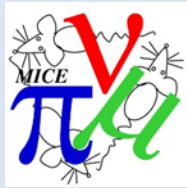


RF Power Systems



- Medium power amplifiers
 - Daresbury Lab – 240 kW from first 4616 system
 - Procured needed tetrode amplifier system thru UMiss – operating at 240 kW
 - DL making significant progress refurbishing 2 other amplifiers
- High power amplifiers
 - First one – full power test using new TH116 Triode valve – July
 - Connect up and taken gradually up to running level of 32 kV
 - Both amplifiers showing high gain and electrical-to-RF conversion efficiency
 - At 1.2 MW a resistor failed in part of 116 PS – upgraded in Sept?
- Ongoing work
 - Control & measurement of RF gradient and phase
- Deadline – amplifier operational in MICE Hall – Sept 2013

Talk by Kevin Ronald



Magnetic Field Mitigation

- Recent calculations with the Step IV and Step VI configurations with ferrous materials in the hall indicate large magnetic fields (> 500 G) in locations with sensitive equipment
- Significant Issue
 - Creates significant functional & safety issues with magnetically-sensitive equipment and ferrous objects
 - Lots of sensitive equipment inside shield walls/Hall
 - compressors, vac pumps, electronics racks, power supplies, PPS, detector readout, etc.
- Shielding solutions
 - Global: relocate equipment or shield specific equipment that cannot be moved
 - Local – Partial return yokeRoy Preece will cover



Schedule



- The MICE schedule has slipped significantly since the last project board meeting due, primarily, with issues surrounding the magnets.
- There will be 3 detail talks:
 - Andy Nichols: Milestone tracking & schedule Overview
 - Ken Long: MICE(UK) project report
 - Mark Palmer: MICE(US) project report



Conclusions

- MICE Beam line & instrumentation in excellent shape
 - Analyses maturing on Step I data
 - Papers in preparation
- Towards Step IV
 - Progress on Spectrometer Solenoids
 - LH2 System Test a great success
 - Focus Coil at RAL
 - Tracker single station test successful
- Magnetic Field mitigation being aggressively pursued