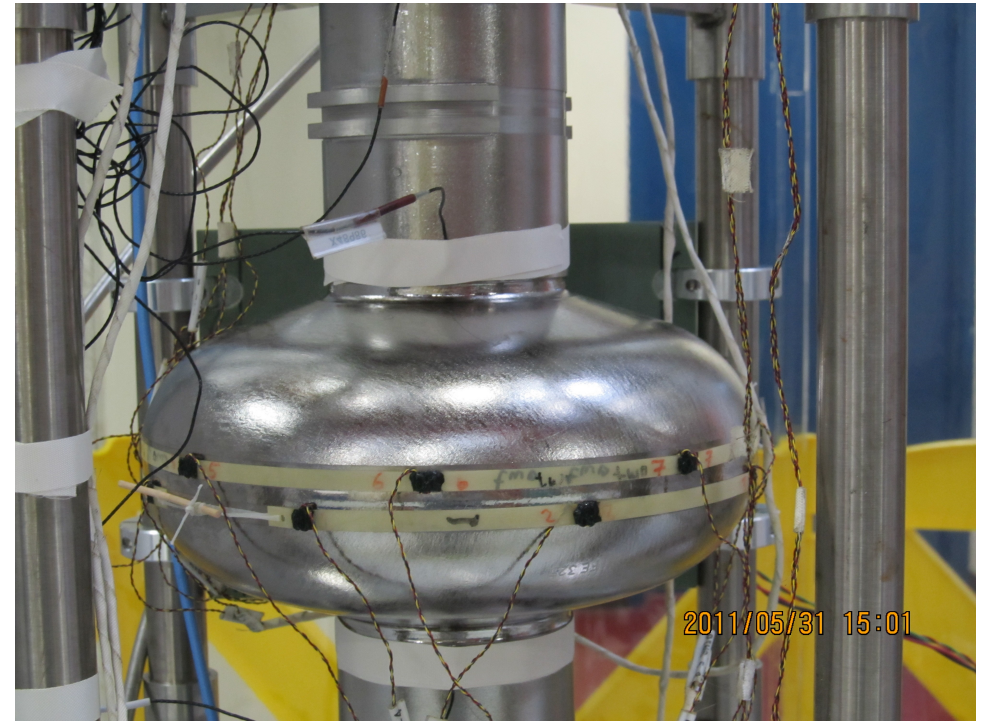


Trapped flux and quench in SRF cavities
Dmitri A. Sergatskov (Fermilab)

