
ILCTA-MDB Status
1.3 GHz RF Power
3.9 GHz RF Power
Meson Detector Building
April 27, 2006

[John Reid]

1.3 GHz RF Update

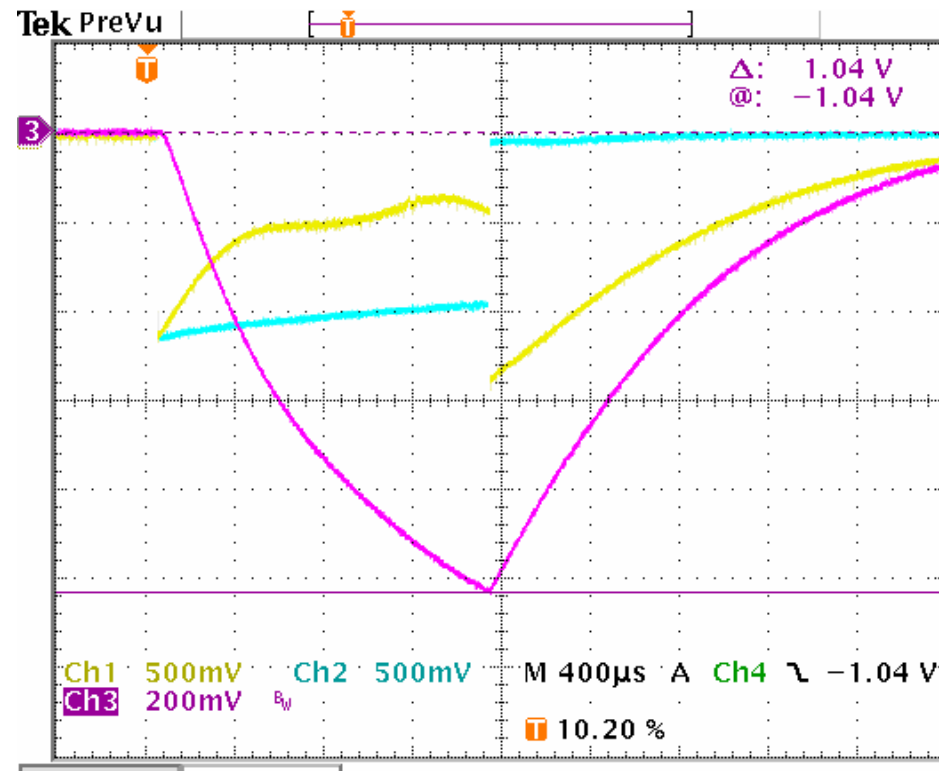
Capture Cavity II Status

- Completed coupler conditioning including multipacting voltage mapping.
- Completed cable calibration measurements.
- Peak gradient measurements at 4.5 K.
- Operated cavity from low level rf with feedback.
- Piezo fast tuner measurements made.
- Cavity warmed up on 3-29-06 for Cryo modifications to operate at 1.8 K.
- Cryo modifications expected to take ~ 1 month.

CC II Peak Gradient

Q-loaded: 4.28×10^6

Driving with a 1.38mSec ($\sim 100\text{kW}$) square RF pulse: "Full Blast"



