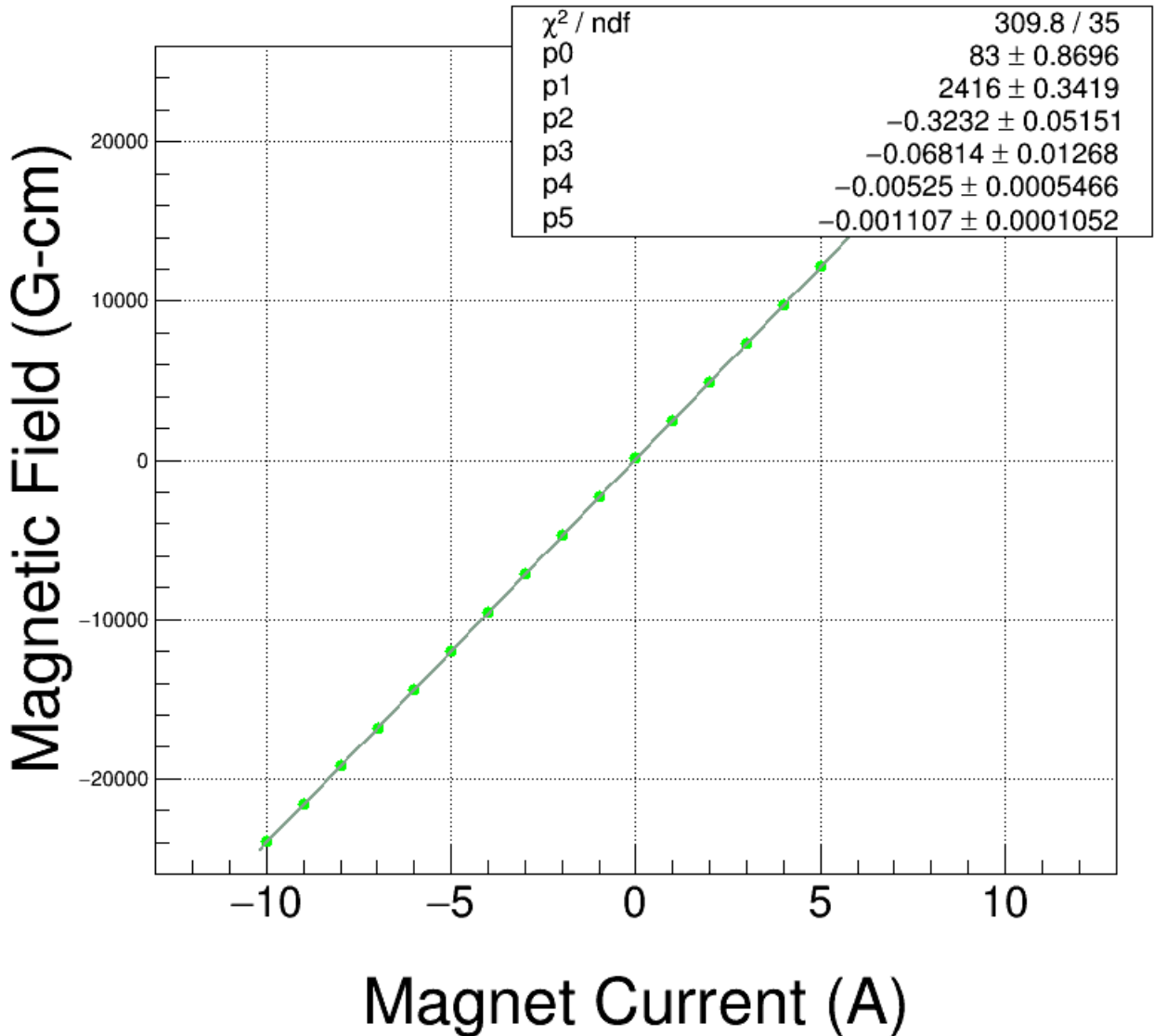


MDL0L02 Dipole Hysteresis Loop Study

