

3.9 GHz Effort at Fermilab

E. Harms
2 August 2007

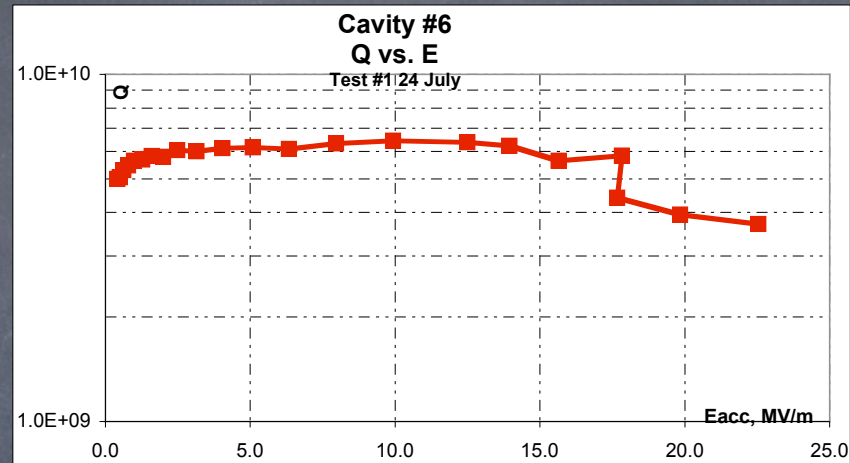
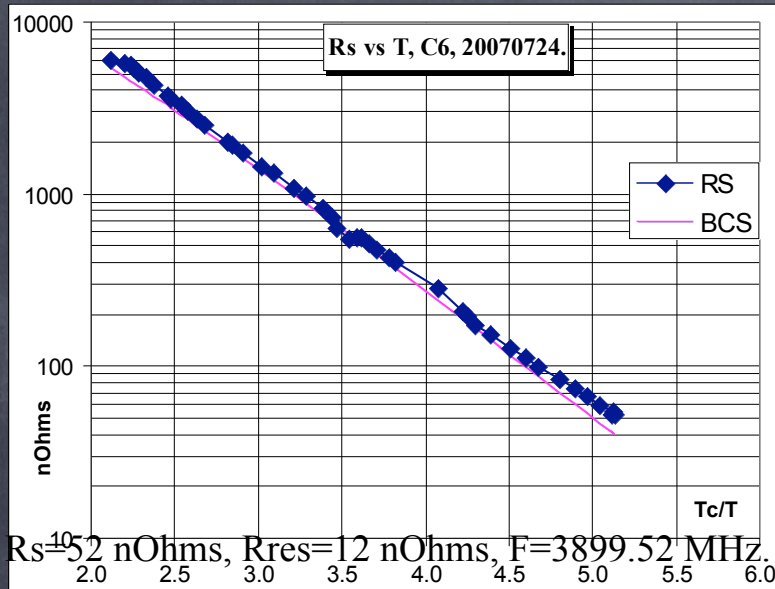
Cavity Status

- Cavity #1 (prototype): HOM knob broke off during ultrasonic cleaning. Cavity used to test helium vessel welding.
- Cavity #2: Vertical tested, low gradient and HOM heating. Formteils found to be fractured. Possible future re-work.
- Cavity #3: Six Vertical tests completed; achieved gradient (12 MV/m), but showed multipacting/HOM heating with old HOM design. HOM's trimmed and subsequently achieved 24 MV/m.
- Cavity #4: Trimmed HOM F-part tip. Four Vertical tests beginning 6 April achieved 23 MV/m.