BLU = P-forward

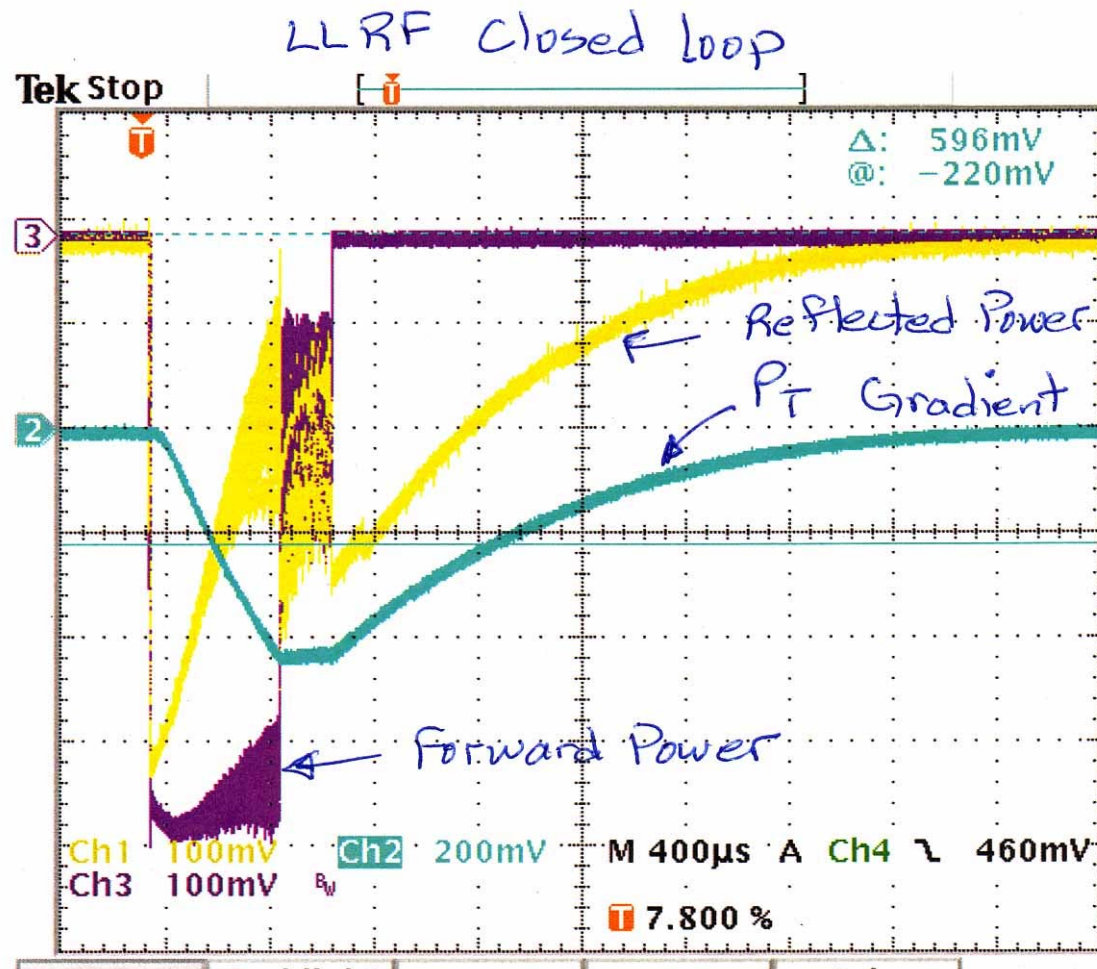
YEL = P-reflected

RED = P-trans = gradient

$\sim 28\text{MV/m}$

(any higher in gradient and cavity displays quenching)

LLRF Driving CC II in Closed Loop



Present Klystron Inventory

- Photo Injector A0
 - 1.3 Ghz 3 Mwatt - GUN
 - TH2104C, New tube (5 MW) installed June 2005.
 - A used TH2104 (3 MW) is in storage, solenoid due 6-06.
 - 1.3 GHz 200 Kwatt - Capture Cavity I
 - YK-1240, Rebuild tube installed March 2005.
- Meson Detector Building (ILCTA-MDB)
 - 1.3 Ghz 200 Kwatt- Capture Cavity II
 - YK-1240, Used tube with limited power capability ~100Kw.
 - Plan to replace tube with rebuilt tube in next few weeks.
 - 1.3 Ghz 200 Kwatt - Rebuild tubes Only
 - Two newly rebuilt tubes ready for testing.
 - Will test using solenoid & oil tank for CC II's klystron.
 - No solenoids or oil tanks for these two tubes.
 - 3.9 GHz 80 Kwatt - New system under construction.
 - Should be installed at Meson by 6-1-06.

Future Systems

- New Muon Lab
 - 1.3 Ghz 3 Mwatt - GUN - from A0
 - 1.3 GHz 200 Kwatt - Capture Cavity I - from A0
 - 1.3 GHz 200 Kwatt - Capture Cavity II - ?