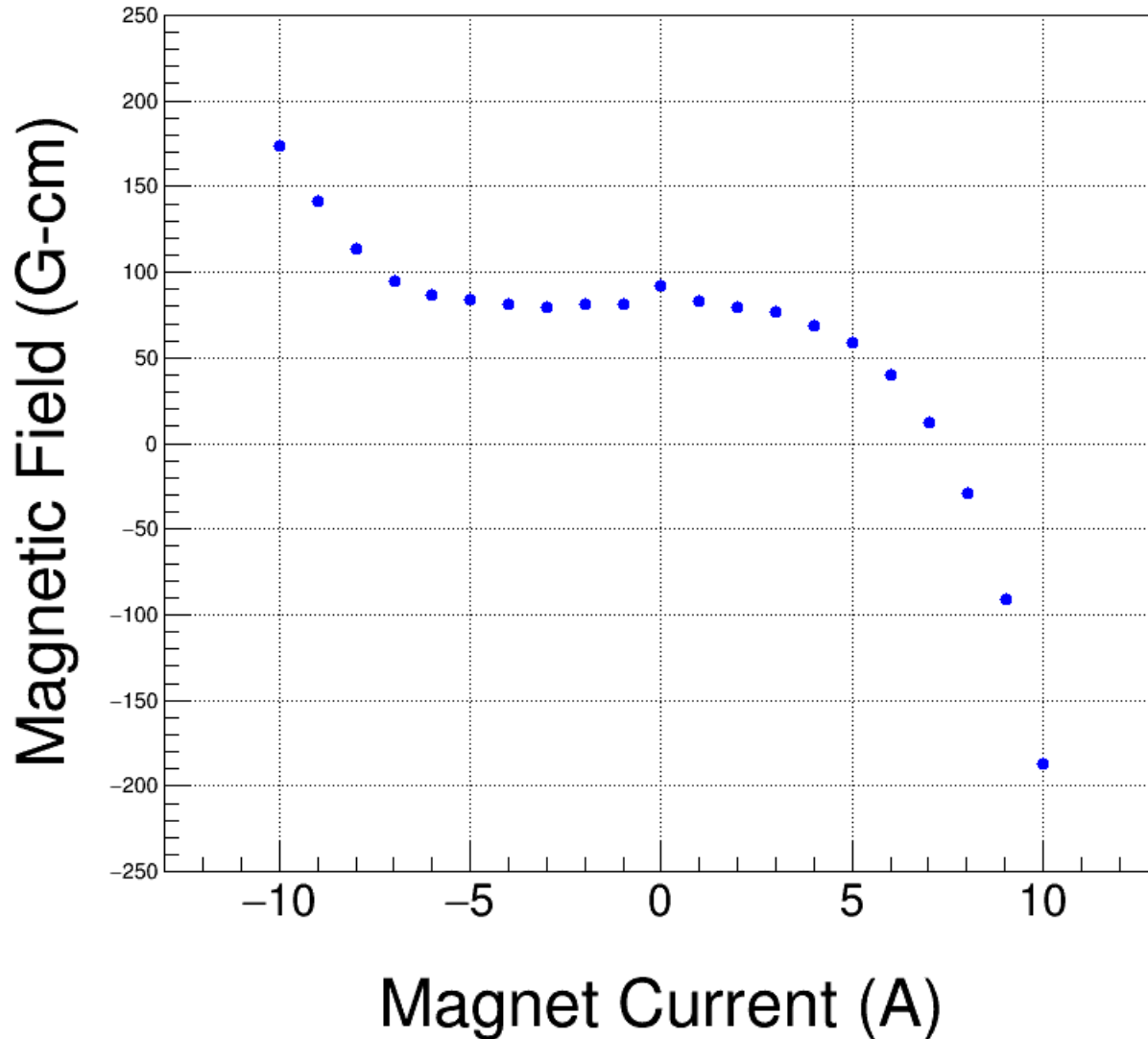
September 20, 2016

CEBAF DL MAGNET AT INJECTOR

