Magnet Update

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SoLID Collaboration Meeting

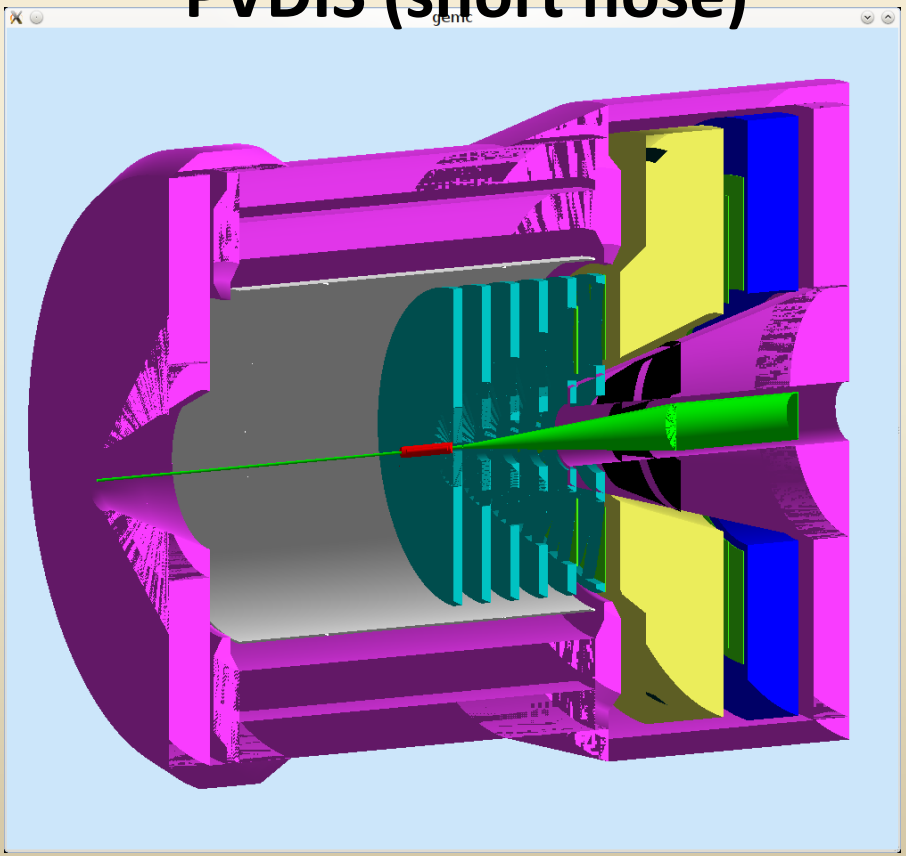
2012/04/13

Jefferson Lab

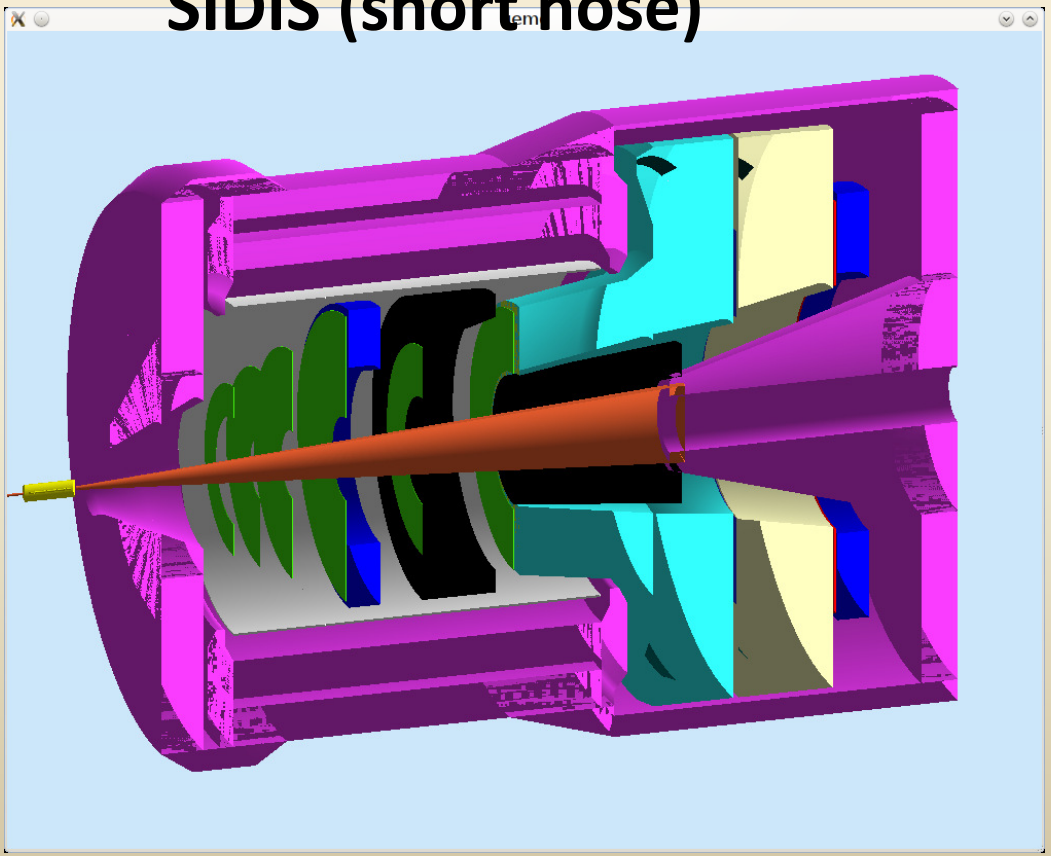
CLEOv6 with detectors

Only small change comparing to BaBar magnet, Including longer Cherenkov, longer EC, end cup radius reaching max allowed due to HallA beam line height about 10 feet

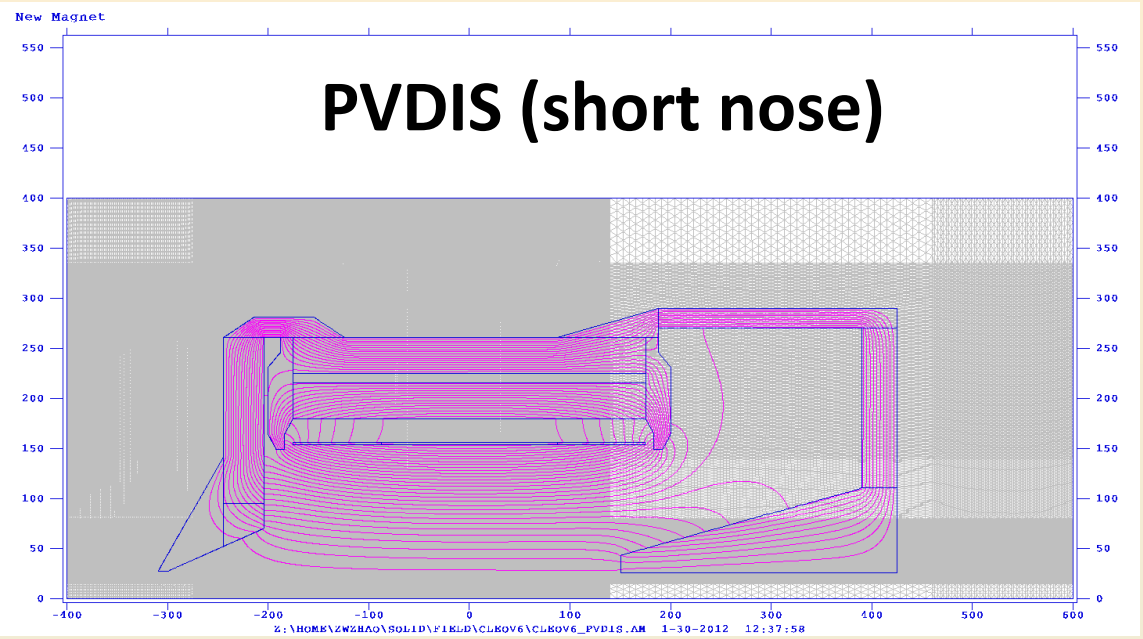
PVDIS (short nose)

