Beamline Magnets Update

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Magnet Summary Table

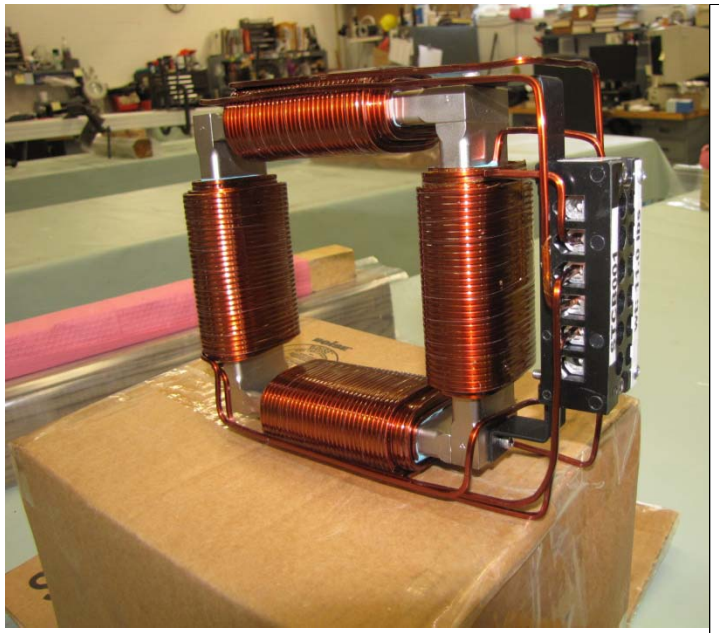
type	# ordered	vendor	int. field max	coil extent in z [mm]	Imax [A]	Vmax [V]
gun solenoid	2 (+ spare coil)	Danfysik	630 G-m (0.28T peak)	130	500	40
LE corr.	33	Radiabeam	12.3 G-m	60	7.5	1.2
LE dipole	14	Everson-Tesla	720(680) G-m	300(320)	8	40
LE quad	37	Radiabeam	1.1 T-m/m	160	9	12
HE corr.	34	Everson-Tesla	200 G-m	200	9.2	13.4
HE dipole	4	FNAL + tbd	15,000 G-m	1500	1100	14
HE quad	34	Everson-Tesla	8 T-m/m	500	60	19

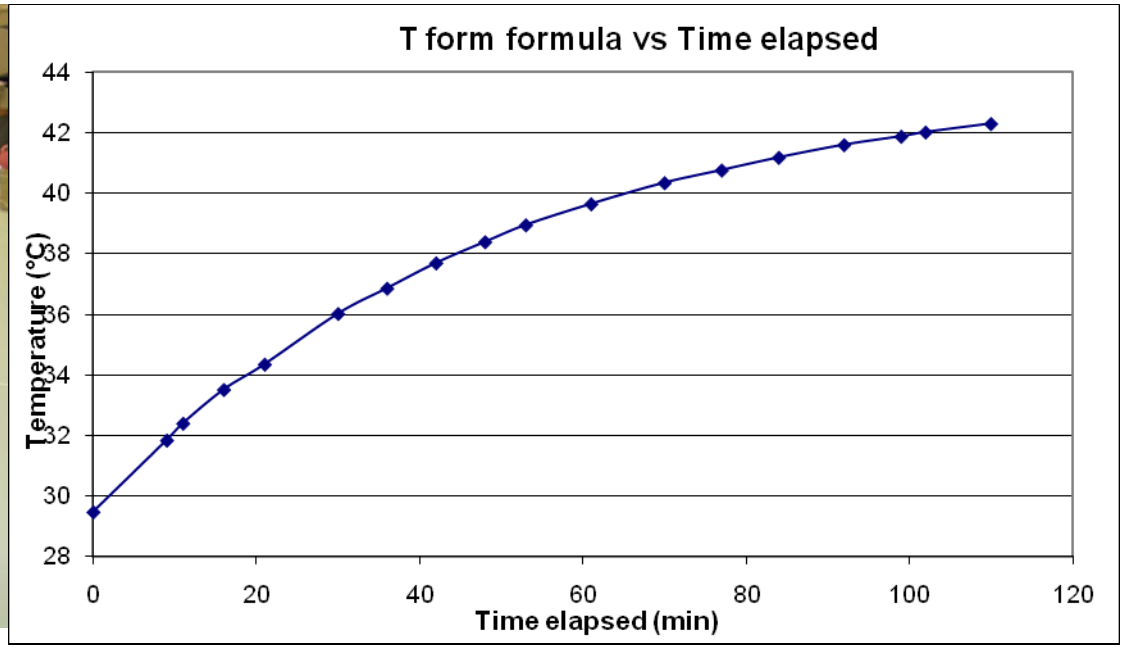
- Have received prototypes of Radiabeam magnets.
- Have 13 HE correctors from E-T.
- LED specifications have changed, 50C temp rise, length of steel in z 210mm

