

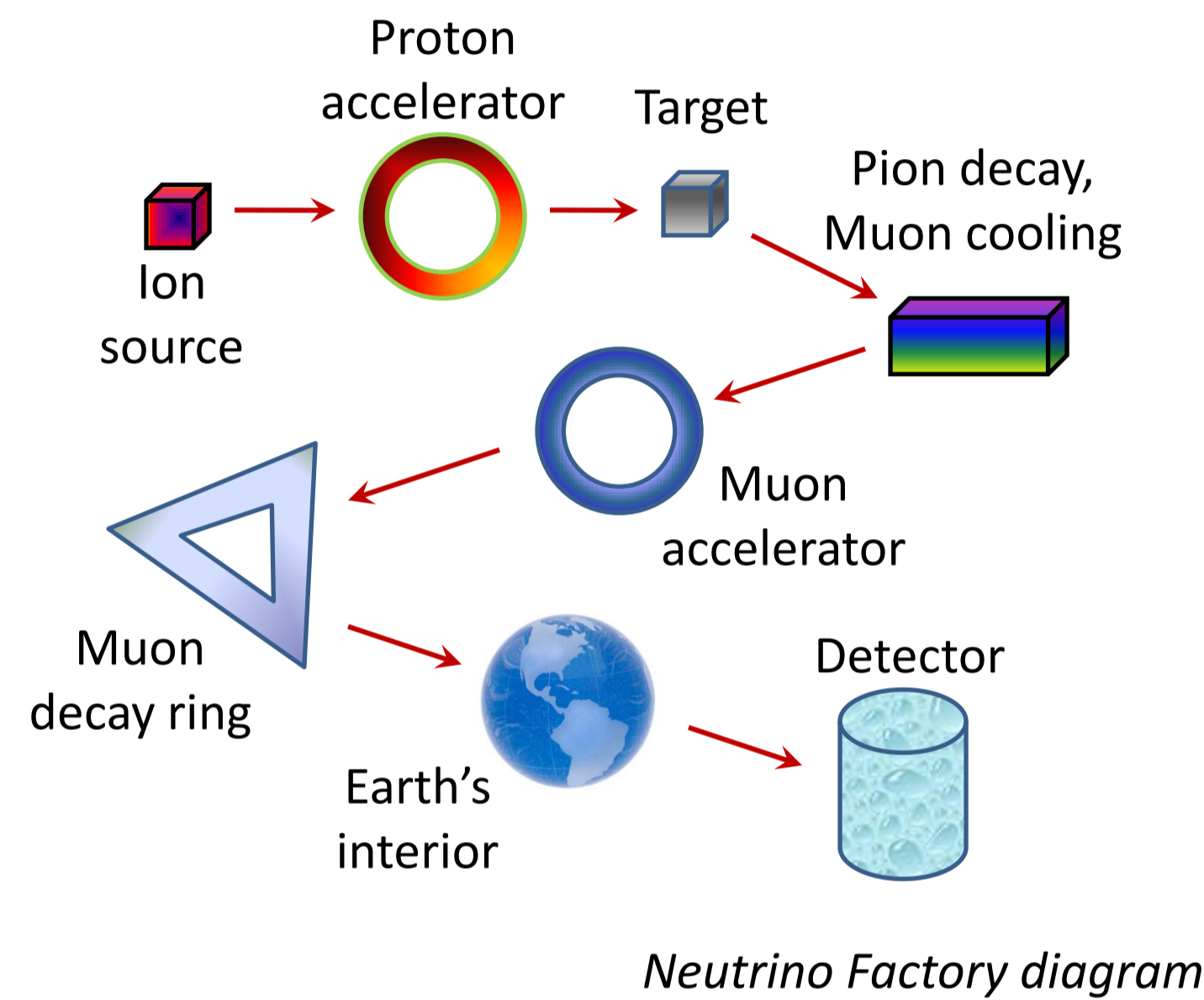
The Muon Ionisation Cooling Experiment

Purpose

To demonstrate and systematically study muon *ionisation cooling*, ultimately leading to a prototype single cooling channel for a *neutrino factory*.