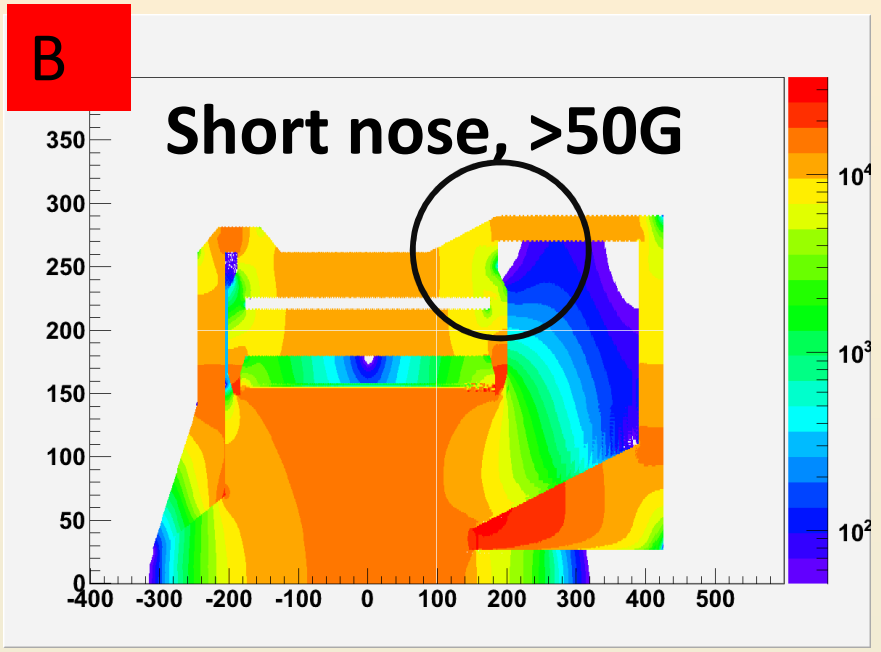


SIDIS (short nose)

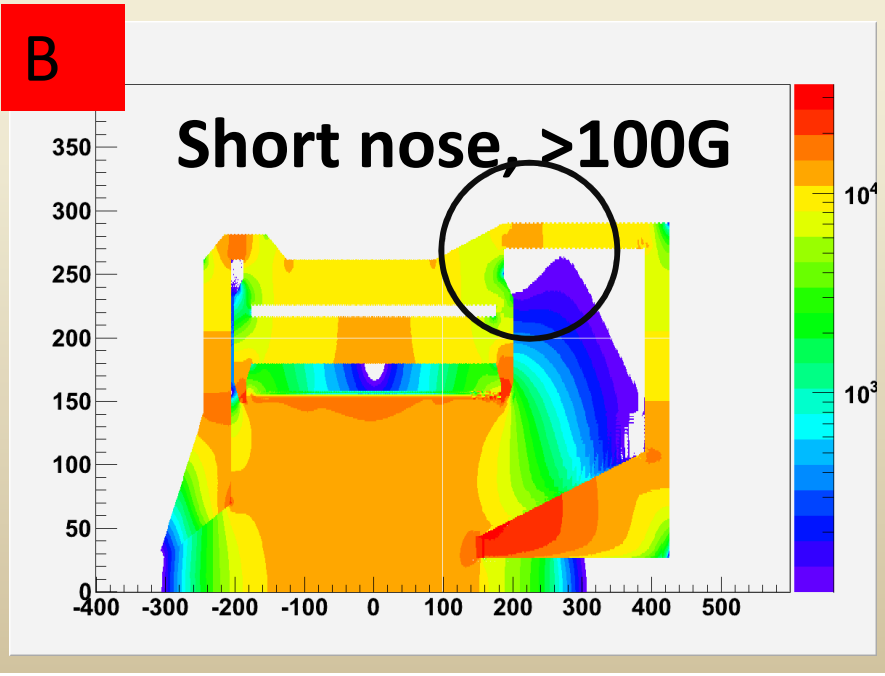


PVDIS

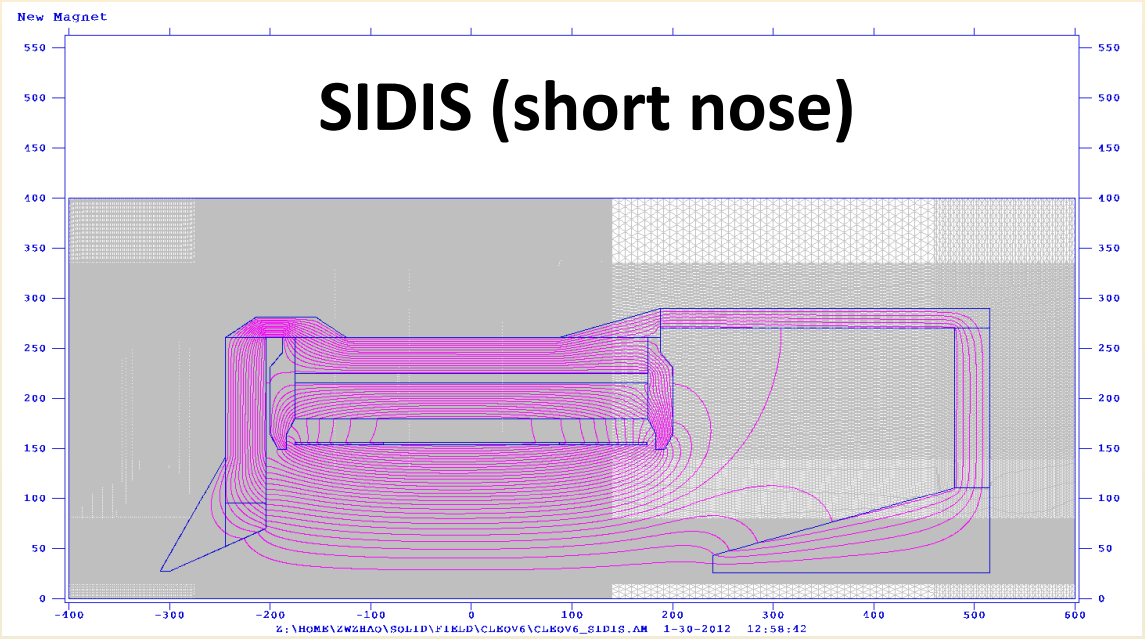


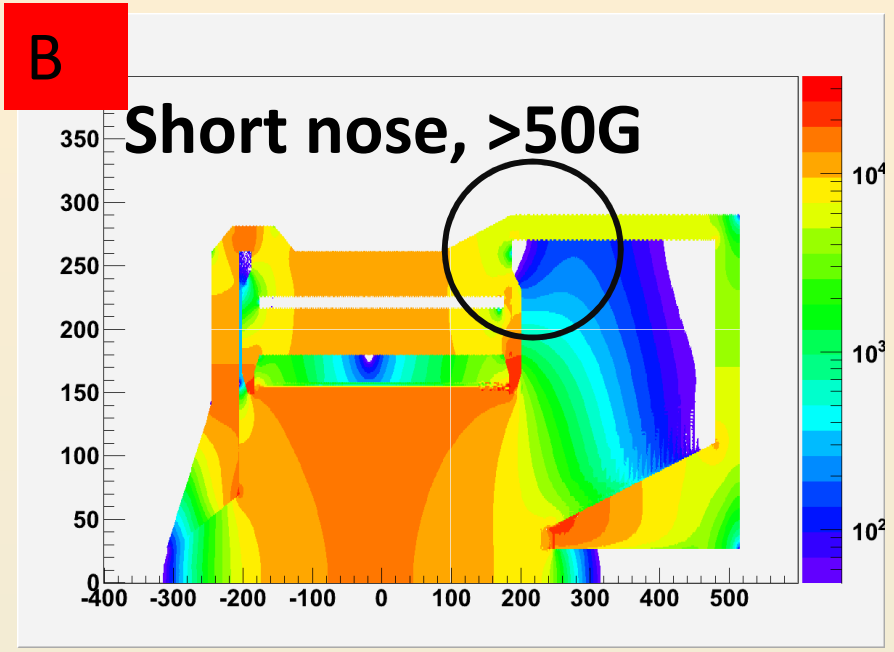


PVDIS has nose further into the solenoid to make field homogeneous at baffle region.