Low Energy Correctors

- One prototype received.
- Plan to measure field profile at TD.
- Temperature measurements done.

LE Correctors – Temperature Measurements

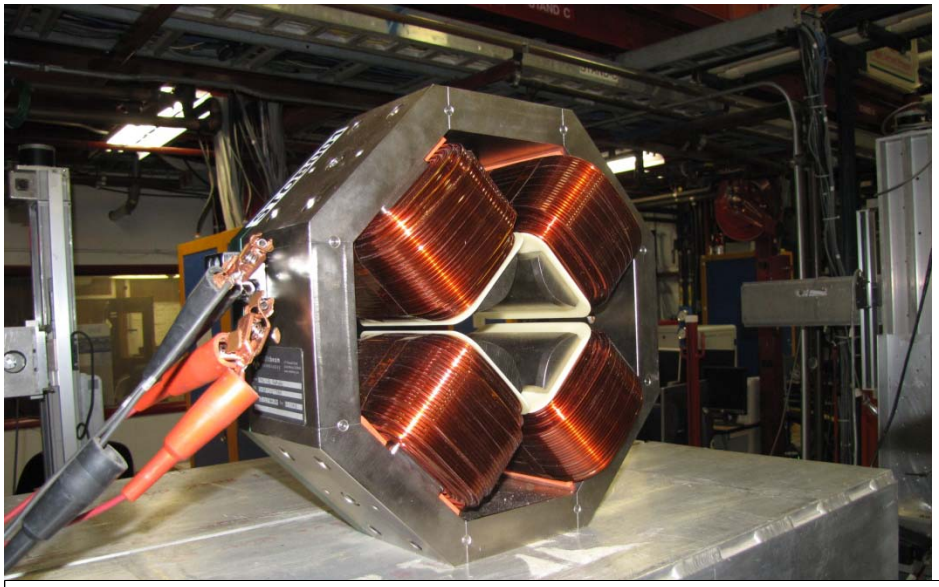