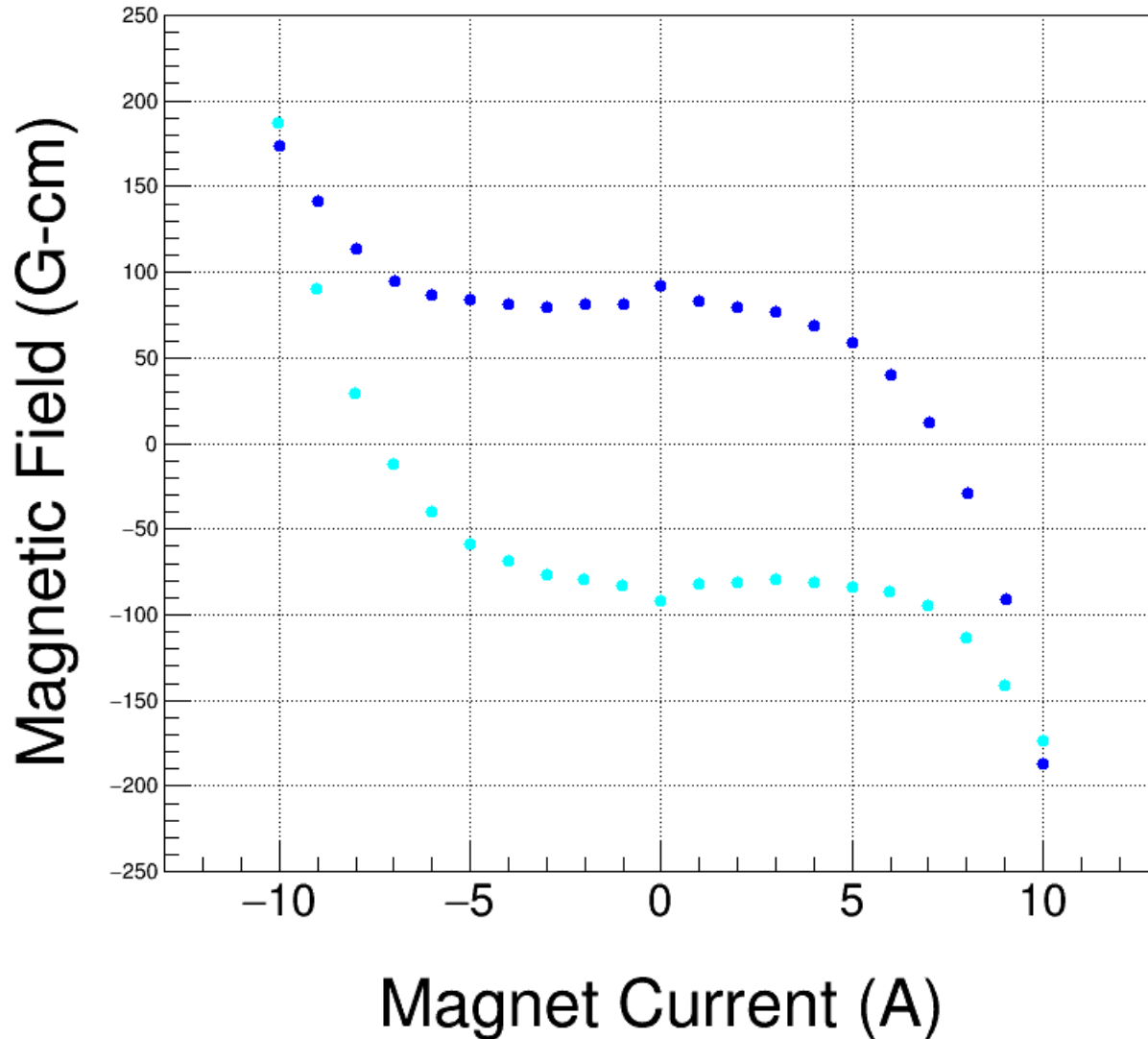
Field Map (27 G-cm Offset Subtracted)