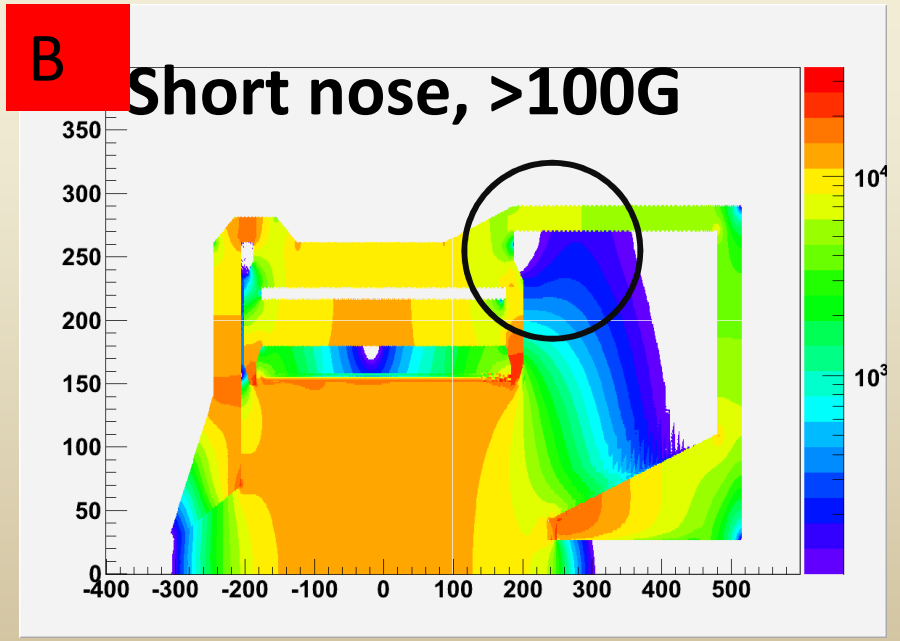


SIDIS



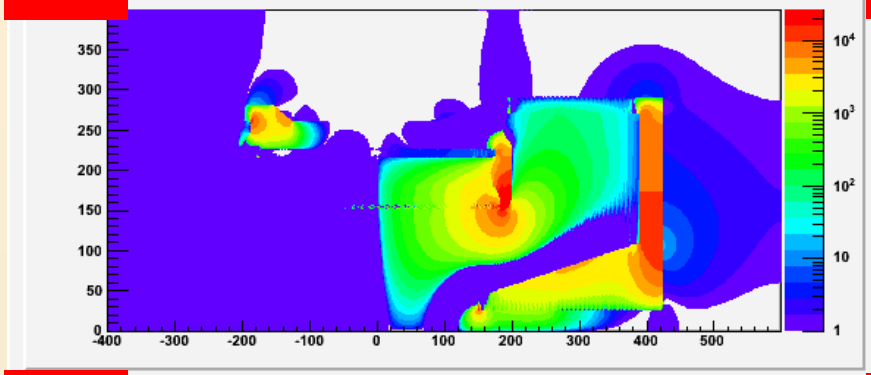


SIDIS has an additional 90cm wide donut shape which holds the heavy gas Cherenkov.

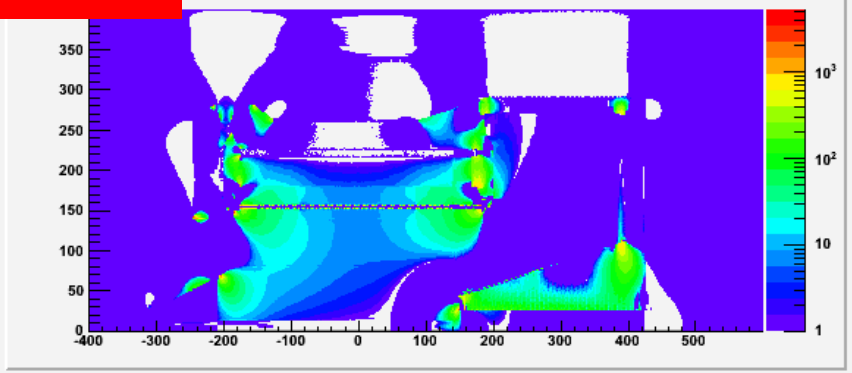


CLEOv6 PVDIS (short nose)