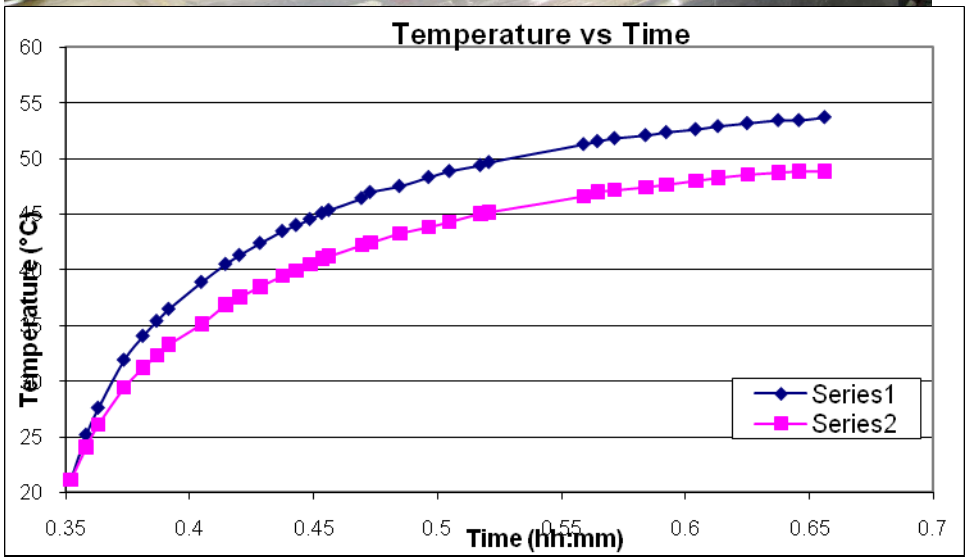


4 coil test at 7.5A

- 1 hour 50 minutes
- ~11C temperature rise

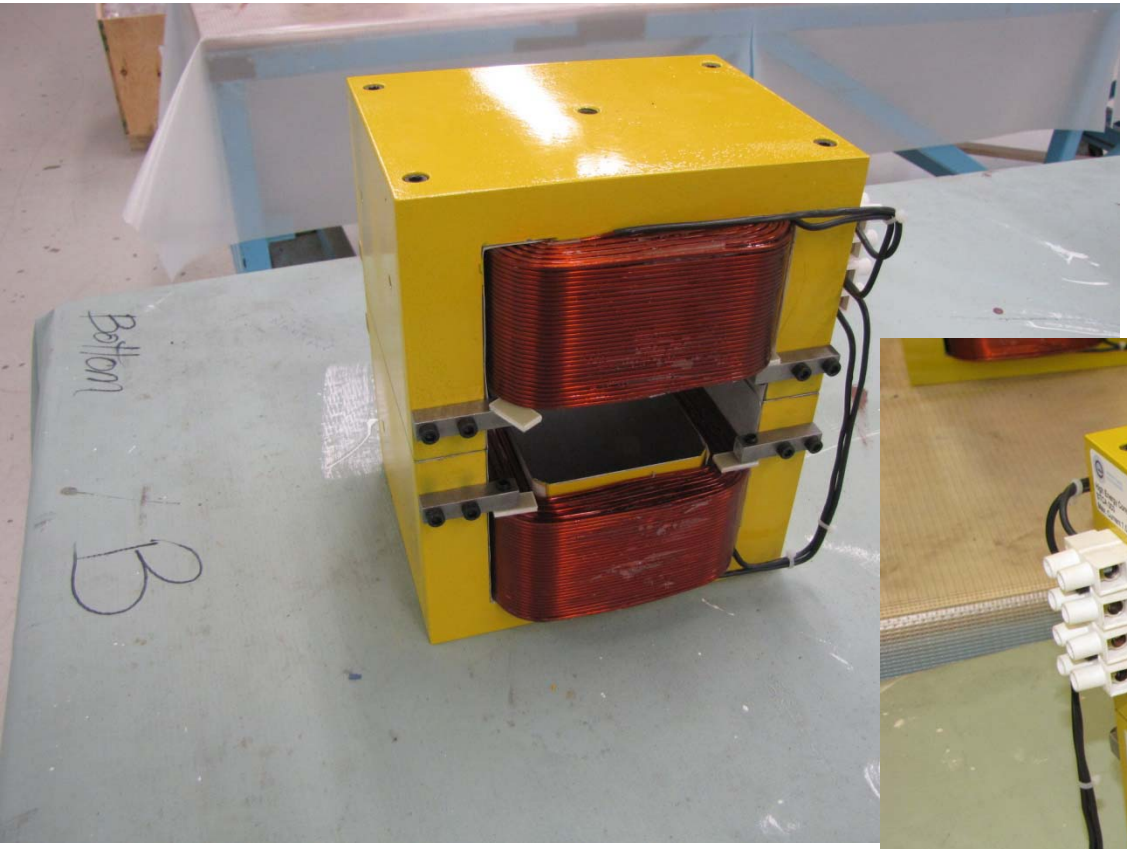
Low Energy Quadrupoles

