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Muon Collaboration Weekly Meeting
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Cables

- EH = Experimental Hall
- RR = Refrigerator Room
- RFC = RF Controls area
- GPIB link from EH to RR and RR to RFC over fiber for instrument control (including digital scope)
- 1/2” and 1/4” coax from EH to RR and EH to RFC for signals and high voltage
- 75Ω coax from EH to RR and RR to RFC for video camera output
- Status: all cables bought, installation imminent; fiber GPIB extenders on order
- Will install end connectors later
Detectors

- Simple radiation meters to track conditioning progress
- Scintillator+PMT counters for small rates
- Scintillating fibers for small rates
- Cryogenic Ge diode counter for x-ray energy spectrum at low rate
- NaI+PMT counter for x-ray energy spectrum at low rate
- Polaroid film to check emitters in cavity
- Black and white film to record dark current trajectories in magnetic field and x-ray flux
- Temperature probes to monitor cavity parts
- Microphones for spark detection
Detector and Readout Location

- With the 805MHz cavity inside the magnet, one side is blocked by input waveguide.
- With the 201MHz cavity on the other side, both sides are blocked.
- We are discouraged from having a large footprint in the RR due to limited space, data acquisition most likely to sit in RFC.
- A few fast signals can be read by a digital oscilloscope and shipped to RFC over GPIB.
- This is not optimal.
Data Acquisition

- PC based auxiliary system was built for the Lab-G program
- Lab-G went down before full commissioning
- System has
  - several channels of ADC
  - GPIB and CAMAC controllers
  - access to ACNET data on the network from rf control racks
  - 8mm tape storage
- Requires OS upgrade and some control software
Simulation

- A simple GEANT4 simulation of the Lab-G setup exists
- Lots of work in progress within G4MICE to evaluate detector performance in the presence of rf-induced background for MICE (R. Sandström, Geneva, M. Ellis, Imperial)
- G4MICE has features to handle
  - Generation of electrons from emitters on cavity windows with realistic distributions
  - Tracking in magnetic field
- Most of this can be carried over to simulation of the MTA
  - Need to implement the geometry/materials in detail (magnet, cavity, supports)
Outlook

- Cables/connectors/electronics to be installed/moved in the next few weeks
- We are looking into buying a few simple detectors
- DAQ also requires a few weeks of work and some final tweaking when rf is turned on
- Rest of the hardware should be ready by the time we have rf power
- Monte Carlo may also be running by then but it’s hard to make reliable predictions with the uncertainty in cavity dark current output