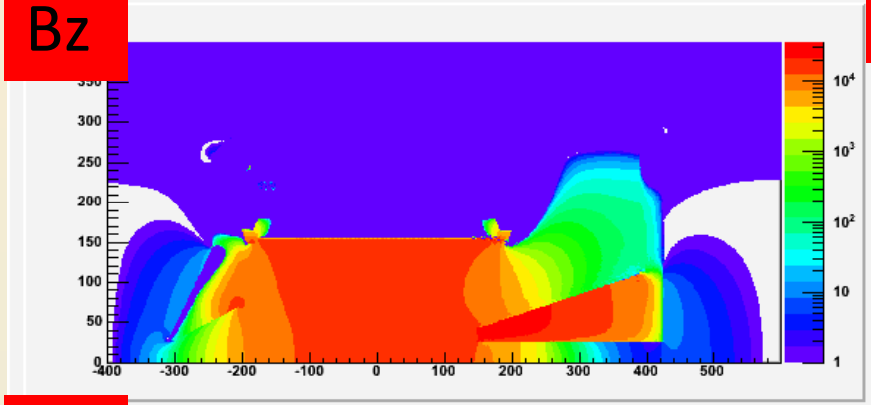
Br



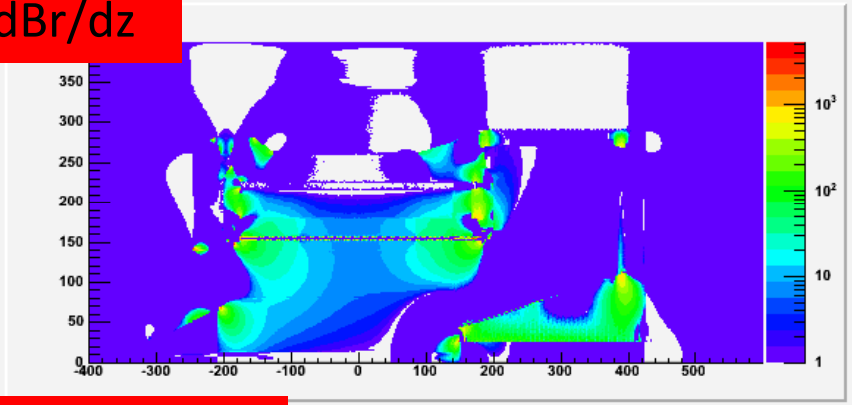
dBz/dz



Bz



dBr/dz



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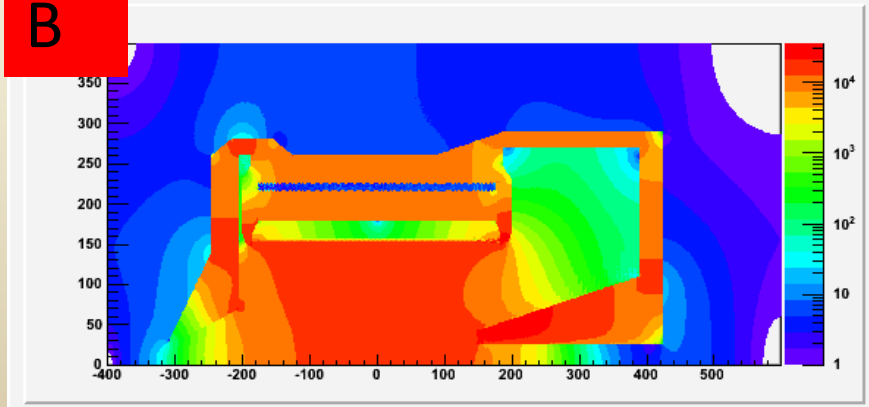
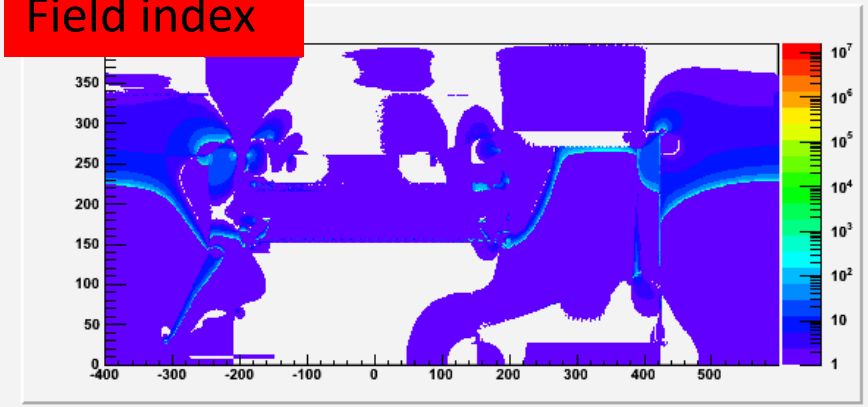
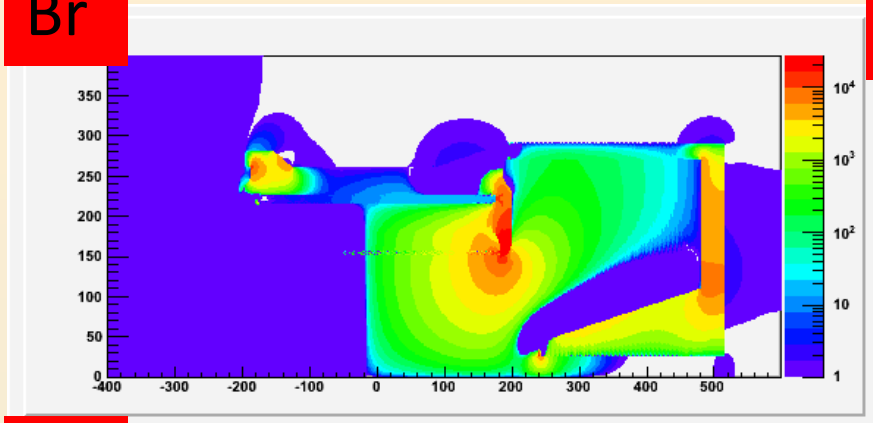


Field index

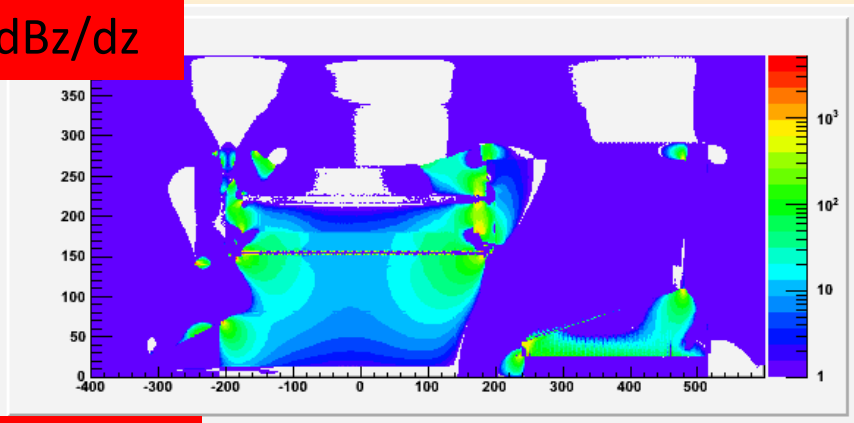


CLEOv6 SIDIS (short nose)