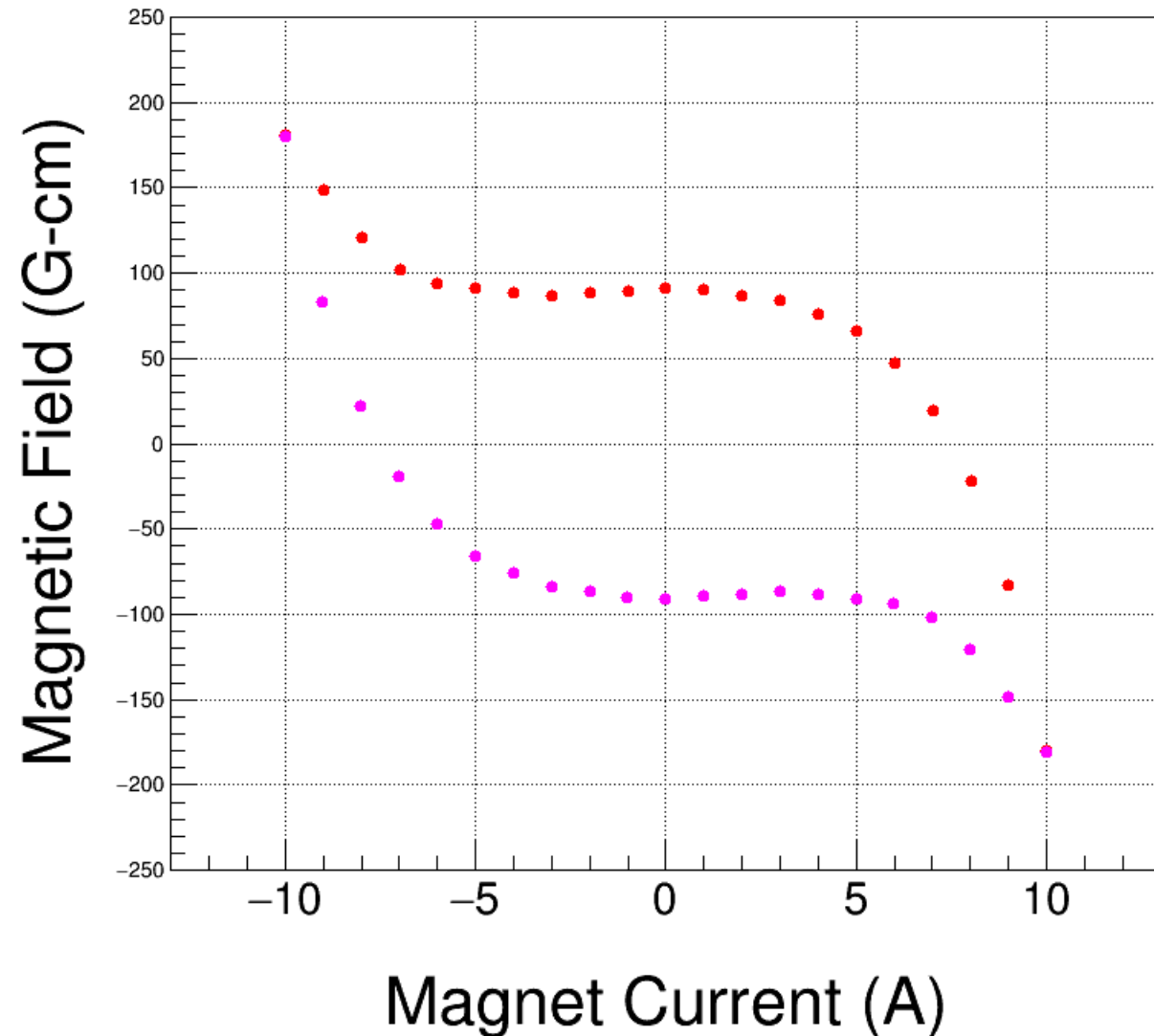
Field Map Residuals (Bdl-p1*I)



Hysteresis Loop



Modified Hysteresis Loop



Two
Modifications:

- I. Subtract 8 G-cm from $I=0$ Bdl
- II. Subtract 0.003 A from Magnet Current

Final New Field Map

Current (A) Strength (Gauss-cm)