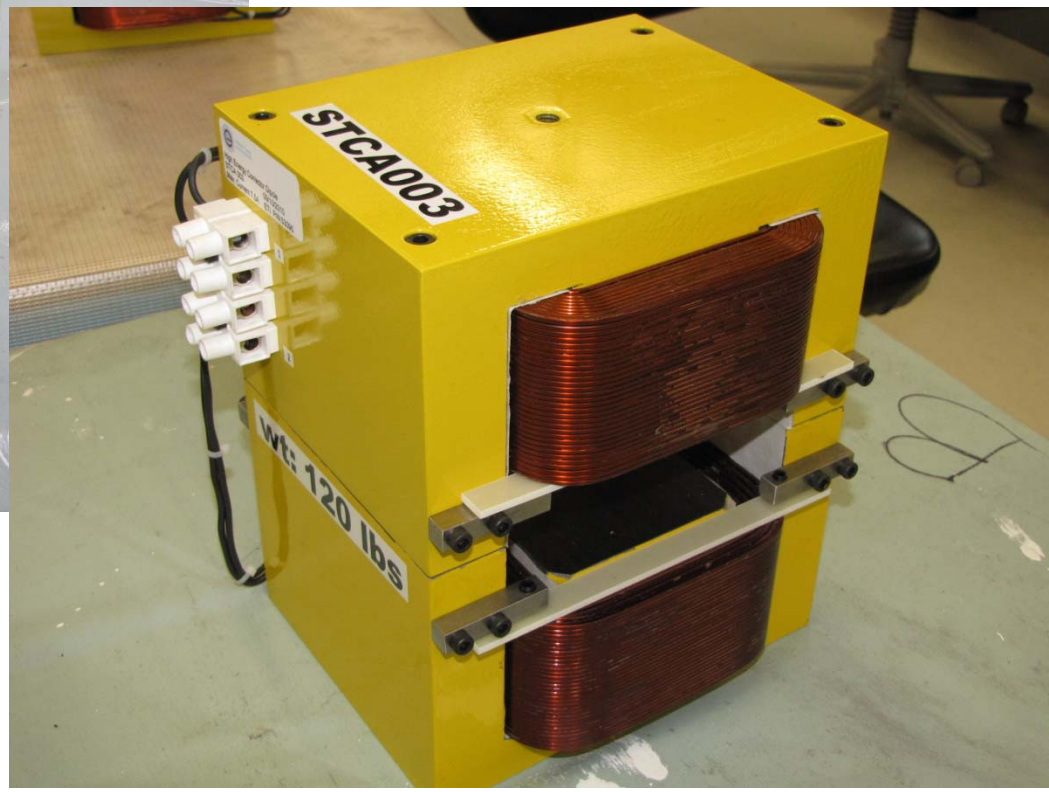




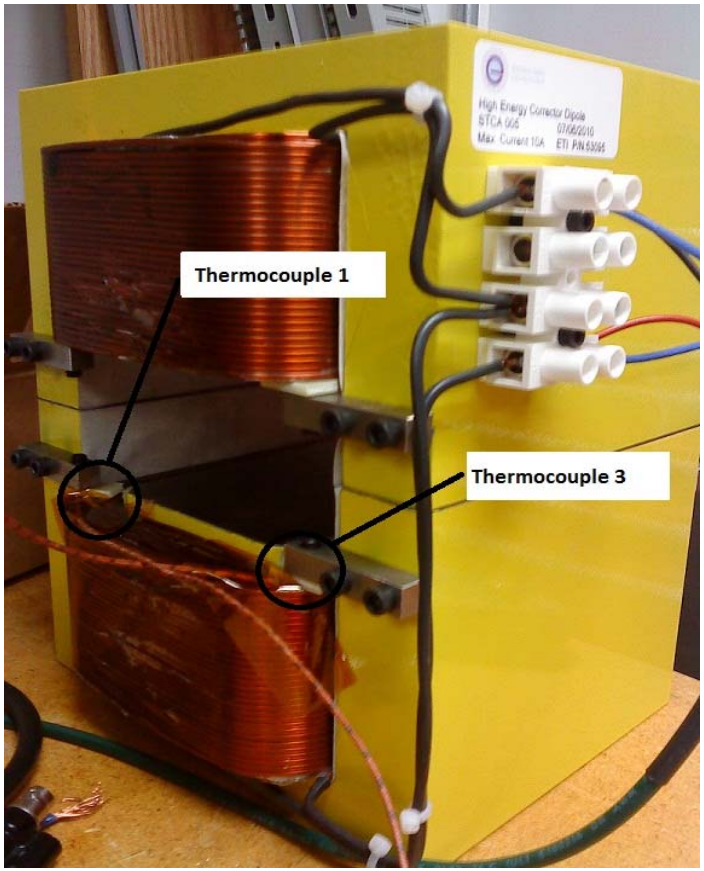
- One Radiabeam prototype received.
- Plan to measure field profile at TD.
- Temperature measurements done.
  - 9.02A, ~28C rise