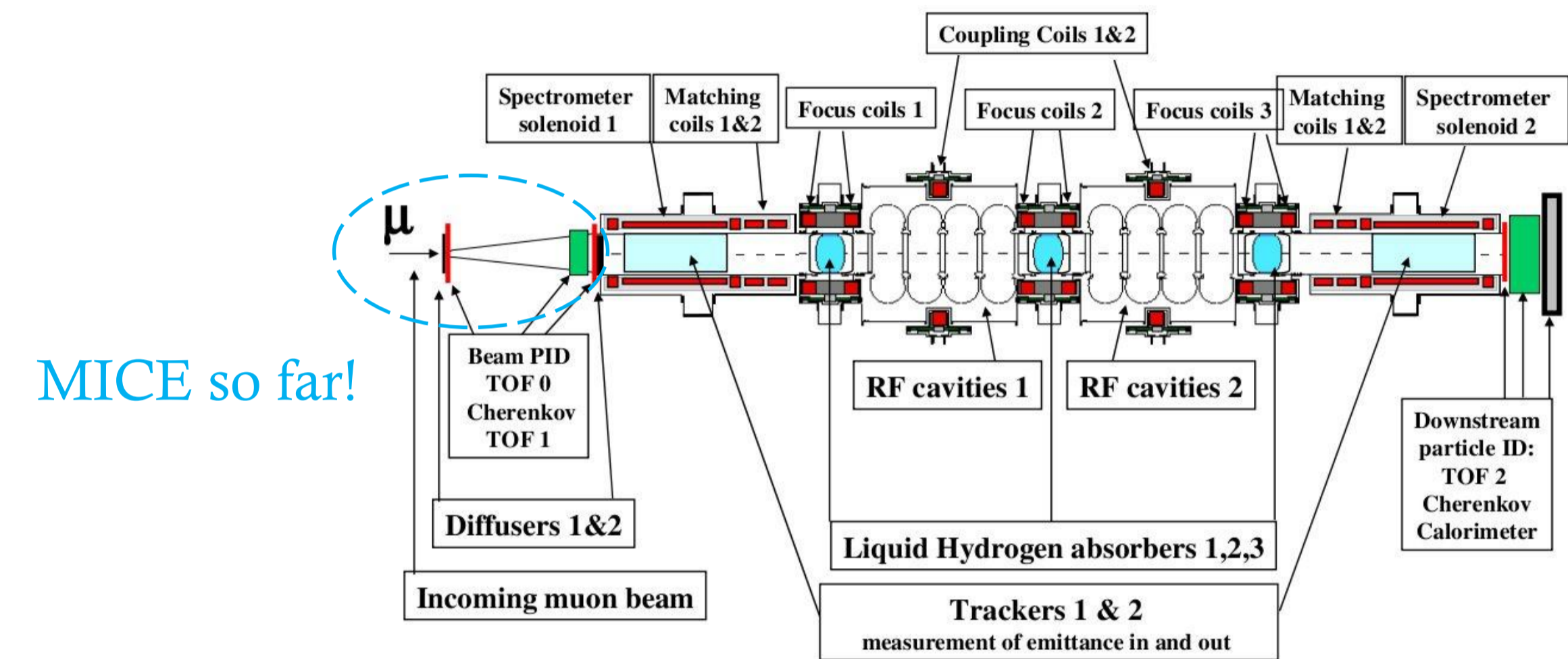
Ionisation cooling: process of phase space compression of a particle beam by passing the beam through an absorber with re-acceleration in the longitudinal direction by RF cavities.

Neutrino factory: proposed next generation neutrino source based on the decay of muons in a storage ring.



Design

MICE is based at the Rutherford Appleton Lab, using the lab's 800 MeV ISIS accelerator as a proton source. The final stage of MICE, Stage VI, representing a full neutrino factory cooling channel, is shown below:

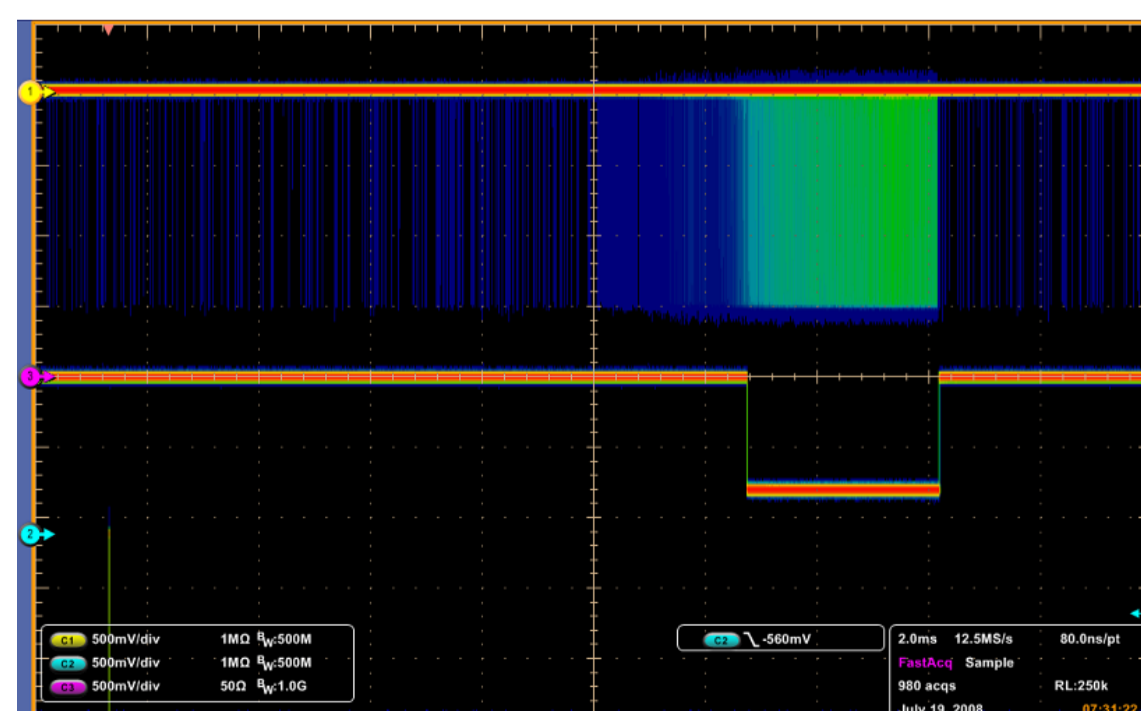


Beam Monitors

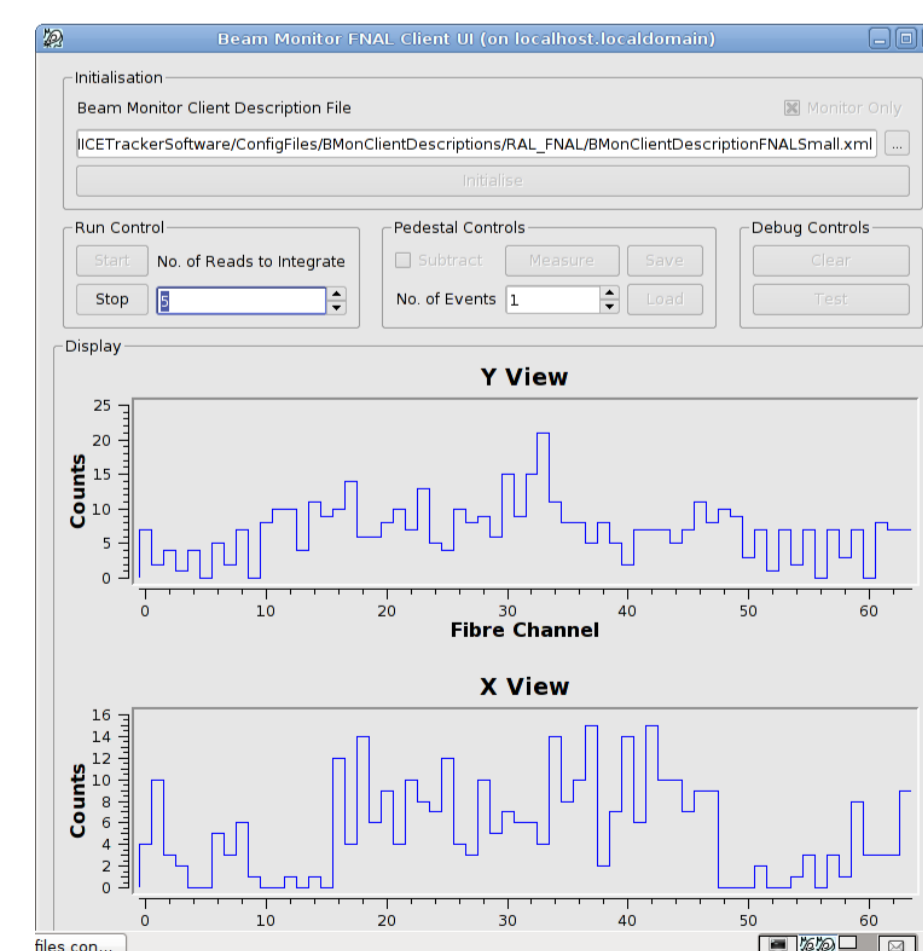
The electronics to generate the monitor gate, situated in the local control room.



Hits in the scintillator counter (blue- green) and the beam monitor gate (lower line).