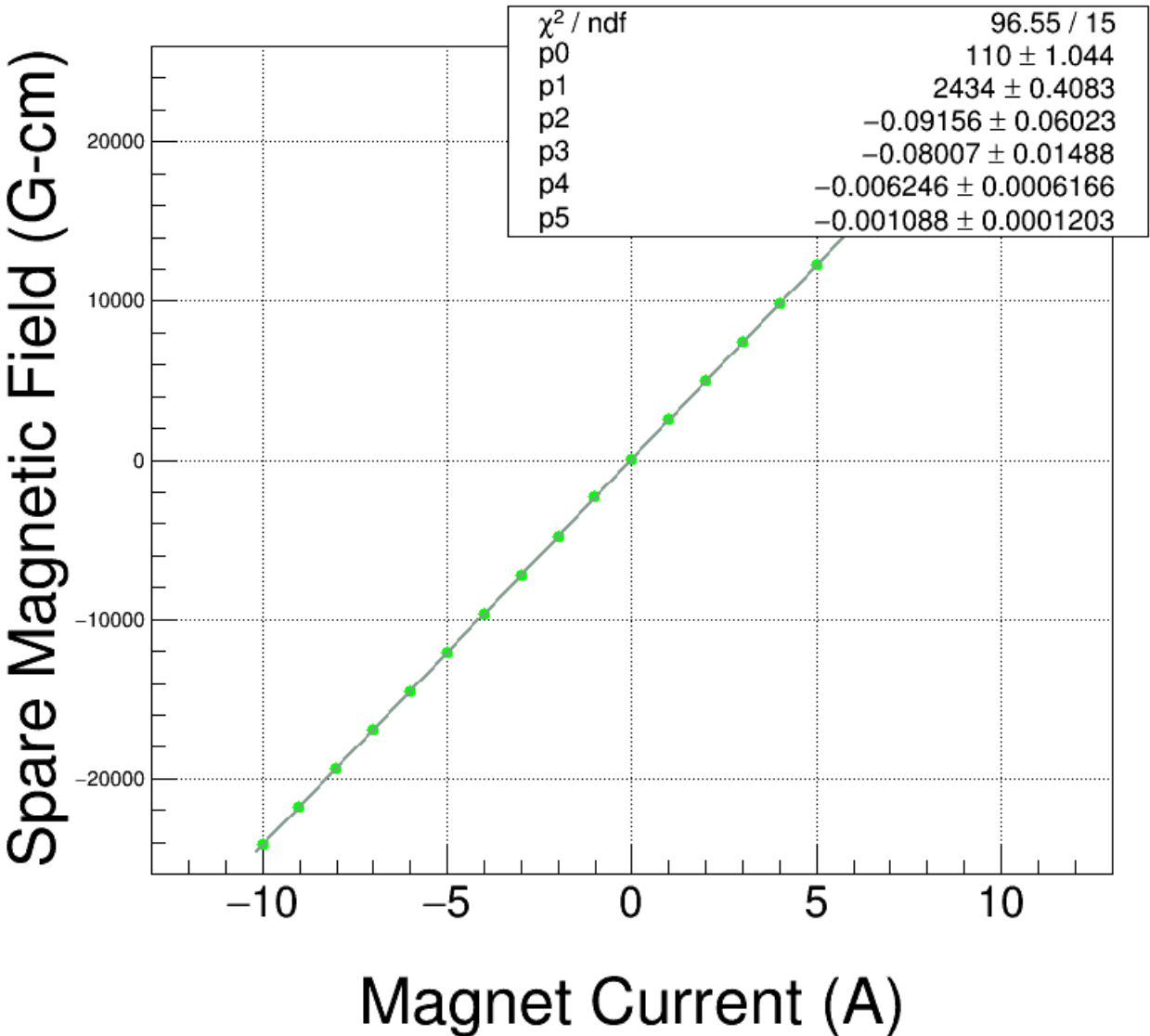
-9.995	-23971.2
-8.999	-21596.6
-7.994	-19196
-6.993	-16796.5
-5.993	-14387.7
-4.996	-11981.6
-3.997	-9569.8
-2.992	-7143.1
-1.992	-4725.2
-0.993	-2310.6
0	91
1.006	2521.4
2.006	4933.8
3.006	7347.6
4.007	9758.8
5.007	12165
6.007	14562.8
7.008	16953.4
8.01	19333.4
9.012	21693.5
10.011	24011.1

Modifications:

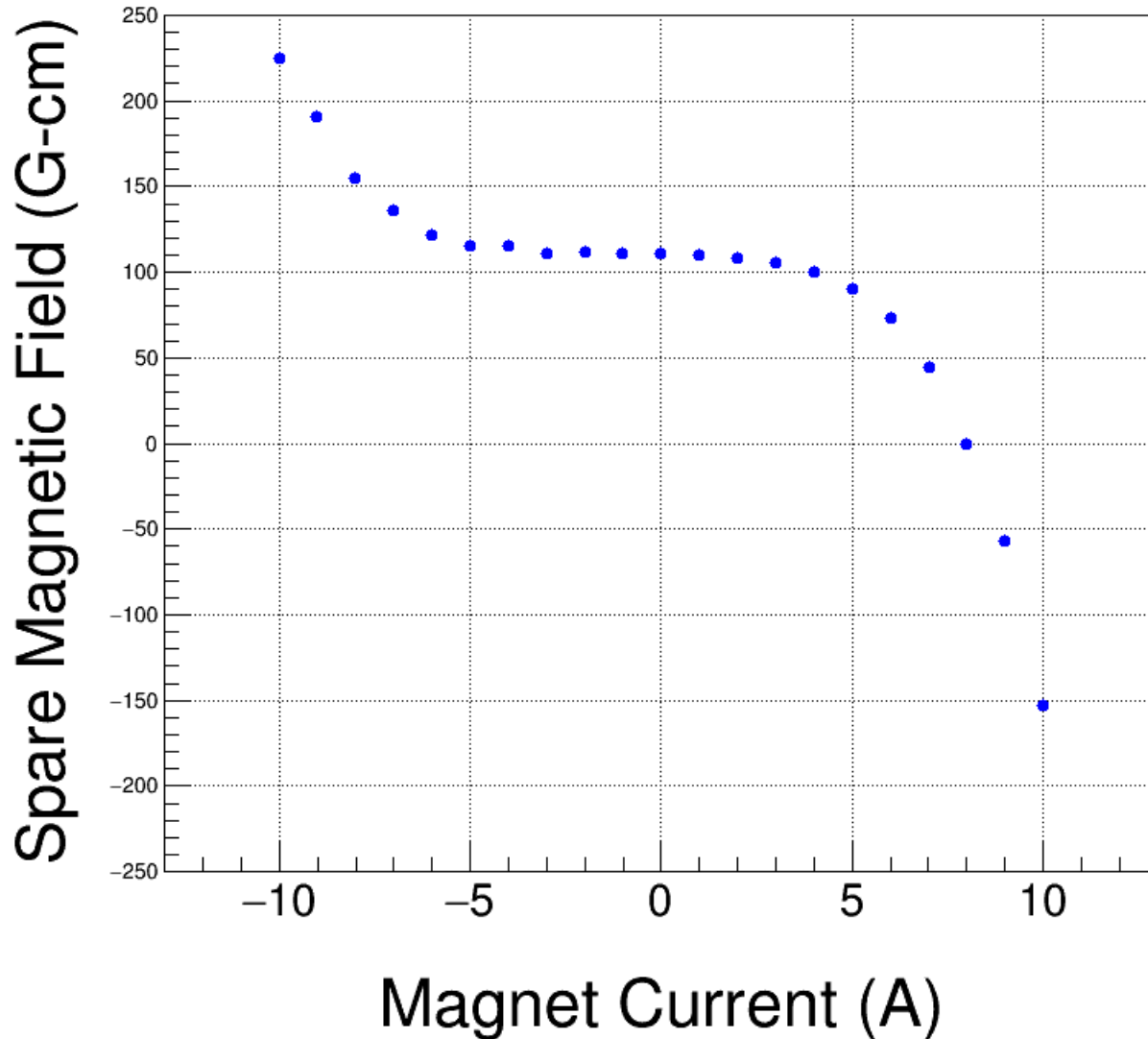
- I. Subtract environmental field offset of 27 G-cm
- II. Subtract 8 G-cm from I=0 Bdl
- III. Subtract 0.003 A offset from Magnet Current