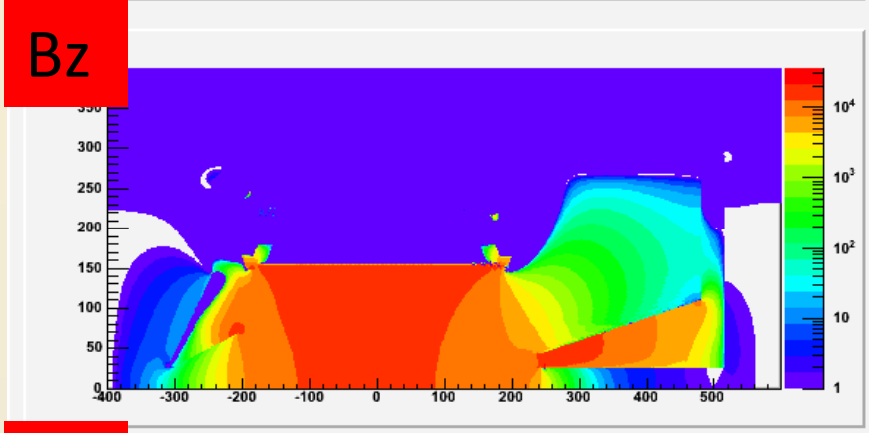
Br



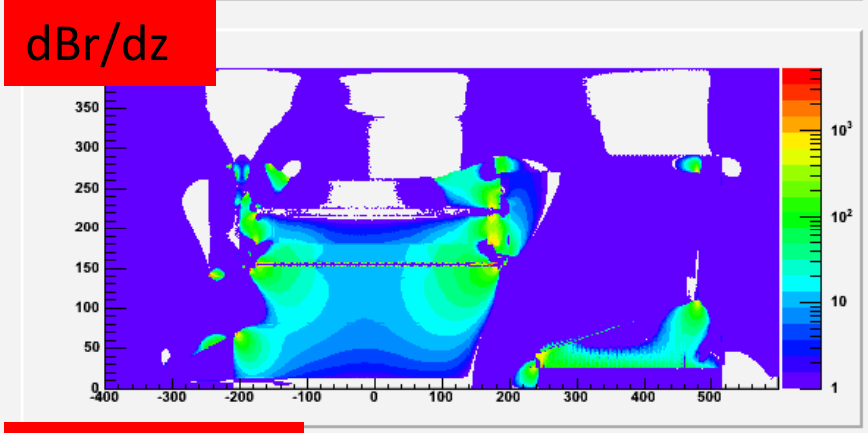
dBz/dz



Bz



dBr/dz



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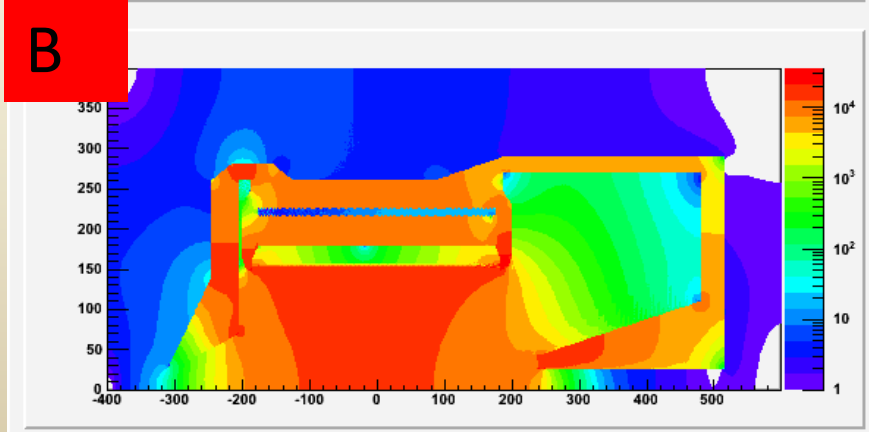
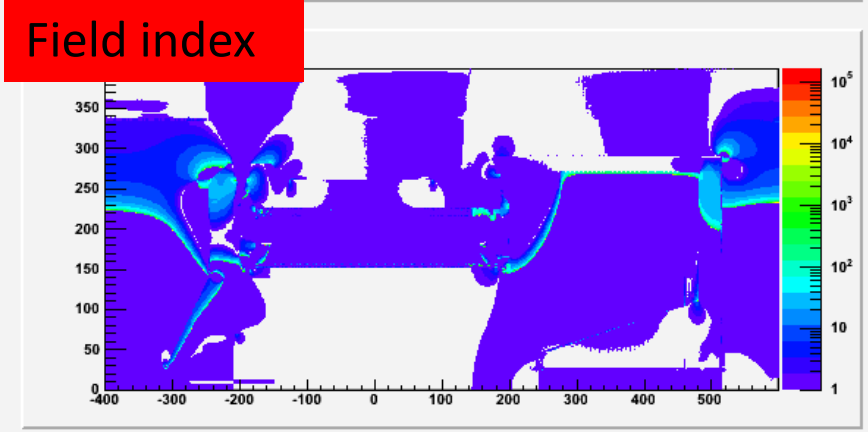
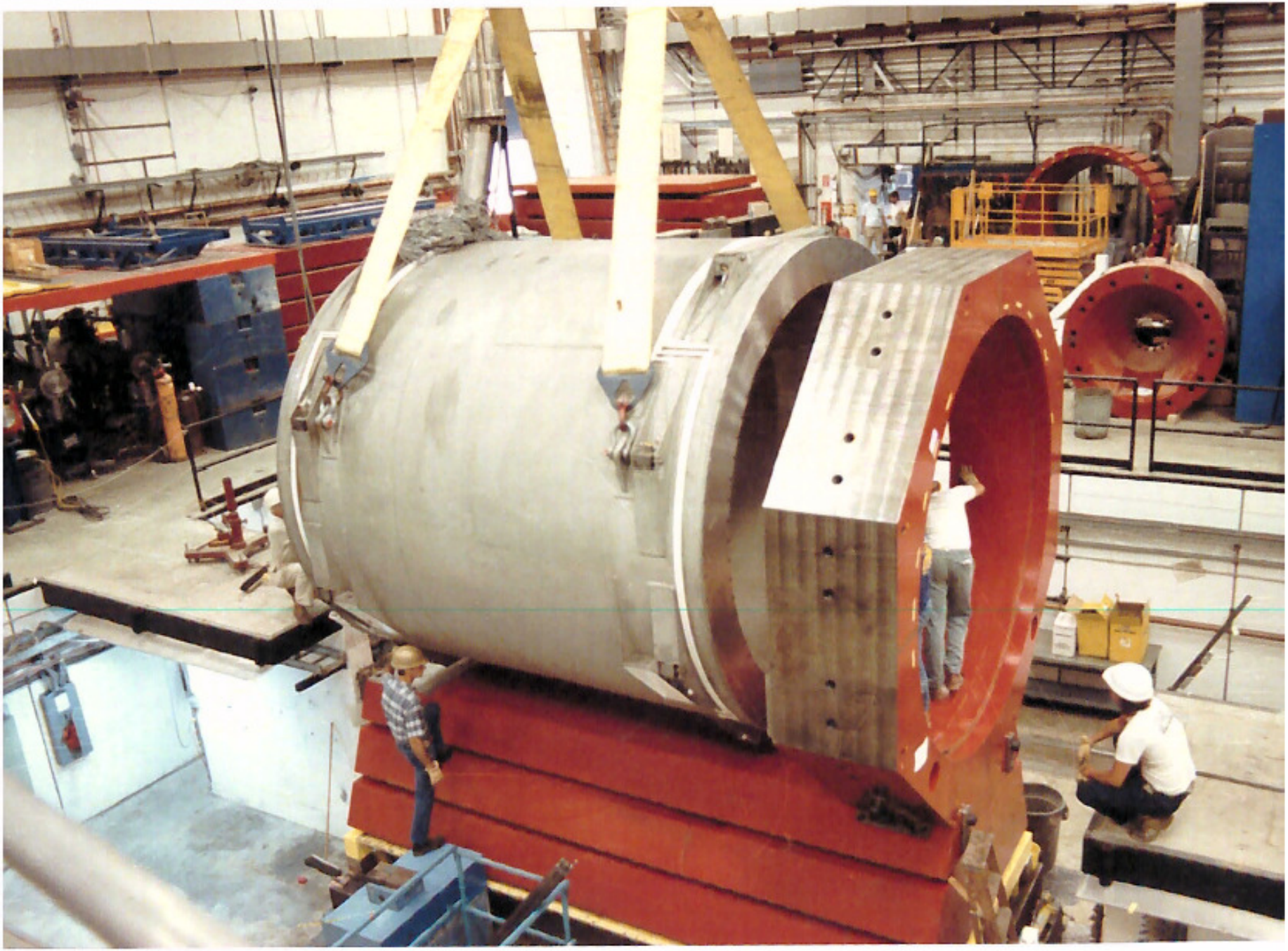