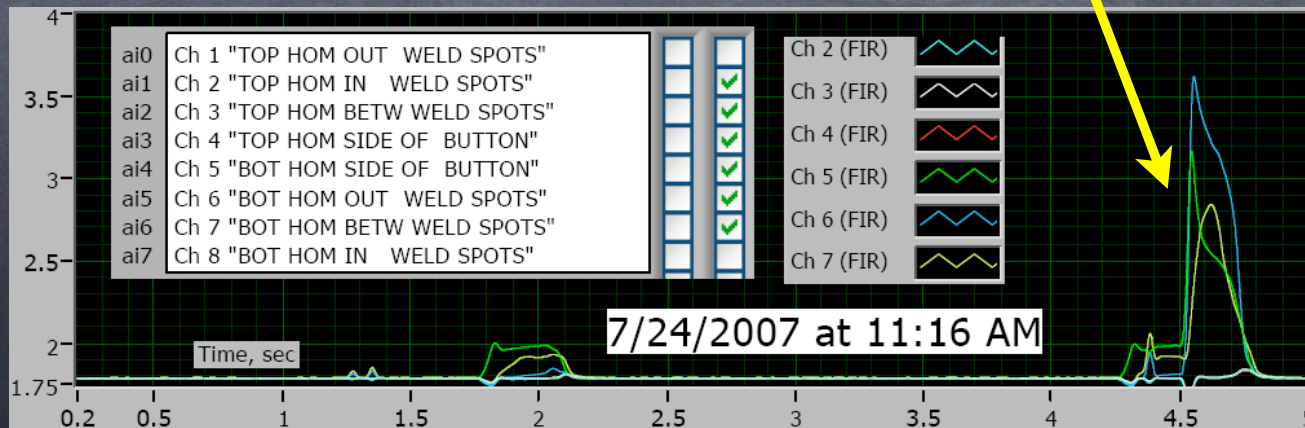
Cavity Status

- Cavity #5: First Vertical test on 22 June - 25 MV/m with no field emission or significant heating. Want to perform quench limit tests. Trimmed F-part HOM.
- Cavity #6: First Vertical test on 24 July - 22.5 MV/m. Field emission observed beginning at 9.5 MV/m. Bottom HOM quenching limited gradient. Trimmed F-part HOM.
- 4 Acceptable bare cavities in hand....

Cavity Performance - #6



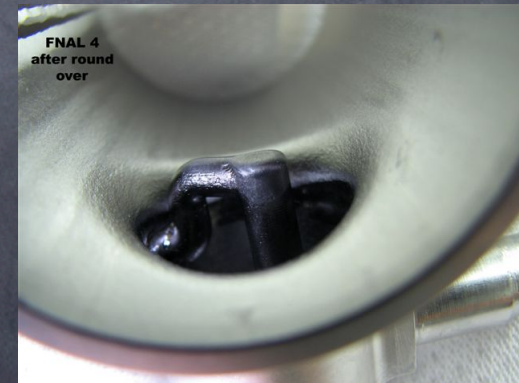
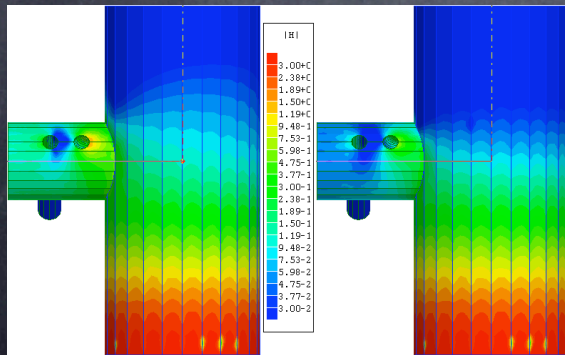
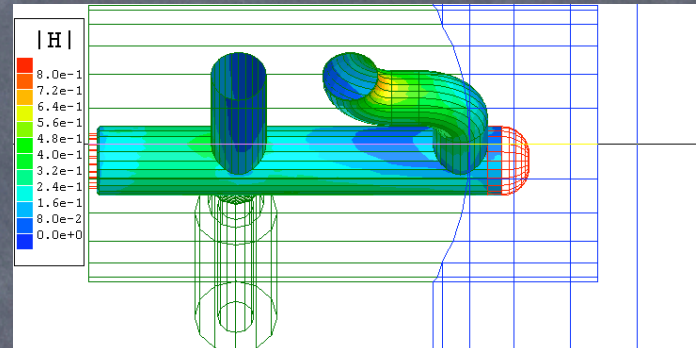
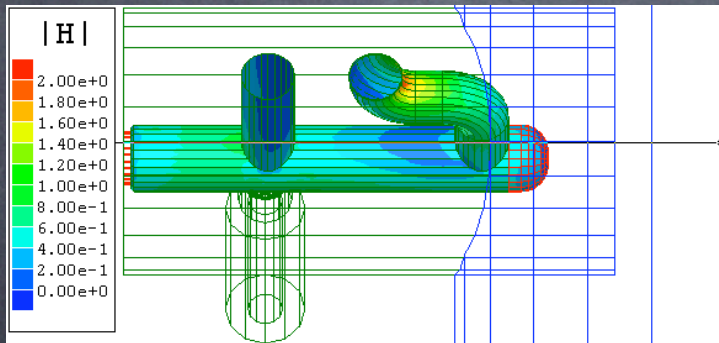
Bottom HOM
quenching