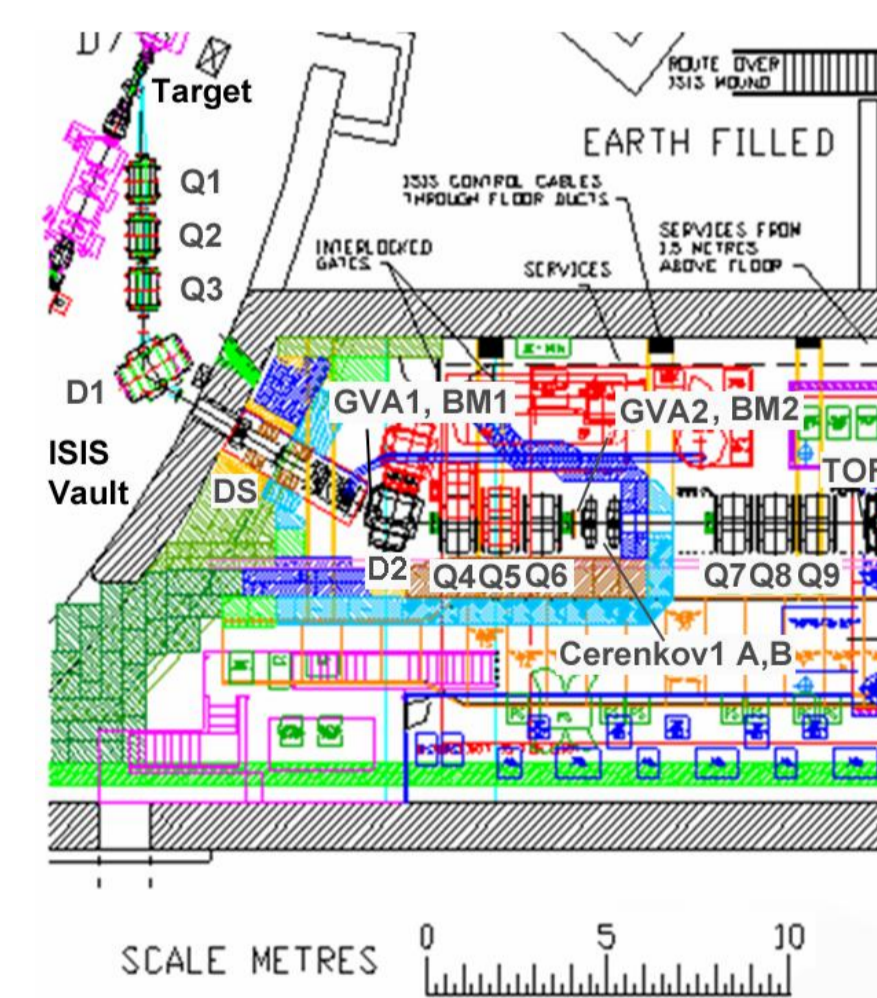


The FermiLab beam monitor GUI.



Progress

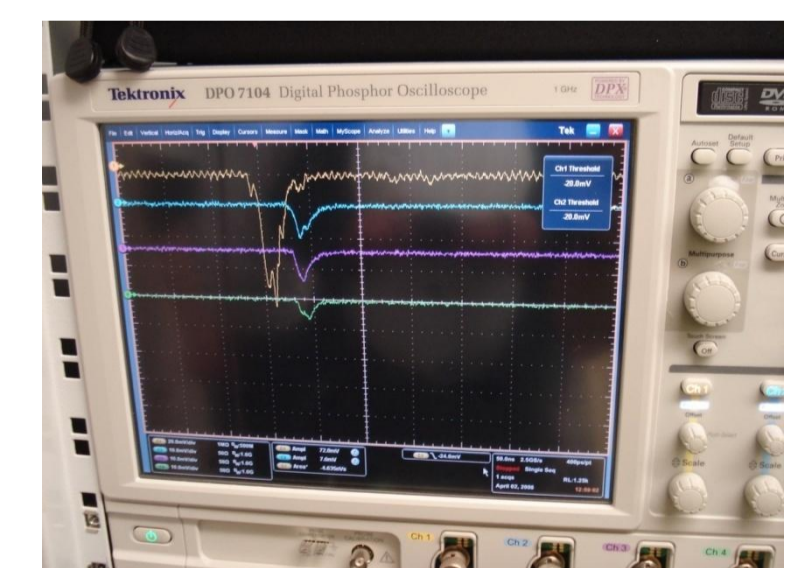
The current beamline.



Quadrupoles 7-9 and Time-of-Flight 0. The walled region is the Decay Solenoid Area, behind which lies the ISIS vault.



First evidence of pions in beamline!



- GVA2 scintillator
- Cerenkov1A PMT1
- Cerenkov1A PMT2
- Cerenkov1A PMT3