SPARE DL MAGNET AT MMF

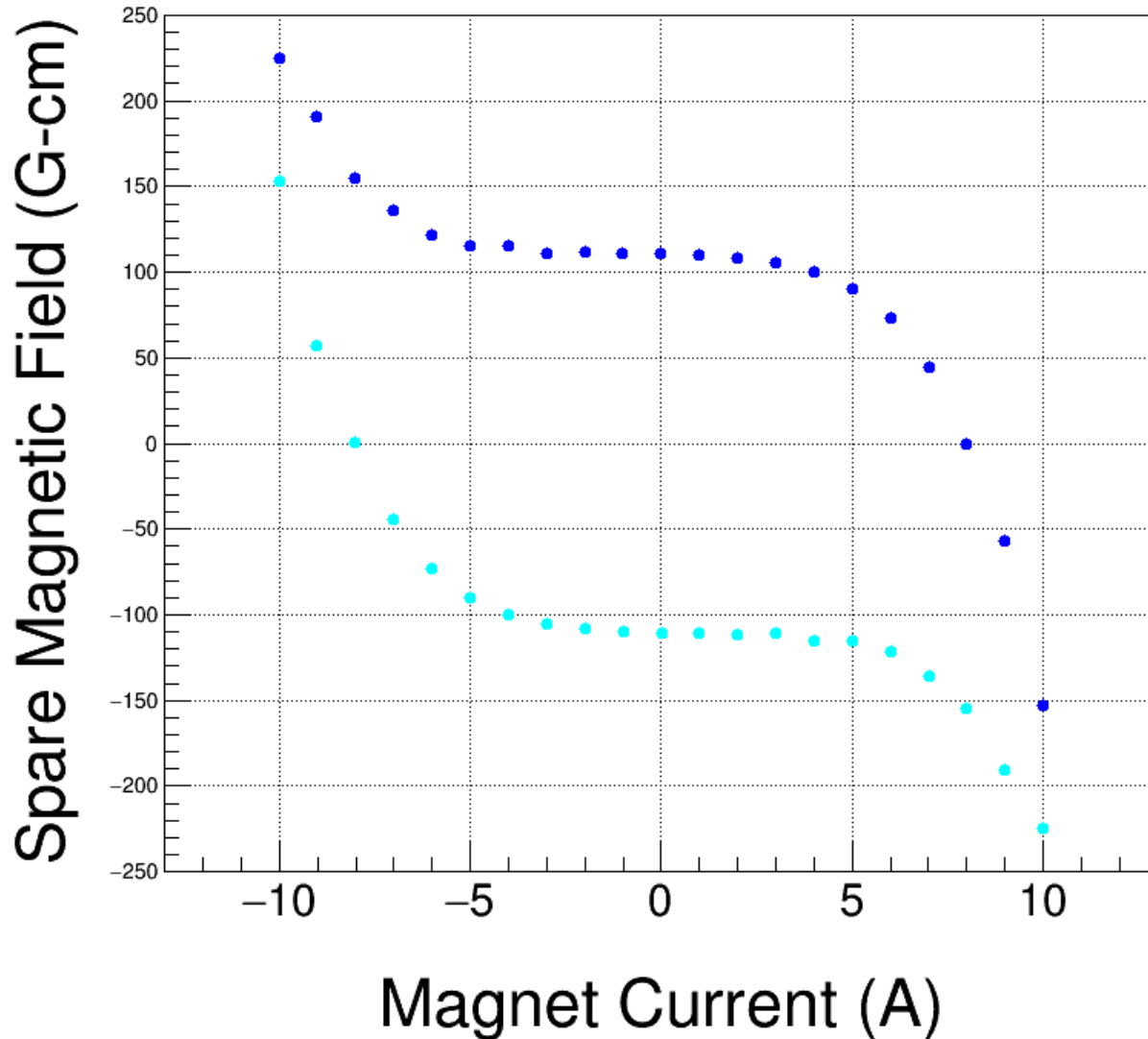
Field Map (49 G-cm Offset Subtracted)



