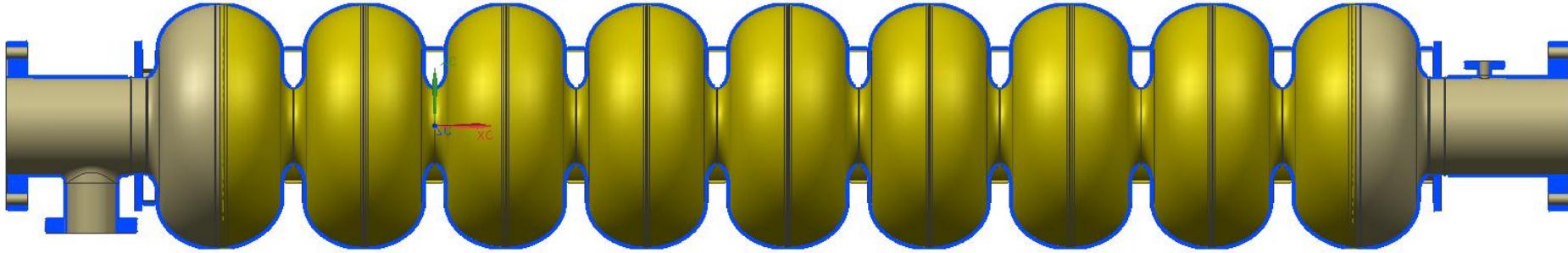

JLab Update

Rongli Geng, Ari Palczewski, Yongming Li

December 11, 2012

43rd ILC Cavity Group Meeting

JLab Status: 9-cell Cavities

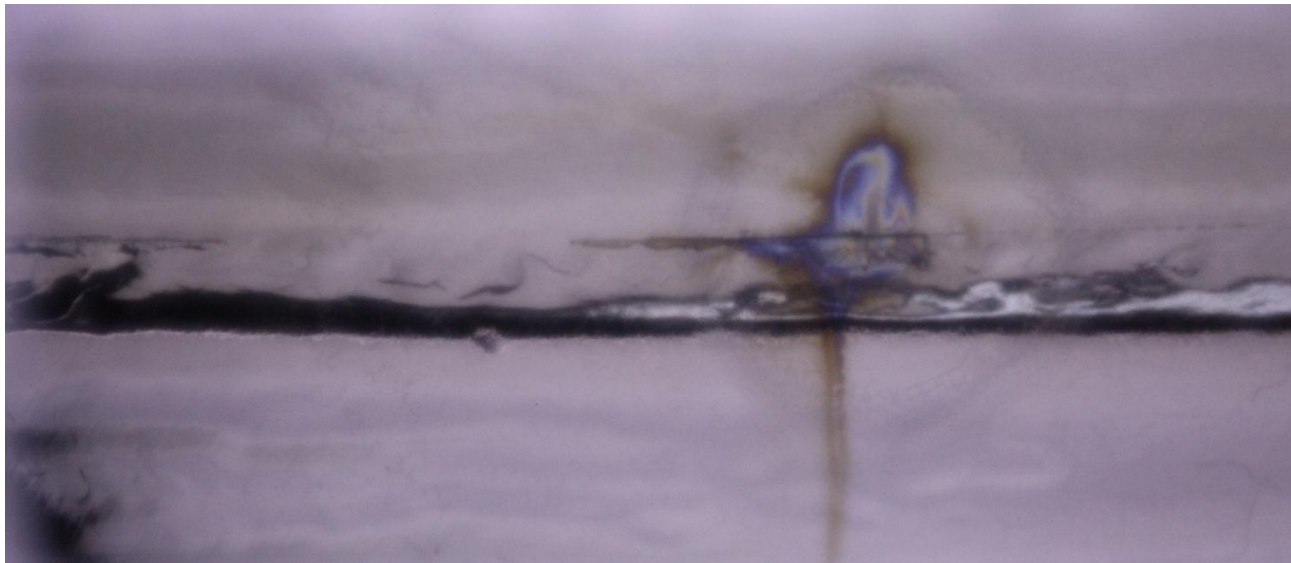


- New 9-cell Low-Surface-Field shape (SLAC design) cavity.
 - Design package 100% completed
 - First Cu prototype completed
 - Used for wall removal assessment by CBP
 - Flat region removes at 75% of that at equator
 - All niobium cups are in hand
 - Deep drawing, Nitric soaking, vacuum furnace stress relief
 - CMM inspection of key dimension shows good precision
 - Next re-stamping and weld prep machining
- Two large-grain ICHIRO shape cavities waiting for processing



JLab Status: Field Emission/Dark Current R&D

- **9-cell cavity JLab LG#1 optical inspection following RF test with strong field emission**
 - Discovery of discoloration at iris



Iris 2
Z=220mm
angle=247.2

- **HOM coupler multipacting**
 - Prediction of a hard MP barrier at > 42 MV/m in ILC cavity HOM coupler
 - Results cross-checked with similar HOM couplers at different frequencies

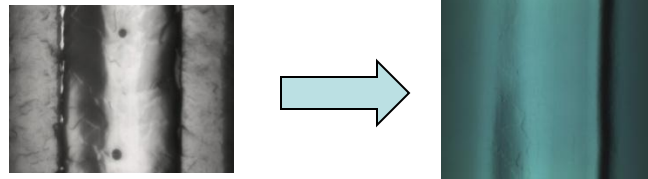
JLab Status: In-House Mechanical Polishing

- **First 9-cell cavity (NR1) in-house mirror-finish mechanical polishing completed**

- Four-step procedure based on C. Cooper's developed at FNAL
- Operation in the new building at Test Lab Addition
- Intermediate rinse using a medium pressure wand
- Optical inspection



- Clear removal of twin defects in cell#5 which limited cavity at 17 MV/m



- But a new defect was disclosed in cell#6 in fusion zone of equator weld



Cell 6 new defect 324 degrees

- Cavity out-gassed in vacuum furnace, waiting for light EP

- **1-cell cavity mechanical polishing**

- Copper 1-cell LSF shape LSF1-1
- Large-grain niobium 1-cell G2