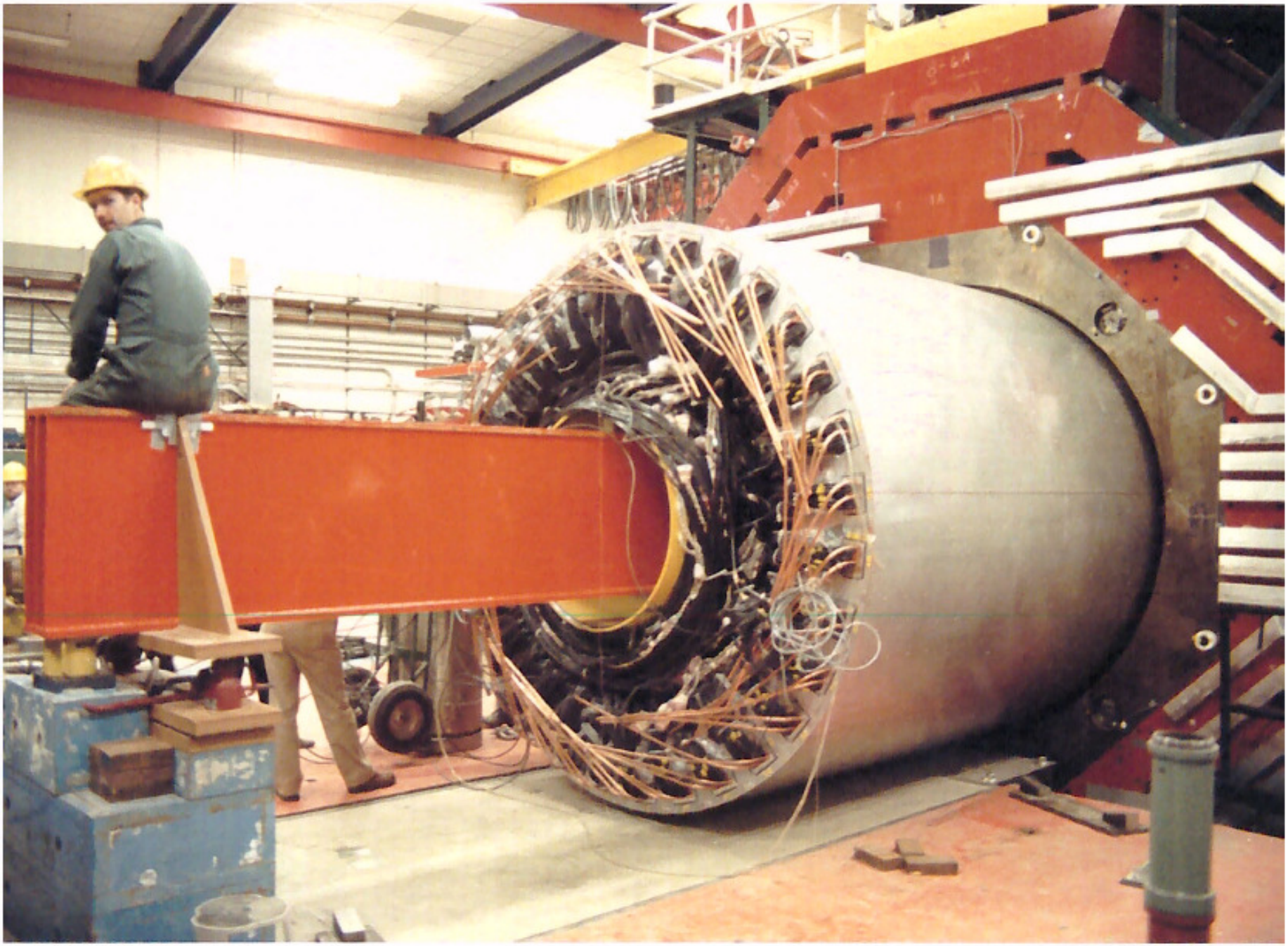
Field index



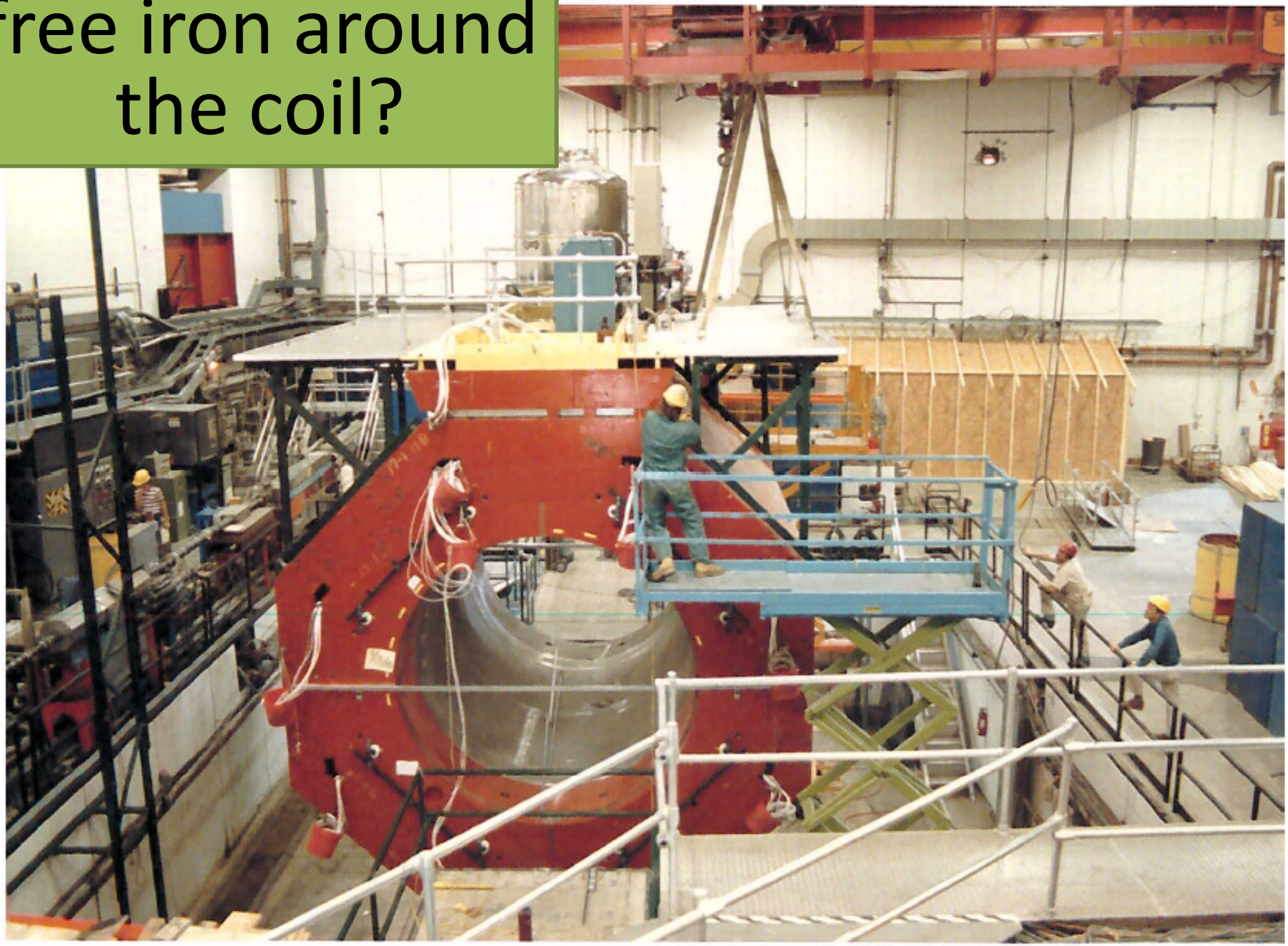
Summary

- CLEOv6 may small field at the region where Cherenkov detectors will be. We need to look at field strength relative to photon sensor orientation.
- CLEOv6 PVDIS has homogeneous region where the baffle is. We will test how BaBar baffle design give acceptance.
- Short nose has better homogeneous region around baffle and better force balance than long nose.
- The large Br could be a concern for the GEM, we need to look into it.
- Magnetic Force and supporting structure need to be checked to make sure it's ok for engineering.
- Use CLEO iron around coil , then make our front and end cups?



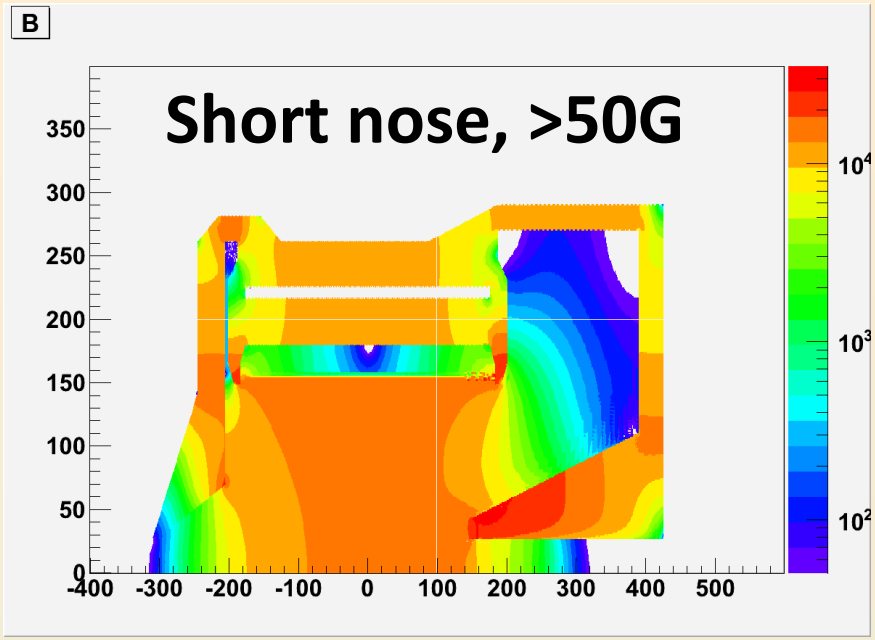


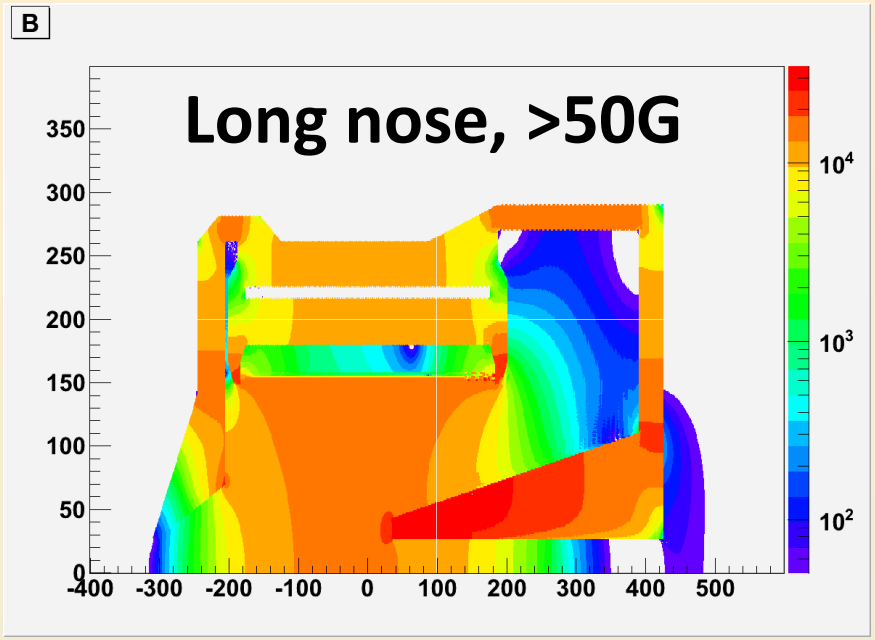
free iron around the coil?

