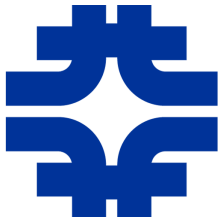


# MTA Update



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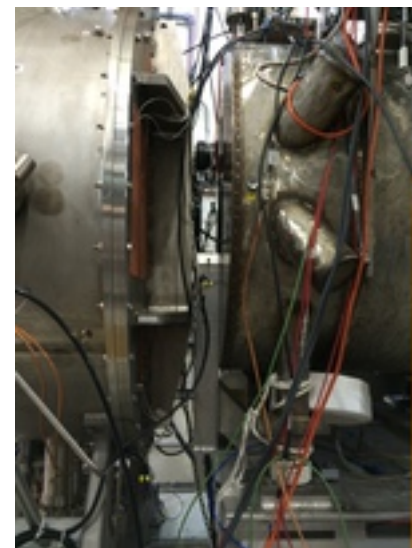
*MAP Weekly Meeting*  
*FNAL – June 19, 2015*

- Infrastructure
  - cryo plant maintenance
  - RF controls update (D. Peterson)
- HPRF
  - preparations for next run
- Modular Cavity
  - analysis of data from first run (A. Kochemirovskiy)
    - klystron still down for service
- MICE
  - high-power run at  $B=5T$  with Be windows
  - tuner system tests

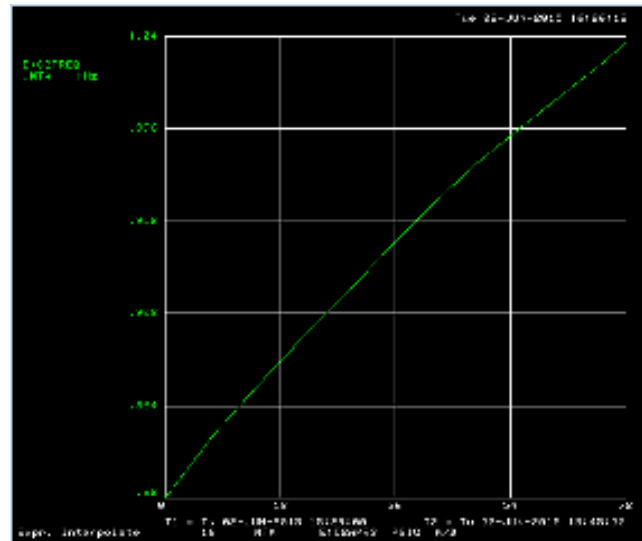
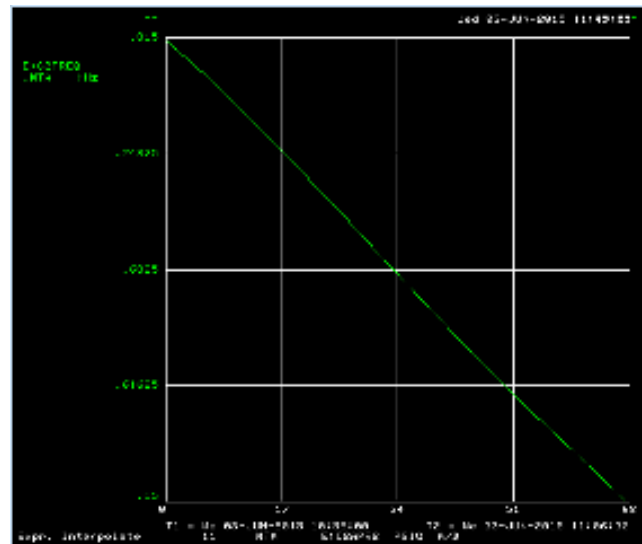
- Thermocouples added for monitoring body temperature (B. Freemire, D. Peterson)
- Dielectric donut inserts installed in low-power test cell (B. Freemire, K. Yonehara, A. Moretti)
  - $\epsilon$ ,  $\tan\delta$  measured
- New pressure relief valve for revised MAWP in hand (T. Anderson)
  - waiting for pressure test valve
- New coupler fabrication in progress (A. Moretti)



- B=0 run (Mar 18-Apr 6)
  - >350 hours, >6M pulses
  - Initial difficulty in getting enough power into the cavity
    - resolved by replacing amplifier tube
  - 0.5M+ pulses at 11+ MV/m
    - MICE baseline is 10.3
    - dose rate comfortably below tracker damage threshold
  - Up to 14 MV/m for short periods
  - No breakdown events
  - No issues with the cavity or services (vacuum, water)
  - All instrumentation and DAQ worked well
- B=5T run (Apr 24-May 20)
  - >7.5M pulses
  - 1M pulses at 8 MV/m (1 MW)
  - 3M pulses at 10.7-11.2 MV/m (1.7-1.9 MW)
    - 1.2M at MICE average power (1.6 kW)
  - 1.3M pulses at 13-13.7 MV/m (2.5-2.8 MW)
  - 360k pulses at 13.8-14.5 MV/m (2.9-3.2 MW) with 13 breakdown events



- Tuner tests (May 29-Jun 3)
  - transfer function (frequency vs pressure) measured under power
    - for both squeeze and stretch modes
    - results consistent with previous low-level measurements
    - tuner control loop updated, parameters optimized for stable operation
  - cavity operated at fixed frequency with tuners for
    - 0.275M pulses @ 10 Hz rep rate
      - B=0, >1MW (8 MV/m) peak, 1.6kW
    - 0.55M pulses @ 5 Hz
      - B=5T, >1.6MW (10.3 MV/m) peak, 1.4kW
    - using 1s update interval (same as MICE)
- Gradient scans at several B-field settings to study
  - Cavity frequency vs temperature
  - Radiation and expected backgrounds near cavity with
    - Ionization chambers
    - Scintillator detectors
      - Including one equivalent to a MICE tracker channel
- Detector calibration with cosmics (May 26-Jun 18)



- Infrastructure
  - need to retrain solenoid
- HPRF
  - should be ready to run next month
- Modular Cavity
  - finish initial  $B=0T$  run and inspect interior
- MICE
  - explore dark current with updated detector config
- Contingent on availability of
  - RF sources
  - technicians
- Fermilab accelerator complex shutdown (Jul-Oct)
  - will interfere with operations