CCT4 test update

M. Marchevsky (LBNL)

- Initial cooldown was started on Jul 22, magnet was cooled to 4.2 K
- Compressor malfunction lead to a warmup to ~ 170 K
- Second cooldown to 4.2 K was started on Aug 6
- We started the test on Aug 8

Steps competed so far:

- Technical ramps / extractions up to 4 kA
- Impedance / inductance measurements
- Training (still in progress)
- Ramp-rate quenches at 30, 50, 75, 100, 150, 200, 250 A/s
- Forced extractions at various current levels up to 13 kA
- Magnetic measurements (z-scan and stair-step cycle)

In progress:

- Heater tests (MQE and quench propagation)

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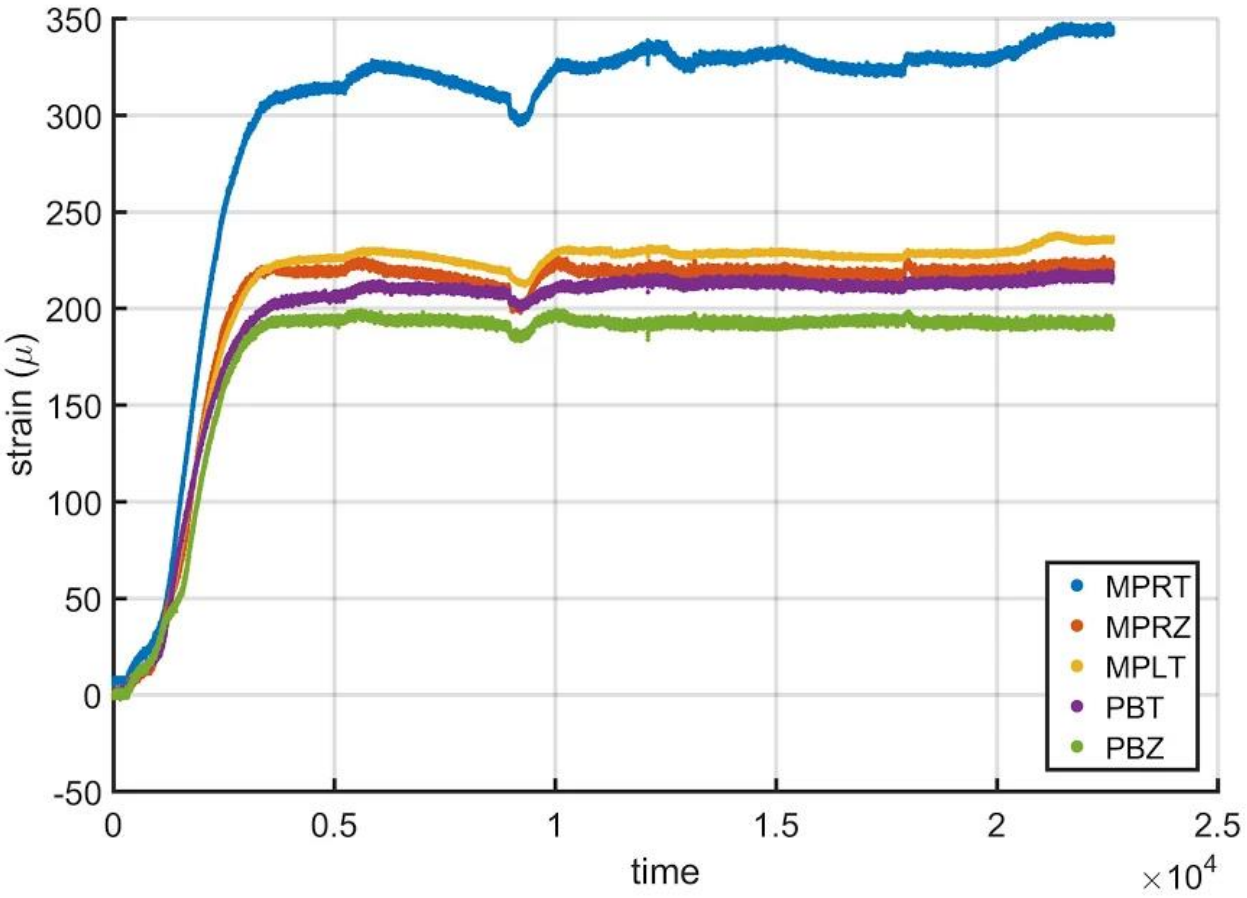
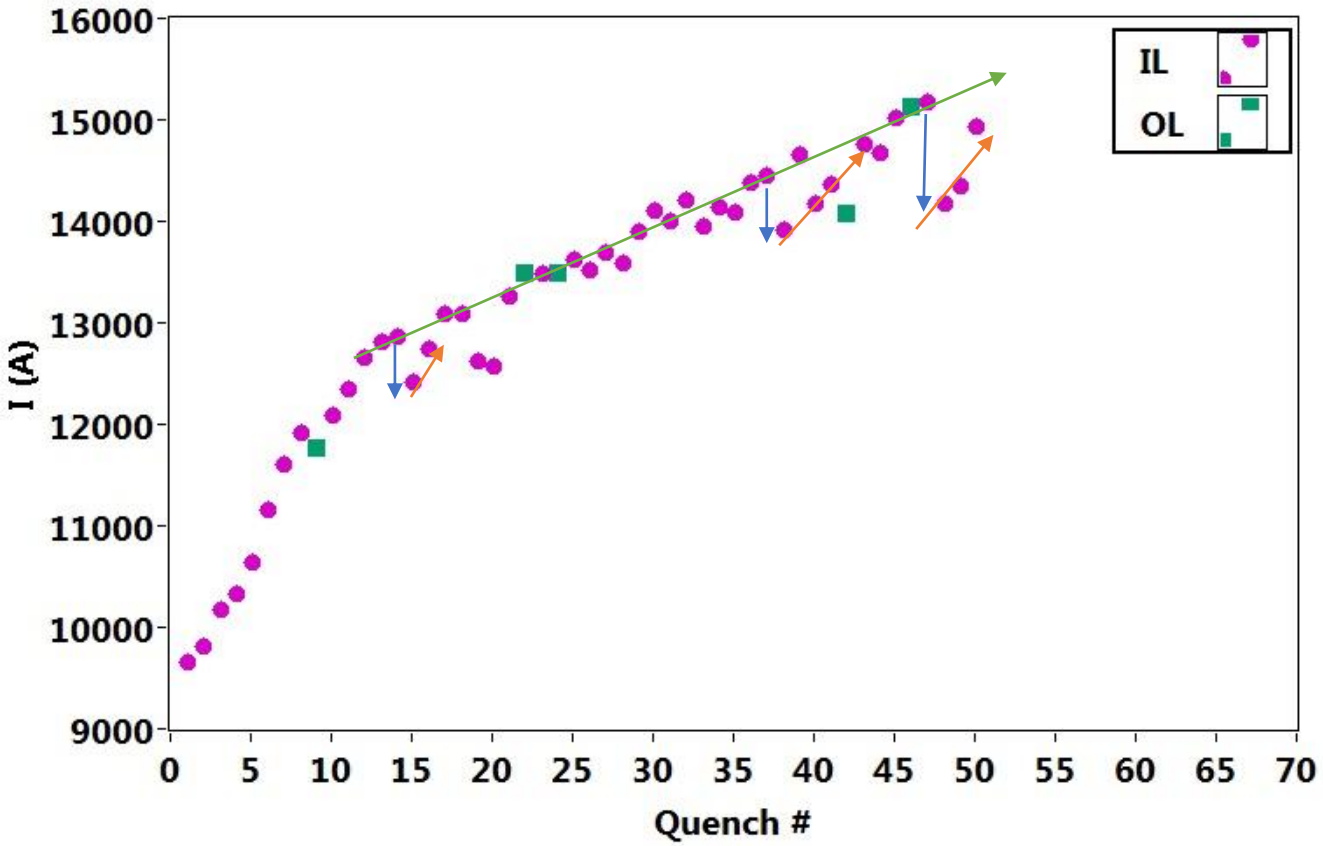
Strain gauges (cooldown)



Training

10 A/s -30 A/s into a quench



- Distinct change of the training curve slope at ~ 13 kA
- Several de-training event observed
- Still steady linear uptrend after 50 quenches, training continues