Experimental setup

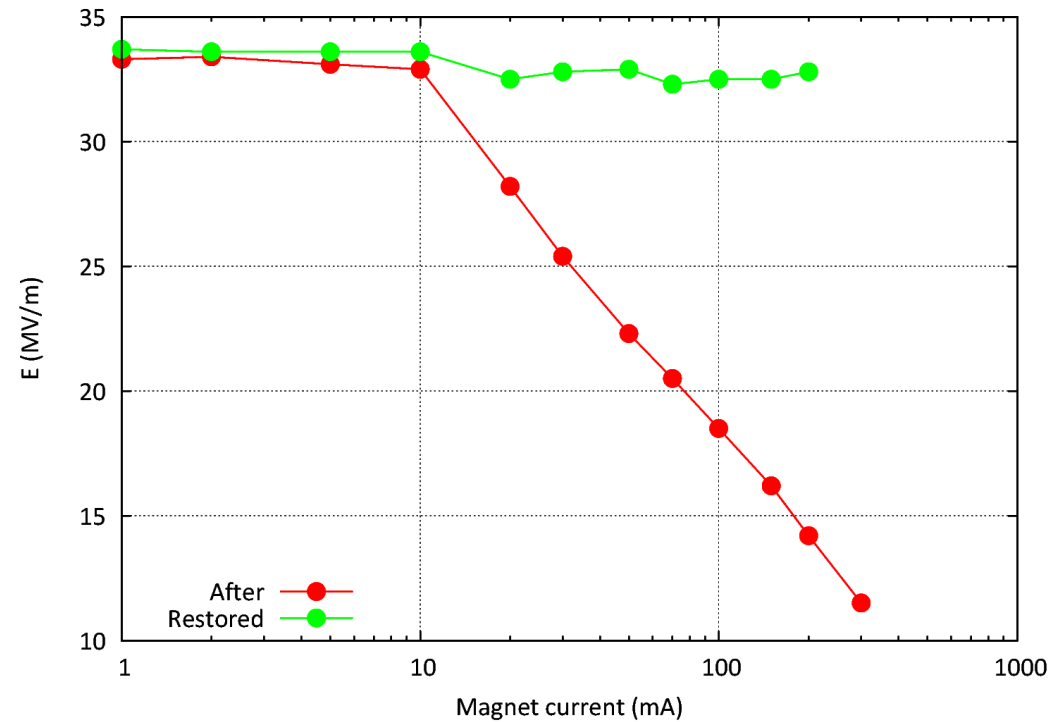
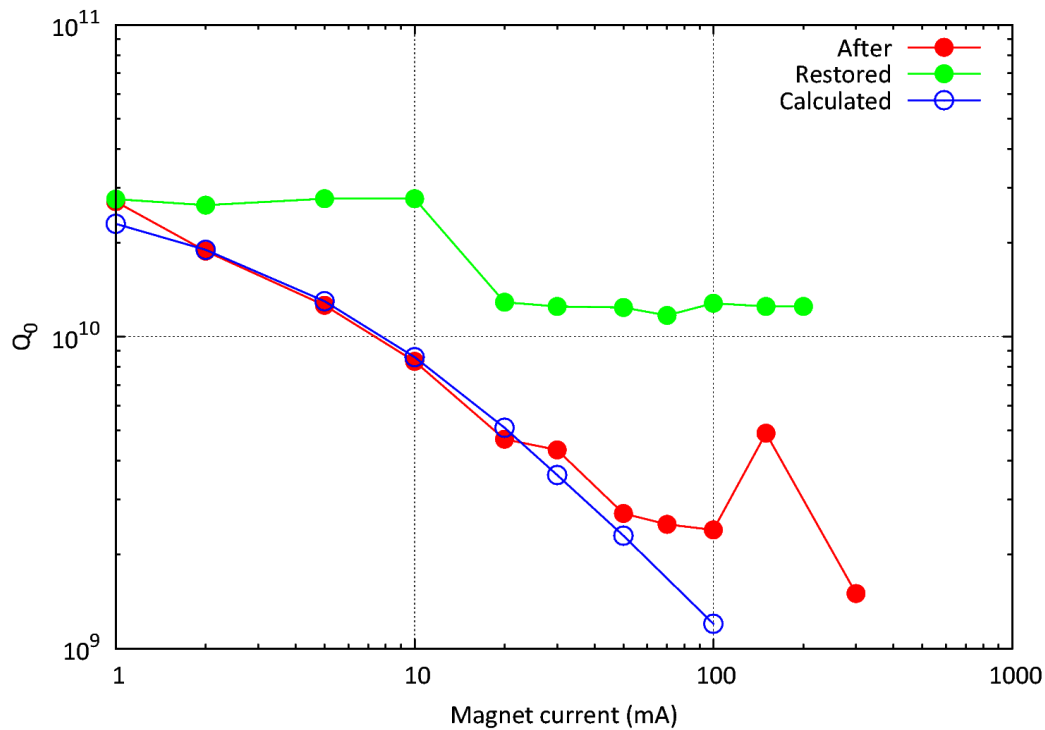


The arrow mark on the cavity points to the quench location. Field/current conversion for the magnet coil is 150 Gauss/Amp at the quench location with superconducting (te1acc002 – Tesla shape 1.3 GHz single-cell) cavity.



Two bands with 8 CERNOX thermometers (~85 mm apart) each placed on the equator of the cavity. Band #1 is the bottom one. RTD#6 on the band #1 (**B1Ch6**) and RTD #2 on the band #2 (**B2Ch2**) are the nearest thermometers to the quench location.

Degradation and recovery



We apply some magnetic field and let the cavity quench and trap some magnetic flux. Its performance degrades in a good agreement with our calculations. We measure Q and E – those are the “After” values. Then we turn the field off and quench the cavity few times. E and Q measured after that are the “Restored” values. The discrepancy between calculated and measured “after” values of Q at high current may be due to:

a) flux migration violating the computer model configuration; b) flux-trapping efficiency becomes less than 100% at high flux densities.

Thermometry: before and after

