



Outline of NUFACT'11 WG3 Second MICE Talk

Gail Hanson
University of California, Riverside

Abstract



Progress in the construction of the MICE cooling channel

The international Muon Ionization Cooling Experiment (MICE), sited at Rutherford Appleton Laboratory in the UK, aims to build and test one cell of a realistic ionization cooling channel lattice. This comprises three Absorber–Focus-Coil (AFC) modules and two RF–Coupling-Coil (RFCC) modules; both are technically challenging.

The Focus Coils are dual-coil superconducting solenoids, in close proximity, wound on a common mandrel. Each pair of coils is run in series, but can be configured with the coil polarities the same (“solenoid mode”) or opposite (“gradient mode”). At the center of each FC there is a 20-L liquid-hydrogen absorber, operating at about 14 K, to serve as the energy loss medium for the ionization cooling process.

The longitudinal beam momentum is restored in the RFCC modules, each of which houses four 201.25-MHz RF cavities whose irises are closed with 42-cm diameter thin Be windows. To contain the muon beam, each RFCC module also has a 1.4-m diameter superconducting coupling solenoid surrounding the cavities. Both types of magnet are cooled with multiple 2-stage cryo-coolers, each delivering 1.5 W of cooling at 4 K.

Designs for all components are complete and fabrication is under way. Descriptions of the various components, design requirements, and construction status will be described.

Outline



- David Adey does Step I
- MICE Layout
- Overview of MICE Schedule Steps IV-VI
- Step IV – components and description of measurements
- Step V – components and description of measurements
- Step VI – components and description of measurements