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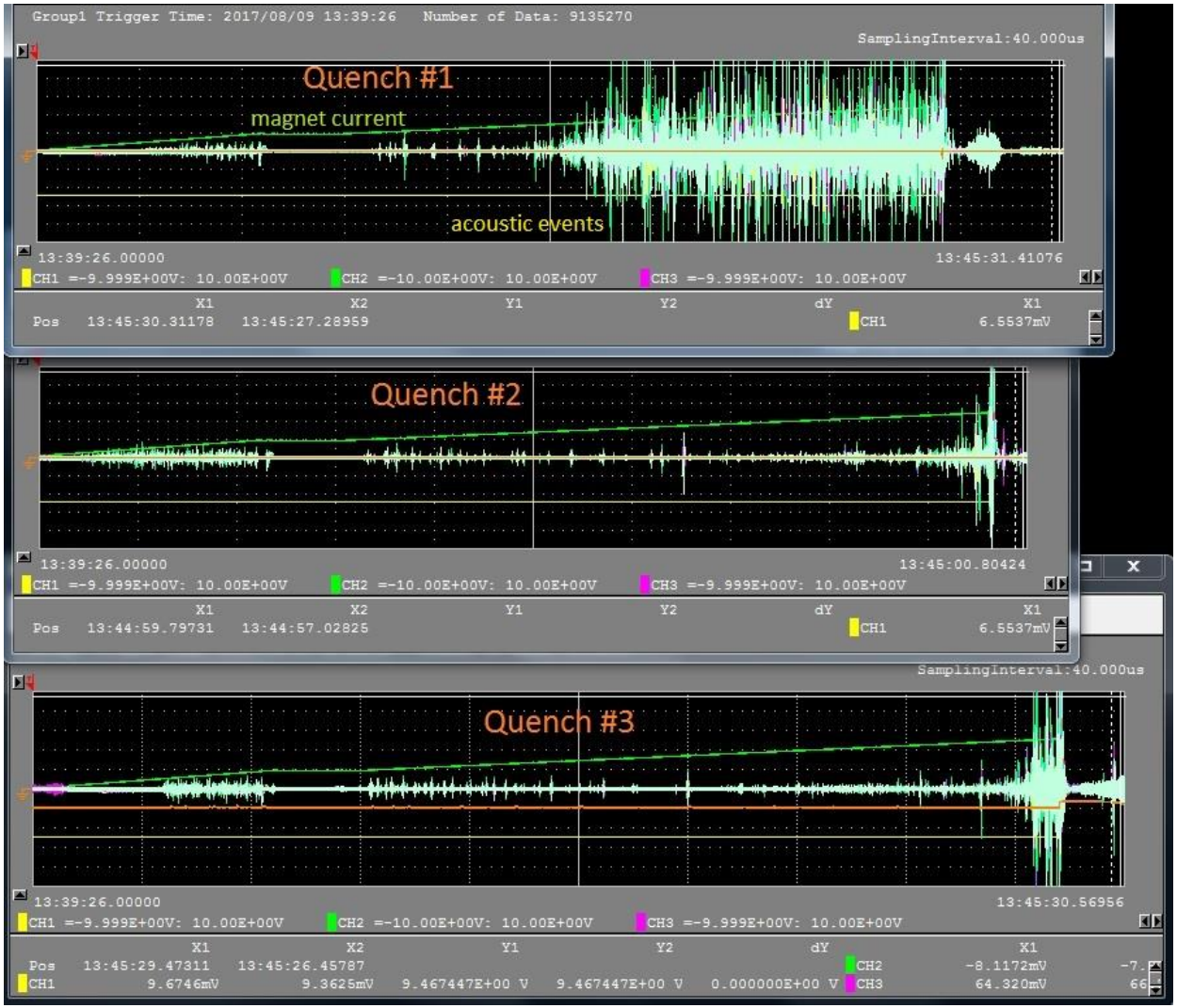
Acoustic signature