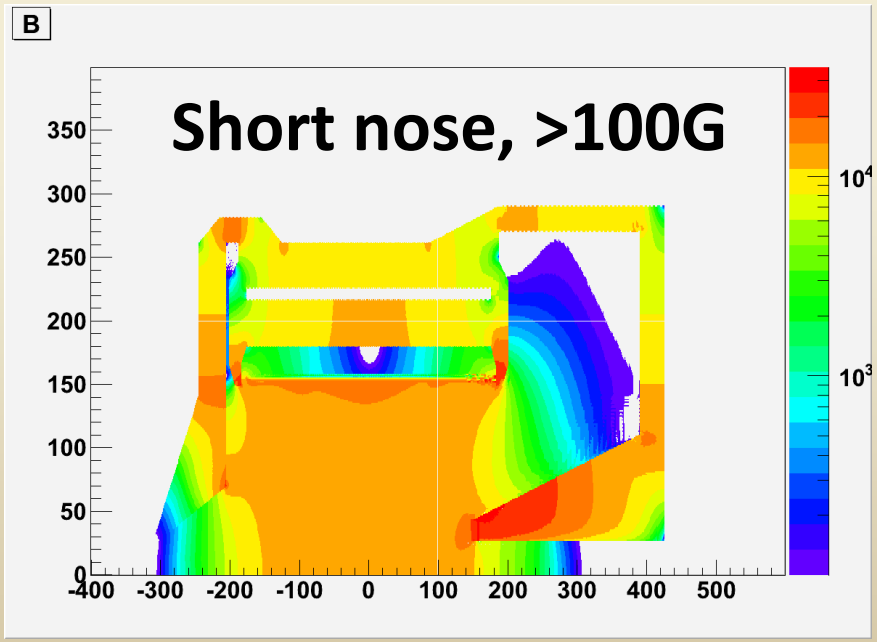


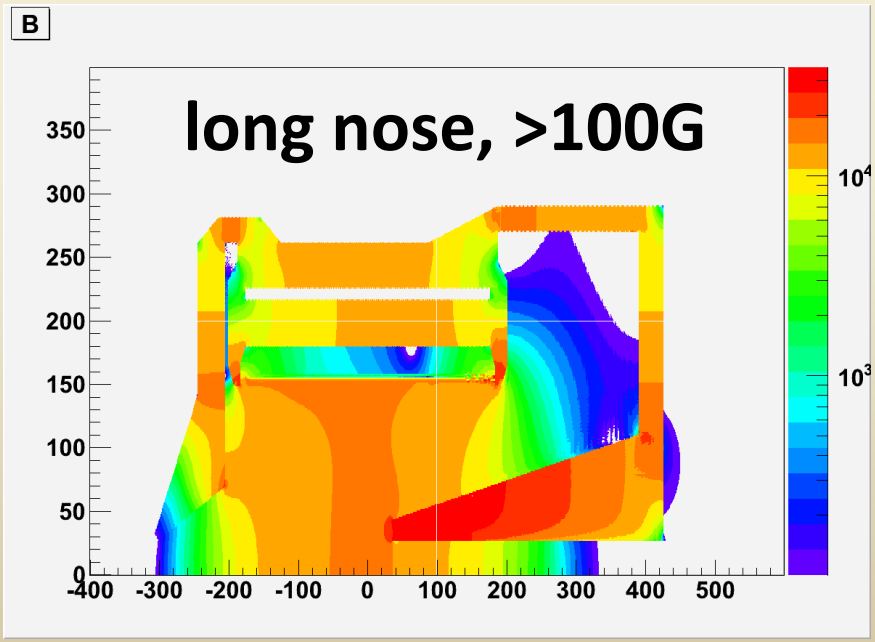
backup

CLEOv6 PVDIS

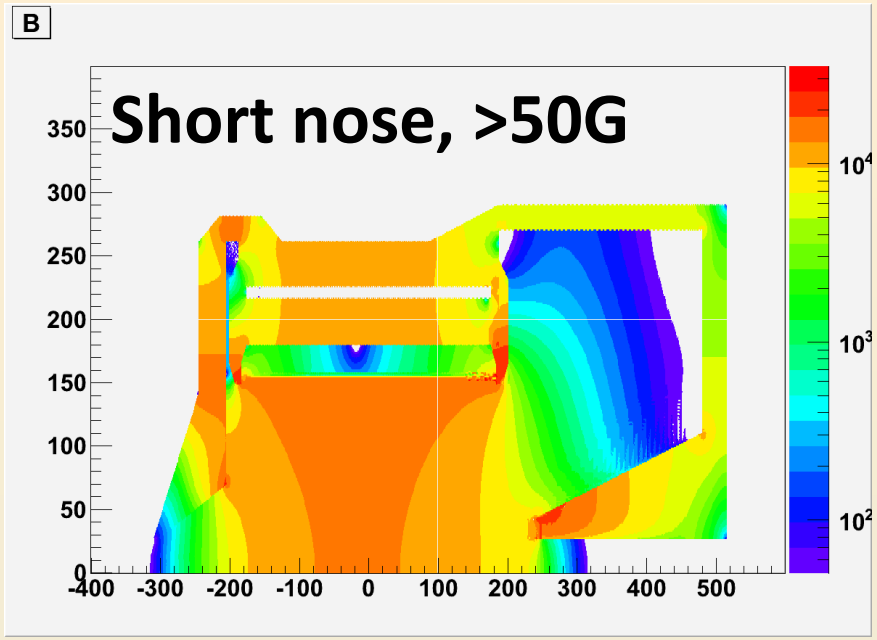