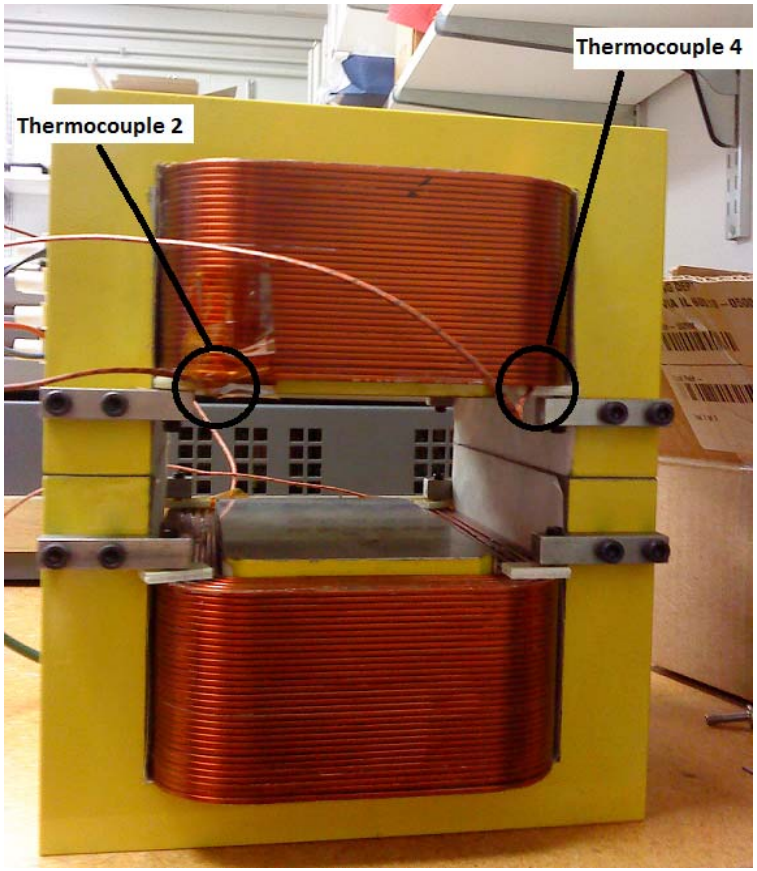
High Energy Correctors



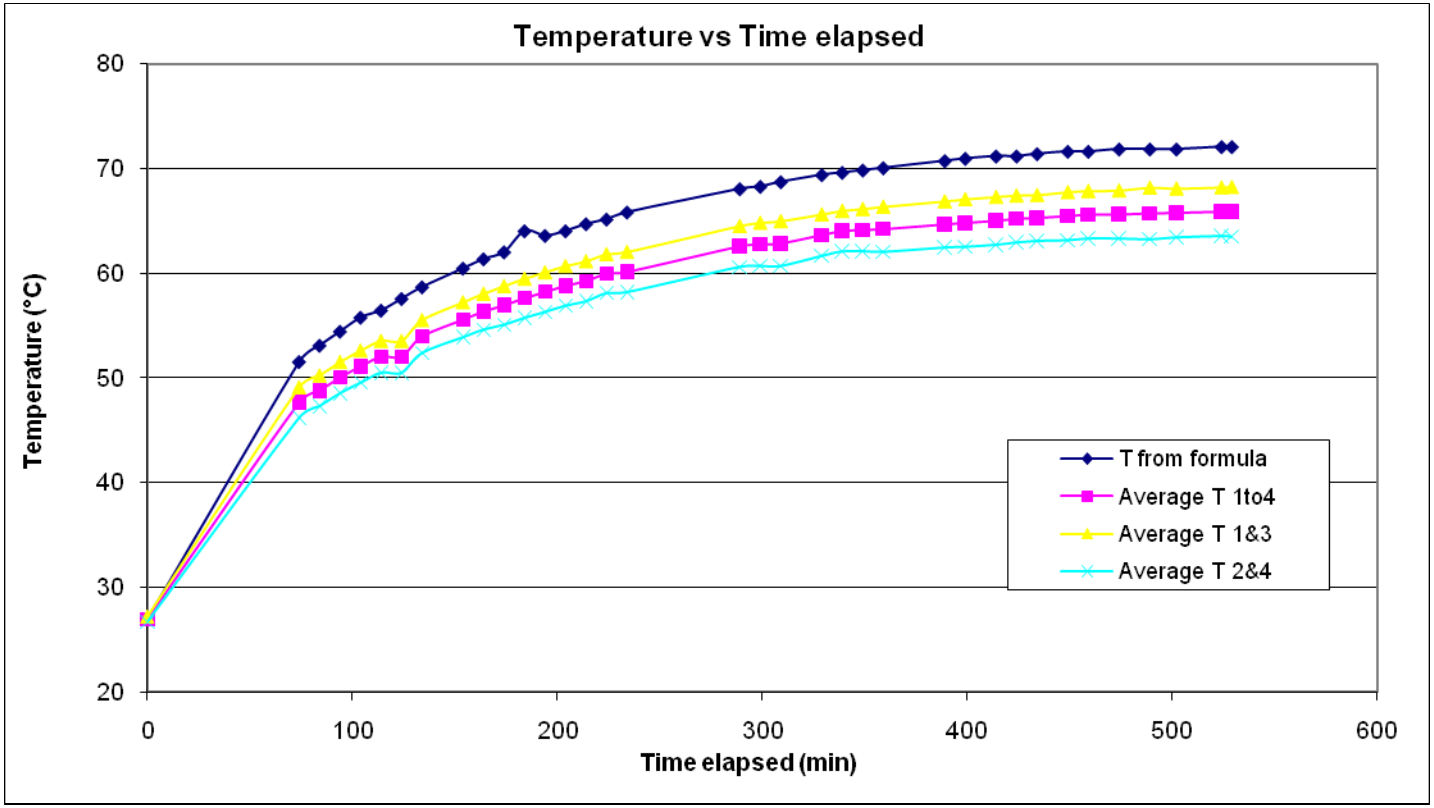


Temperature Test



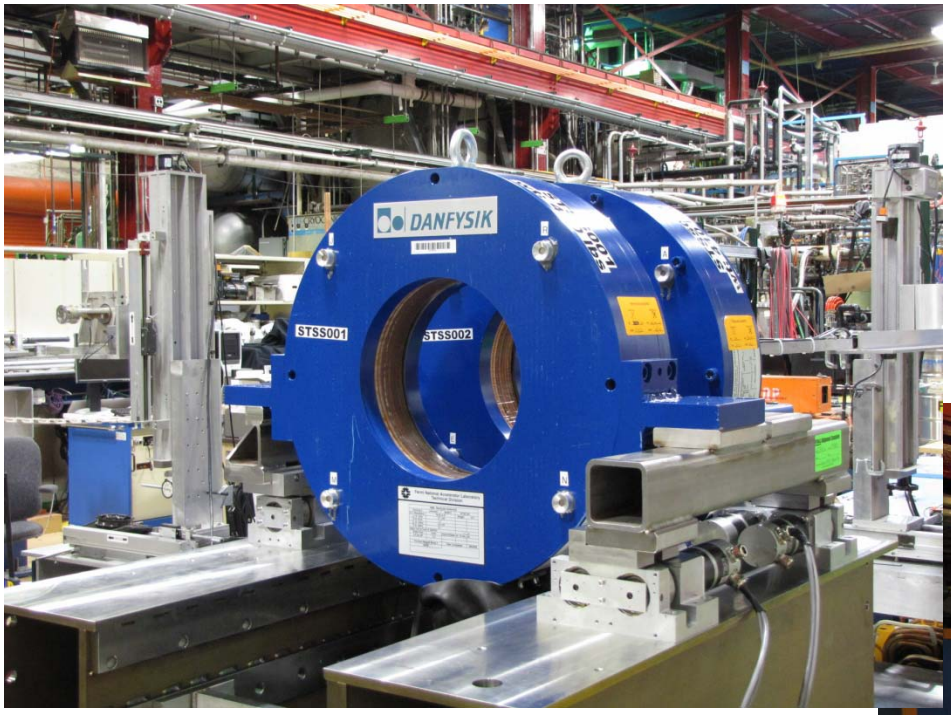


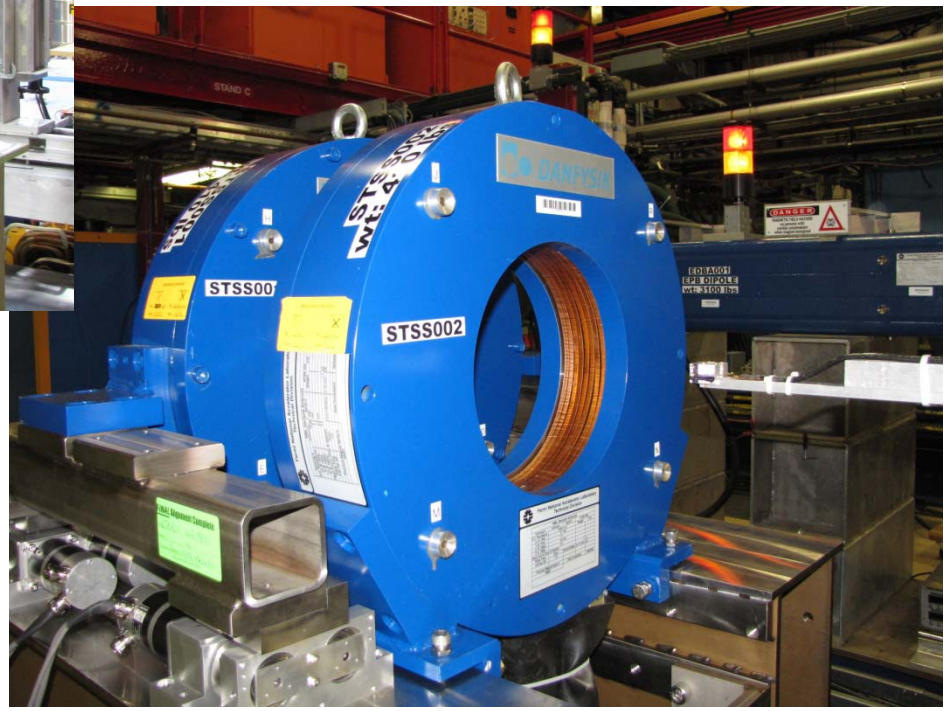
Results



