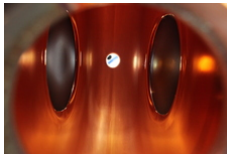
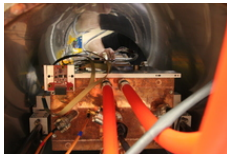


# MTA FY12 Plans

Yağmur Torun

Illinois Institute of Technology

MAP Management Meeting  
Oct 20, 2011 – Fermilab



Explore solution space for NCRF in magnetic field

- Materials
- Surface processing
- Magnetic insulation
- HPRF

Space-time challenge:

- Many tests with conflicting requirements
- Try to prepare/run in parallel
- Significant overhead from configuration control (H2, beam)
- Ongoing maintenance and infrastructure upgrades
- Linac emittance measurement

# R&D: existing hardware

- Old 805 MHz pillbox button cavity
  - ran with flat Cu plates ( $B=0$  and 3 T), poor performance
  - inspection revealed surface damage
  - test with Be windows (started yesterday)
  - problems with vacuum seals
  - will remove for repair afterward
  - restart button program when returned
- 805 MHz HPRF cavity
  - Successful beam test, no breakdown, explored effect of pressure and doping
  - Q-vs-p calibration (done this week)
  - other follow-up tests to help interpret beam test results
  - RF pickup feed-through to be re-engineered
  - re-assembly for higher pressure rating
  - upgrade beam diagnostics (new toroids)
  - gas analysis system
  - 2nd beam test early 2012 (magnetic field, doping)

# R&D: (mostly) existing hardware

- 805 MHz 4-season cavity
  - adopt mechanical interface for installation in magnet
  - run under vacuum with magnetic field
  - re-assemble with Be end-plates
- 201 MHz pillbox
  - coupler and window
  - reassembly and operation
  - retest with low-pressure gas?
  - depends on RF source availability



# R&D: hardware to be built

- 805 MHz ALD cavity
  - design/build cavity
  - safety review
  - process optimization
  - pre-coating run
  - setup and coating
  - rerun
- 805 MHz E||B box cavity
  - design/fabrication
  - assembly/installation
  - run without/with field at several angles
  - or not ..



# R&D: hardware to be built

- 805 MHz ALD cavity
  - design/build cavity
  - safety review
  - process optimization
  - pre-coating run
  - setup and coating
  - rerun
- 805 MHz E||B box cavity
  - design/fabrication
  - assembly/installation
  - run without/with field at several angles
  - or not ..



Install/run when hardware and facility available

- Be-wall cavity
- New 805 MHz pillbox
- Dielectric loaded cavity
- 201 MHz single-cavity module

# Infrastructure upgrades

- Electrical power
  - rebuild/replace spare breaker and trip unit
- Beamline
  - new MW diagnostic section at the end
  - fast BPM readout for single-bunch intensity data
  - more vacuum instrumentation
  - add more vertical bend upstream (probably not FY12)
  - better integration into timeline of accelerator complex
- Cryo plant
  - Finish magnet interlock reconfiguration
- Detectors, DAQ, controls, monitoring
  - Local network, data archive, backups
  - Environmental monitoring
  - DAQ system integration
  - Acoustic sensor system for cavity spark detection
  - More light sensors for RF (SiPM, PMT)
  - Install new radiation detectors



# Infrastructure upgrades

- 805 MHz source reconfiguration in Linac
  - engineering/design for supports
  - installation of supports/services
  - installation of rf hardware (circulator, switch, loads)
- single-cavity module installation
- coupling coil?



- We have done (or started) everything we said we would in the MTA for FY11 (and more)
- Expect the same in FY12 if/when hardware is available
- Stronger team in place
- Test Be asap
- Need HPRF beam test before long shutdown (Mar?)



- We have done (or started) everything we said we would in the MTA for FY11 (and more)
- Expect the same in FY12 if/when hardware is available
- Stronger team in place
- Test Be asap
- Need HPRF beam test before long shutdown (Mar?)

- We have done (or started) everything we said we would in the MTA for FY11 (and more)
- Expect the same in FY12 if/when hardware is available
- Stronger team in place
- Test Be asap
- Need HPRF beam test before long shutdown (Mar?)



- We have done (or started) everything we said we would in the MTA for FY11 (and more)
- Expect the same in FY12 if/when hardware is available
- Stronger team in place
- Test Be asap
- Need HPRF beam test before long shutdown (Mar?)

- We have done (or started) everything we said we would in the MTA for FY11 (and more)
- Expect the same in FY12 if/when hardware is available
- Stronger team in place
- Test Be asap
- Need HPRF beam test before long shutdown (Mar?)