thanks to
Timergali
Khabibbuline

HOM Trimming

- 3mm trimmed from tip
- Peak Surface field reduced by factor of 2.5

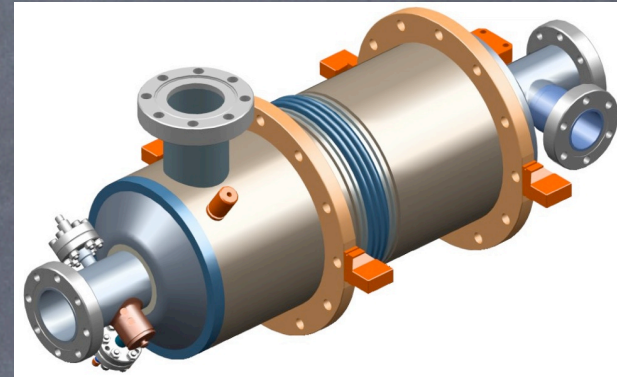


Cavity Status

- Cavity #7: In Fabrication at JLab. 1-post HOM (welded at DESY). Should be complete this month.
- Cavity #8: In Fabrication at FNAL. 1-post HOM (welded at DESY). Weld dates set for expected completion in late August.
- Cavities #9 & #10: Will be fabricated at FNAL. Blanks scanned.

Helium Vessels

- Cavity 2 welded into Helium vessel - prototype
- Remaining Helium Vessels - Bellows (Titanium) welds found to be suspect, improper welding procedure
- New vessels being procured - 1 built at FNAL, remainder by outside vendor. All parts for #1 in hand except bellows assembly (mid-August).



Cryomodule

- Cryo Vessel
 - arrived late June - interior found to be coated with Lithium grease
 - Removal completed
 - Sealed vessel pumped down to $3E-9$ with no discernible leaks
- Miscellaneous issues video conference with DESY, - occurring on a semi-regular basis

Other - 1

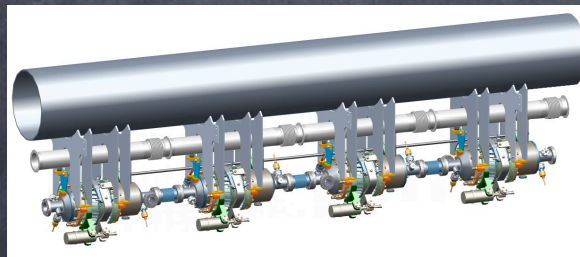
- Input Coupler Test Stand
 - Operational - one pair conditioned
 - Measurements for trimming next week
 - Second pair to be prepped shortly
- HOM Coupler Antennae/Feedthroughs
 - 14 in hand
 - QC & RF measurements in progress

Other - 2

- Horizontal Test Stand
 - Operational clearance given last week
 - RF introduced to cave yesterday!
 - Warm coupler conditioning to start next week
 - C22 cold tests thereafter
 - 3.9 cavity when a 'good' one is in a helium vessel

Summary

- Four cavities successfully tested cold - meet specifications, but bare cavities...
- Two more fabricated by month's end - alternate 1-post HOM design
- New Helium vessels in fabrication - critical path item (bellows) due middle of month
- Other facets well underway or complete
- Strong collaboration from JLab (cavity fabrication) and DESY



ILC Main Linac R&D Status Meeting