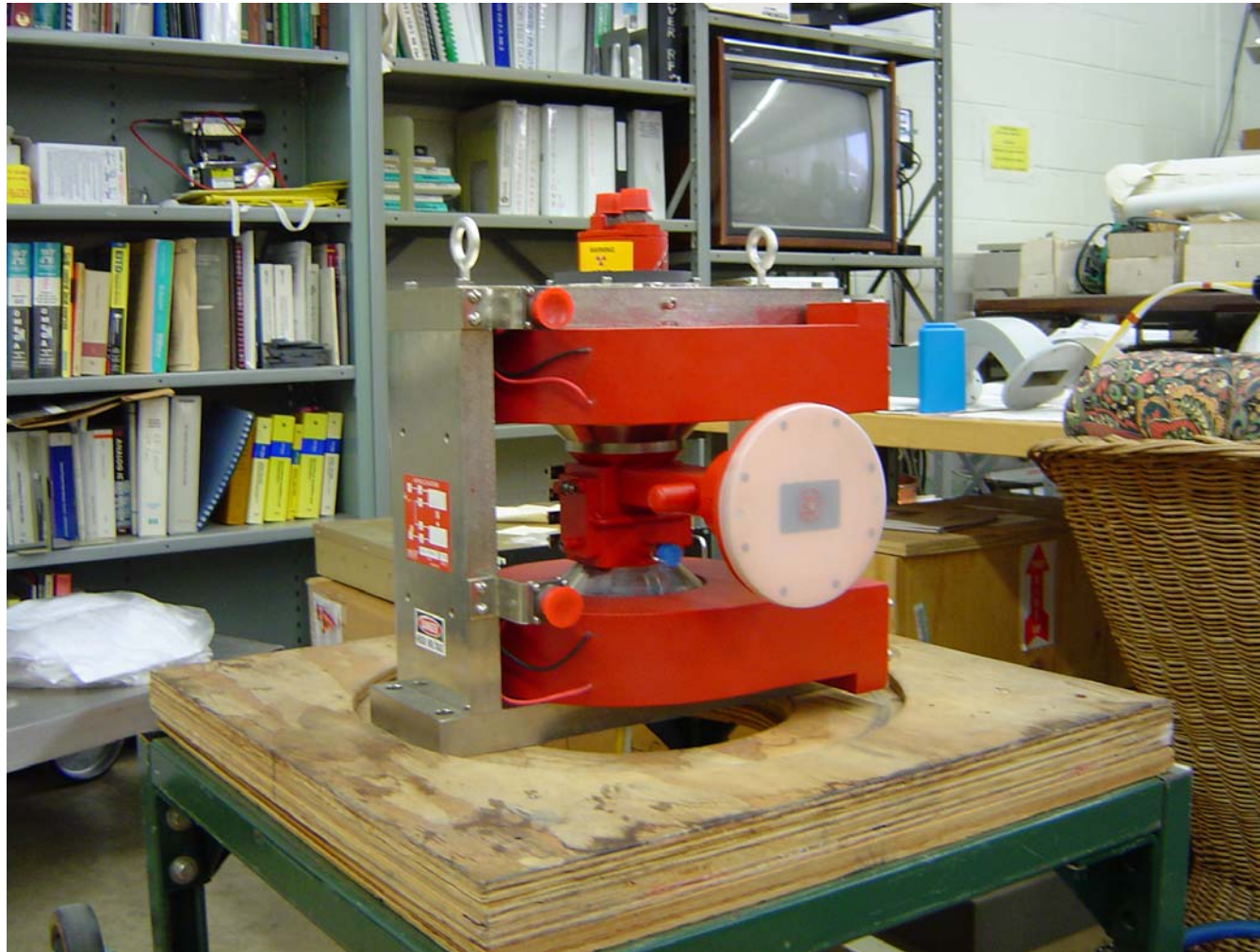
 - 3.9 GHz 80 Kwatt - Third Harmonic - from Meson

 - 1.3 GHz 10 Mwatt - ILC 24 cavity test
 - Could start with a 3 Mwatt tube for initial 8 cavity test.

Work in Progress

- 3.9 GHz 80 Kwatt Klystron
 - Klystron & Solenoid in house
 - Presently assembling components into relay rack.
 - Klystron
 - 50 KV Isolation transformer
 - Filament transformer + Sola
 - Solenoid power supply
 - Water manifolds, turbine, hoses, etc.
 - Klystron interlocks
 - Ready for installation at Meson Detector Building June 1.
- 3.9 GHz waveguide components
 - Most components in house, ordering some additional components for coupler testing & Horizontal Dewar.
 - Elbows
 - WR-284 waveguide switches
 - Stub tuner
 - Dummy loads

CPI 3.9 GHz 80 Kwatt Klystron



3.9 GHz Isolator



Work in Progress

- Building two additional small 60 KV modulators.
 - About 25 % complete.
 - Work will restart at end of present accelerator shutdown.
- Building one additional 70 KV charging Supply.
 - About 15 % complete.
 - Work will restart at end of present accelerator shutdown.