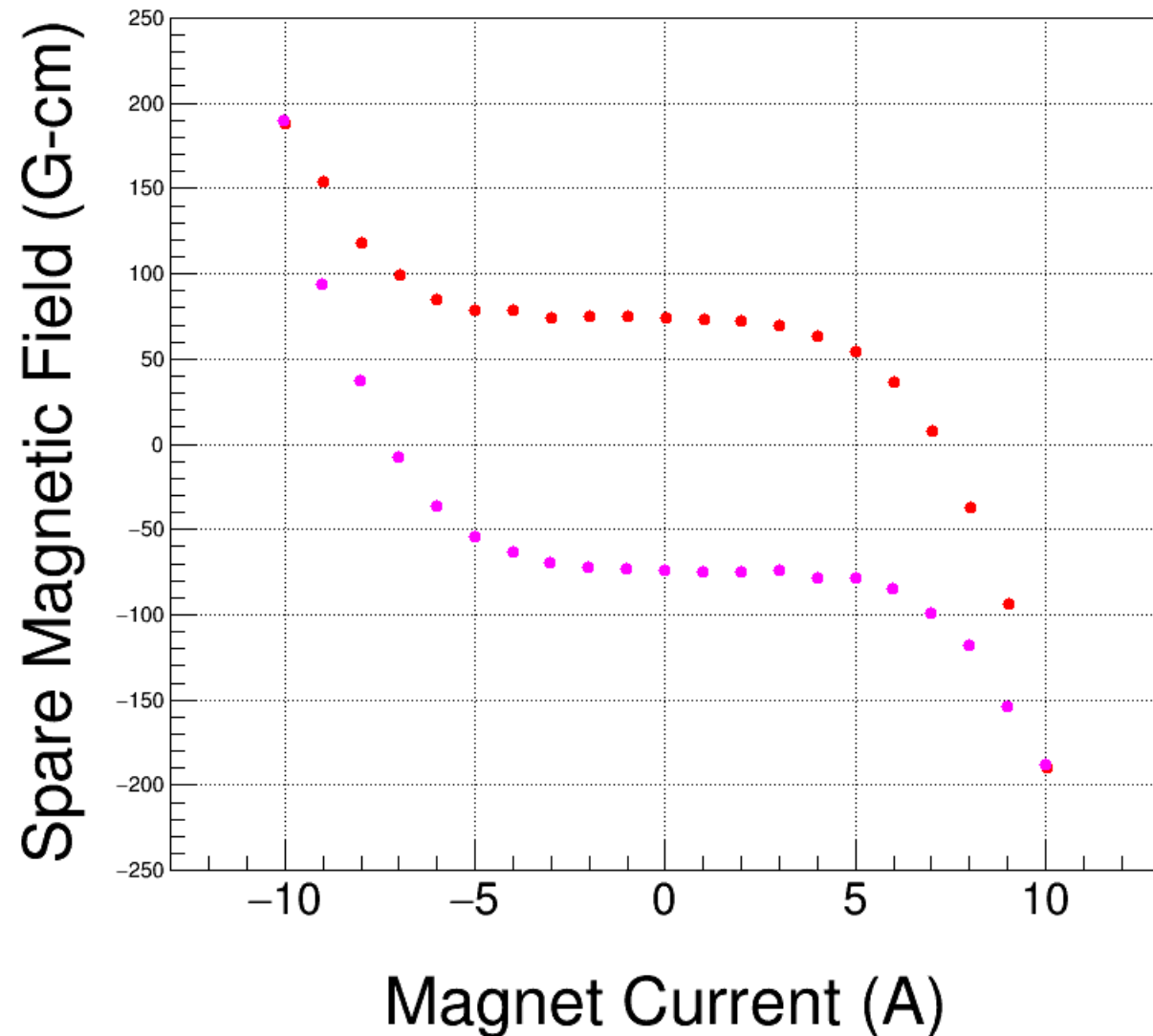
Field Map Residuals (Bdl-p1*I)



Hysteresis Loop



Modified Hysteresis Loop



One
Modifications:

- I. Add 0.015 A offset to Magnet Current

Summary

- I. Hysteresis loop study of CEBAF DL magnet showed:
 - I. Bdl abnormality at $I=0$. Fixed by subtracting 8 G-cm.
 - II. Magnet current during mapping was off by 0.003 A. Fixed by subtracting this offset from map current .
- II. Similar check for the spare DL, showed a 0.015 current offset
- III. Request to install new Field Map for CEBAF DL magnet