- Temperature rise ~40C
- Re-labeled and limit current to 7A

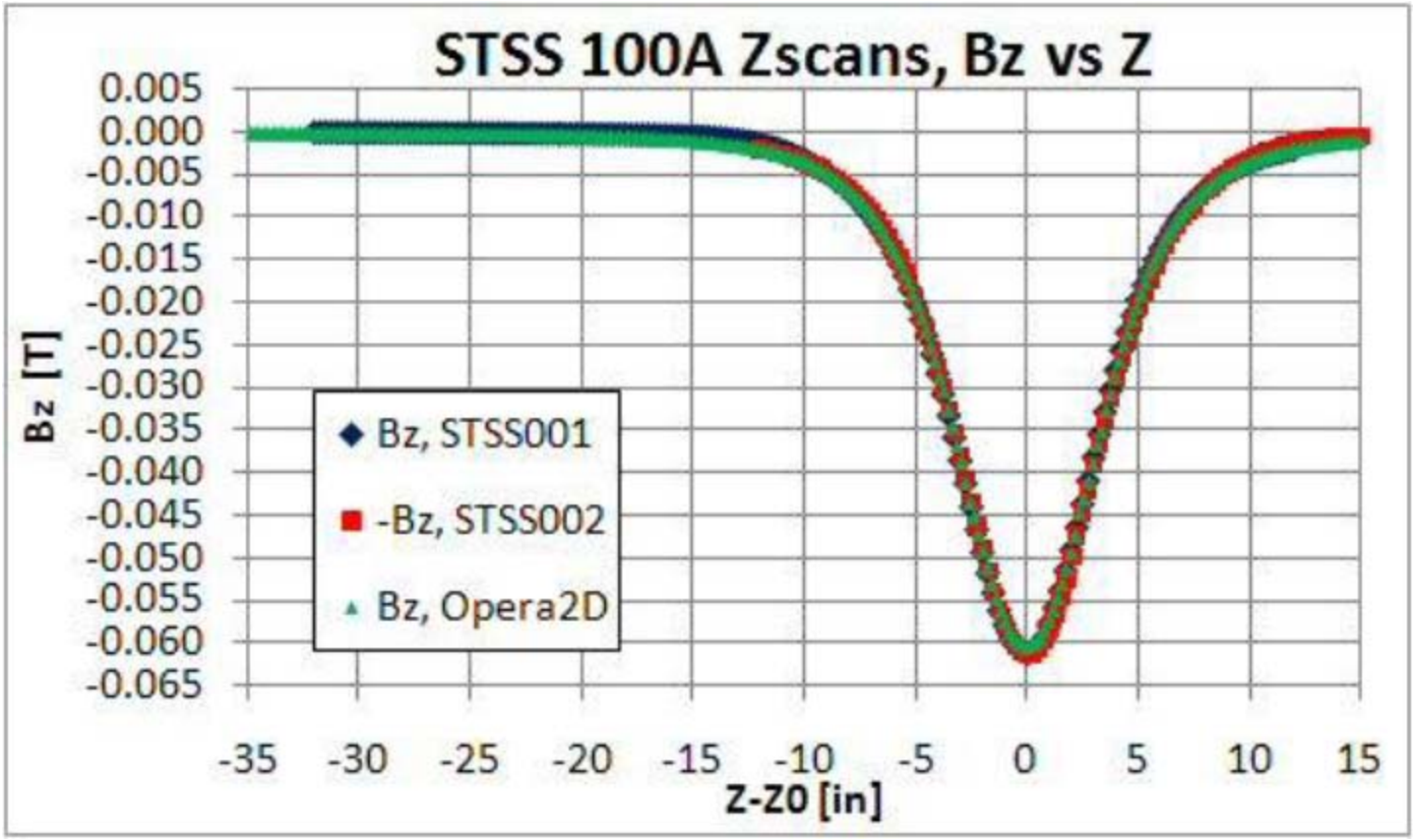
Solenoids @ MTF



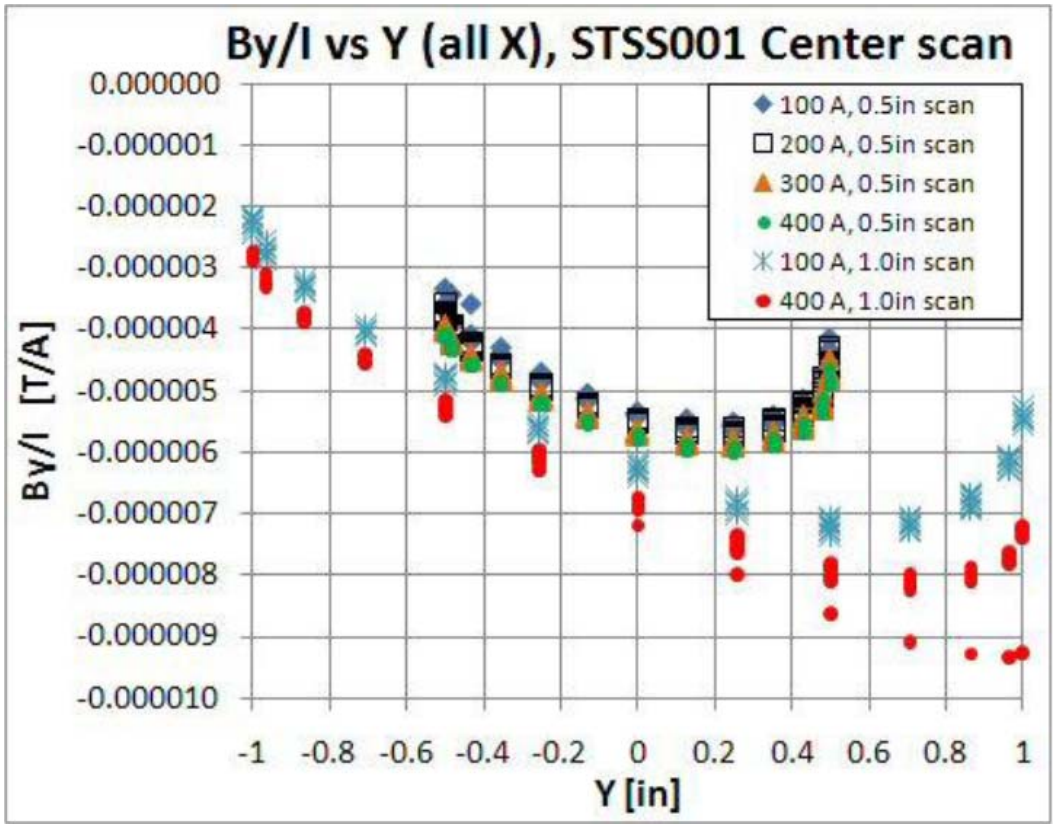


Solenoid Tests

- Completed data taking in August
  - Data in files
- Mike Tartaglia has done an analysis
  - Opera2D model for comparison to data
  - Basic Plots
    - Not so trivial because of probe geometry.
- Bz is predictable
- Fields linear with current
- Grid scans still a small mystery.



- Overlay of predicted and measured, excellent agreement
- Small asymmetry in tail, adjacent magnet steel



- Normalized to current.
- Small fraction of a gauss scale.
- Physical asymmetry in coils.