- Magnet showed clear mechanical memory in the first quenches

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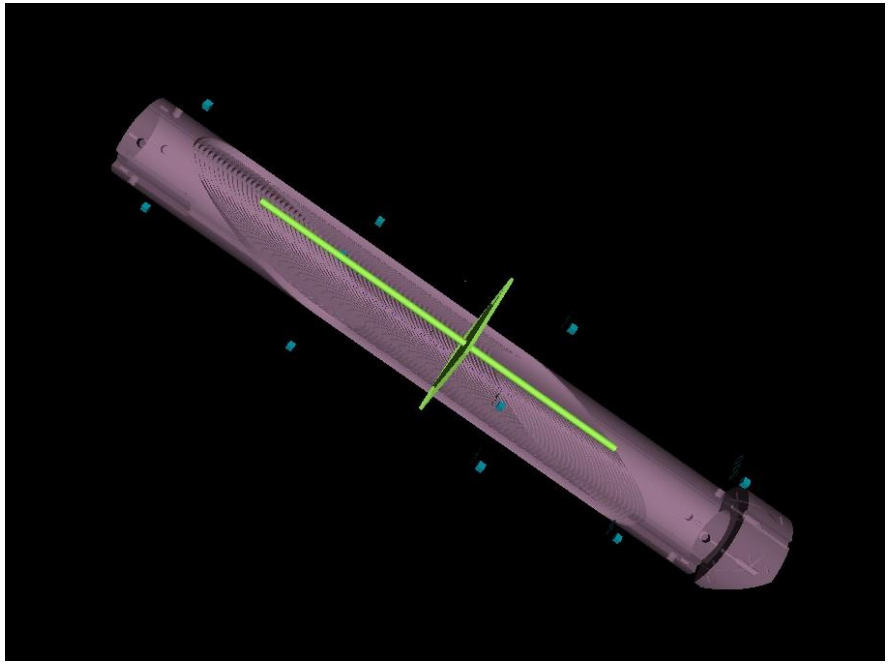
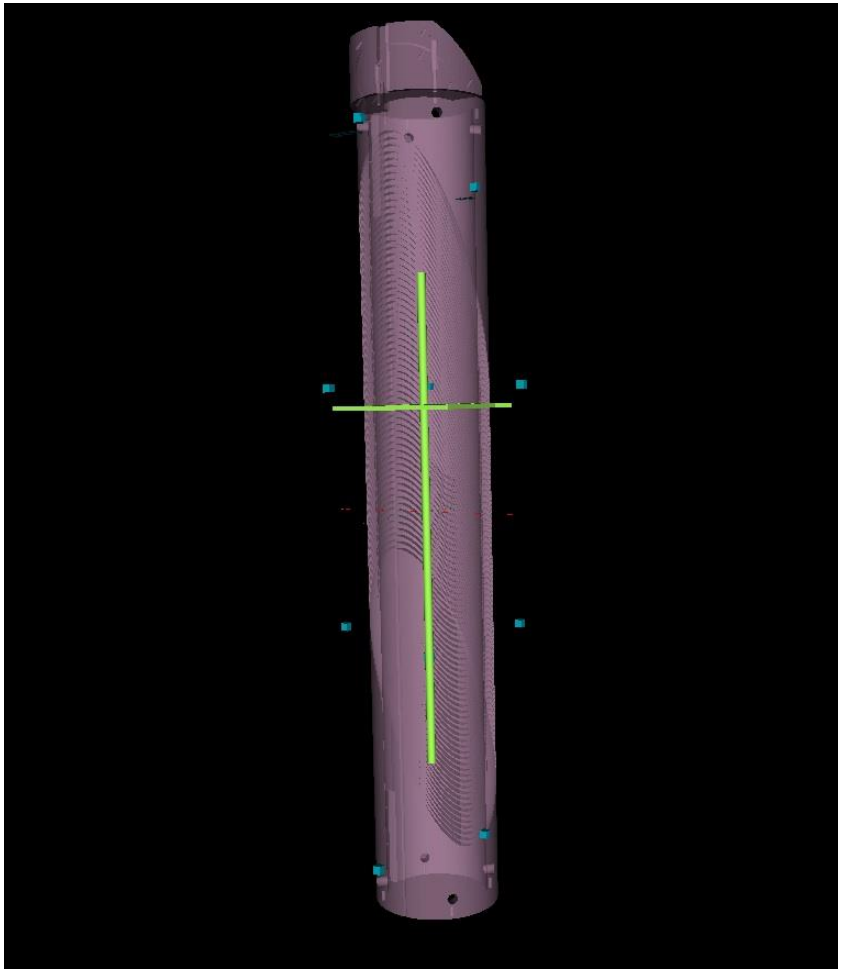
Quench location triangulations



Location of the inner layer quench #4 (10350 A), as determined from acoustic signals

- Quench locations are close to the pole

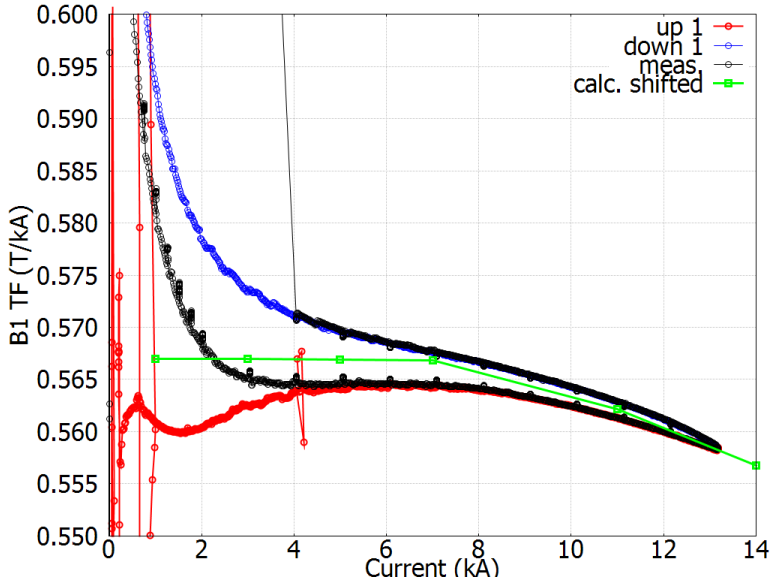


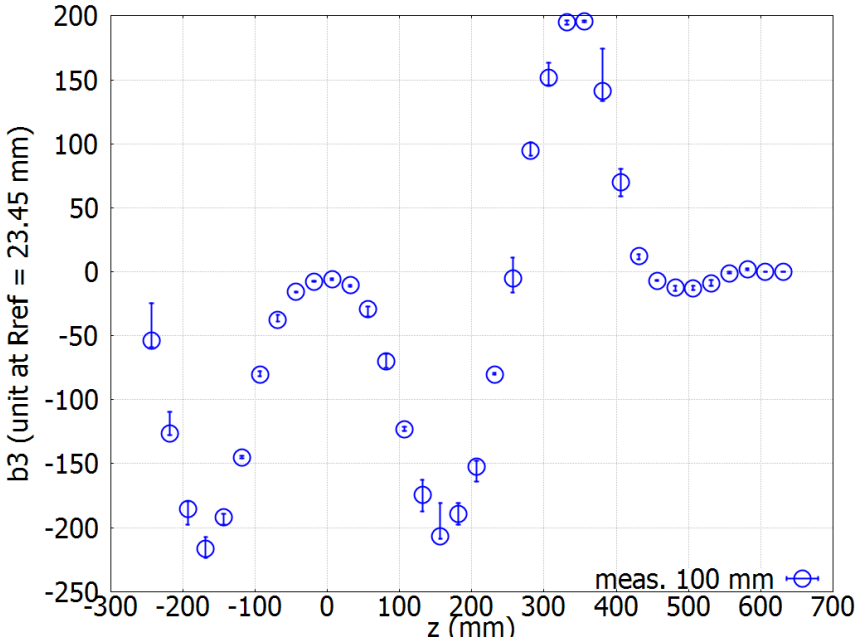
Location of the outer layer quench at 13506 A

25 mm long rotating coil developed by FNAL was successfully used for the magnetic measurements

- Better spatial resolution with 25 mm length (CCT2/3 used 100 mm long probe)
- 23.45 mm reference radius (52% of available aperture, limited by the anticryostat)

Joe DiMarco at FNAL developed the probe





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Up to date test information

https://sites.google.com/lbl.gov/cct4