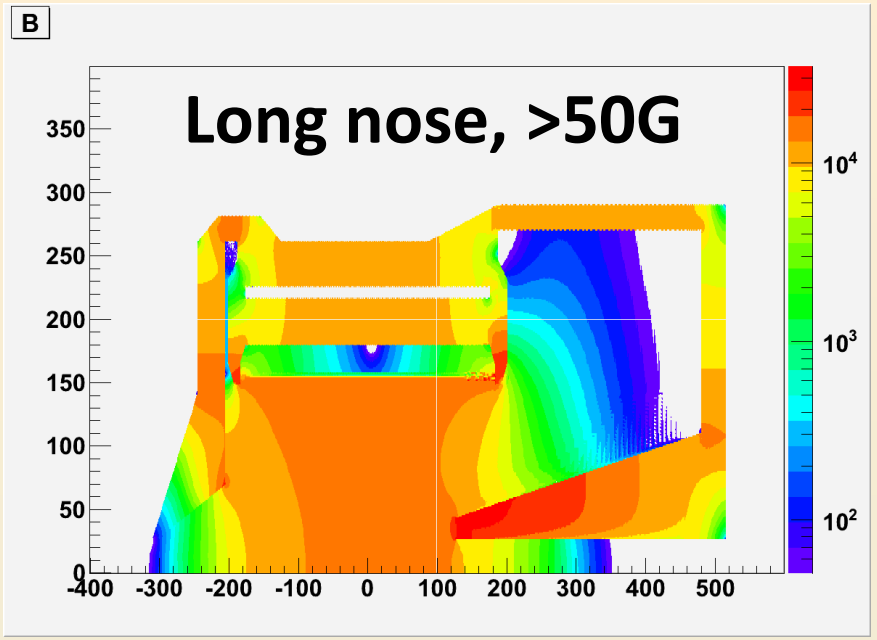


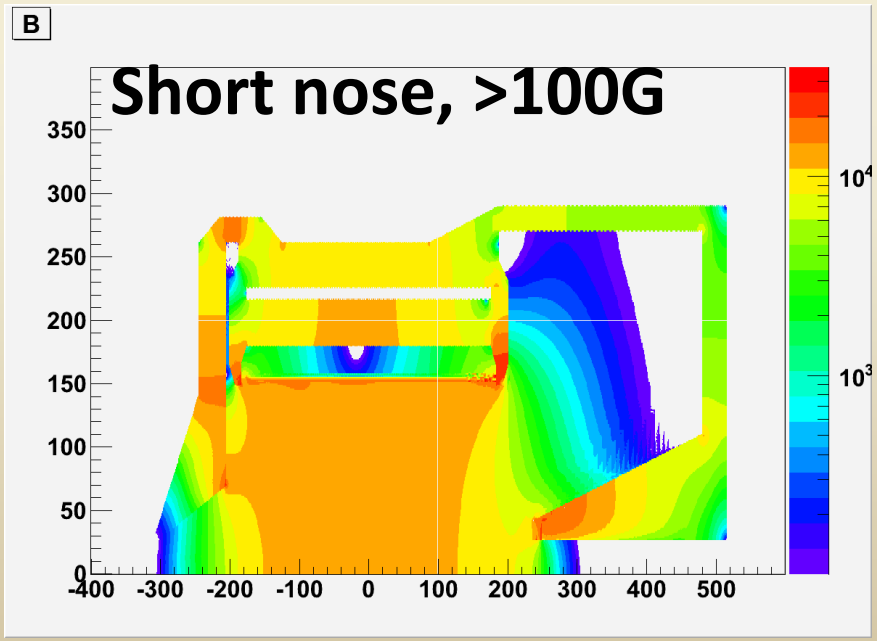


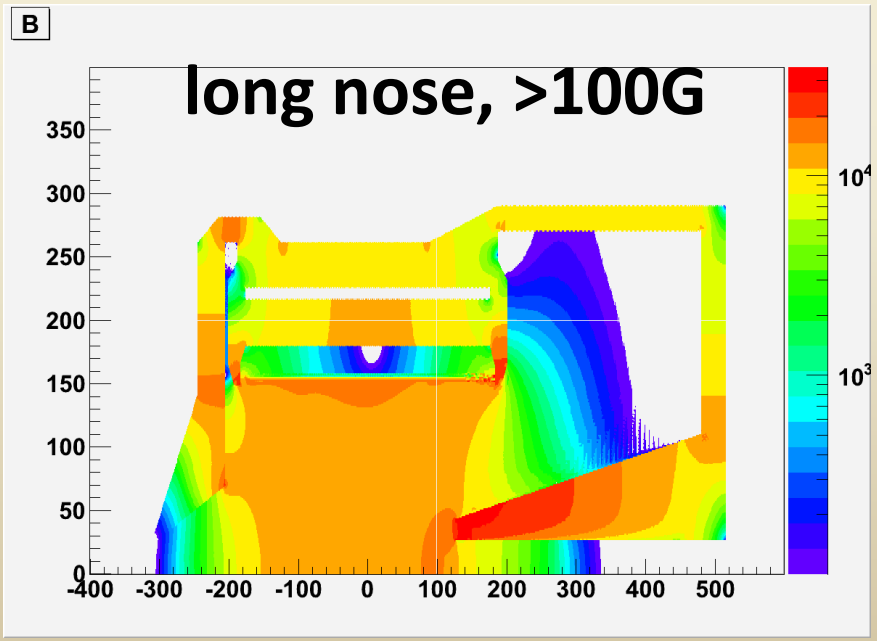


CLEOv6 SIDIS

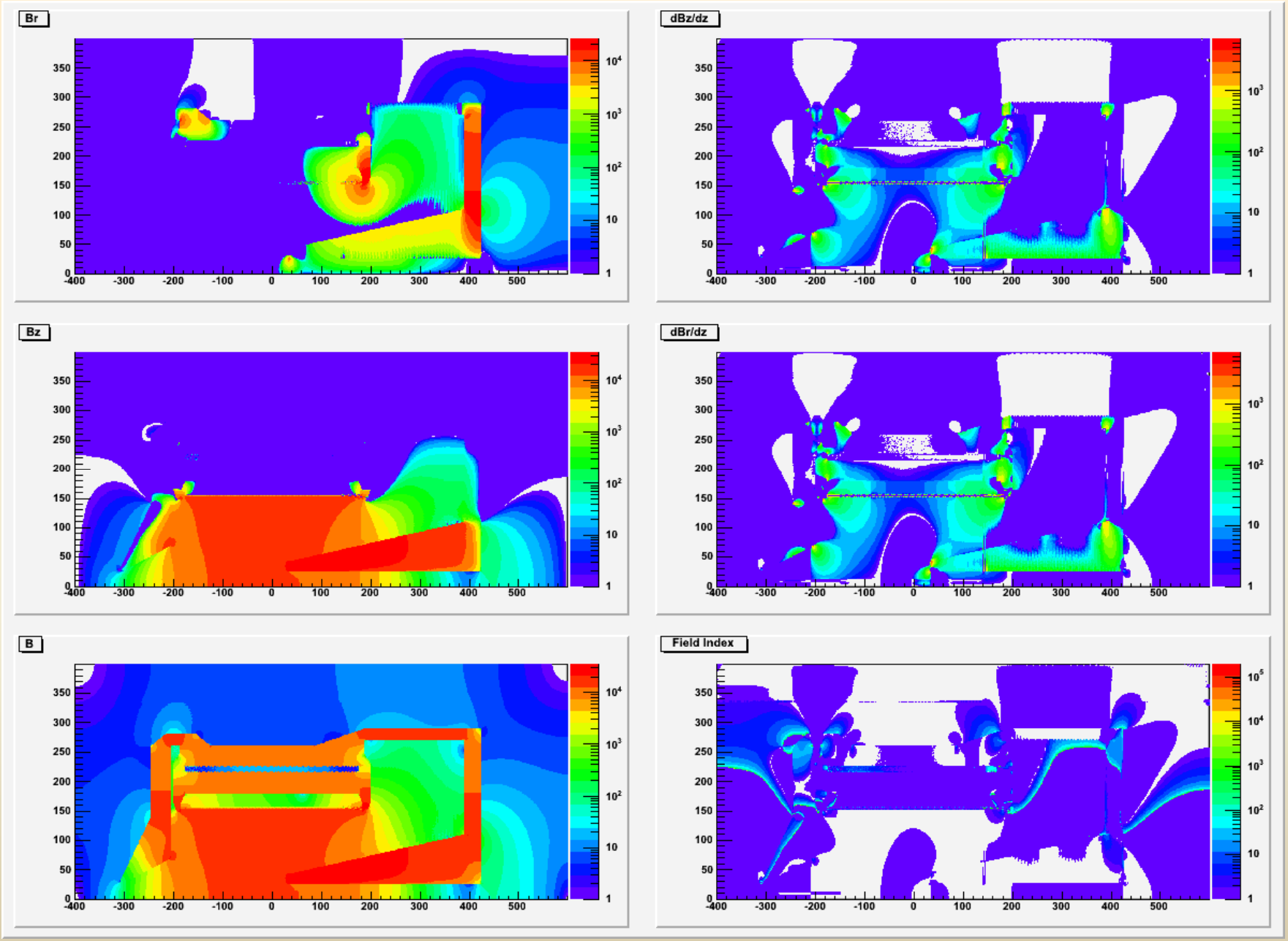




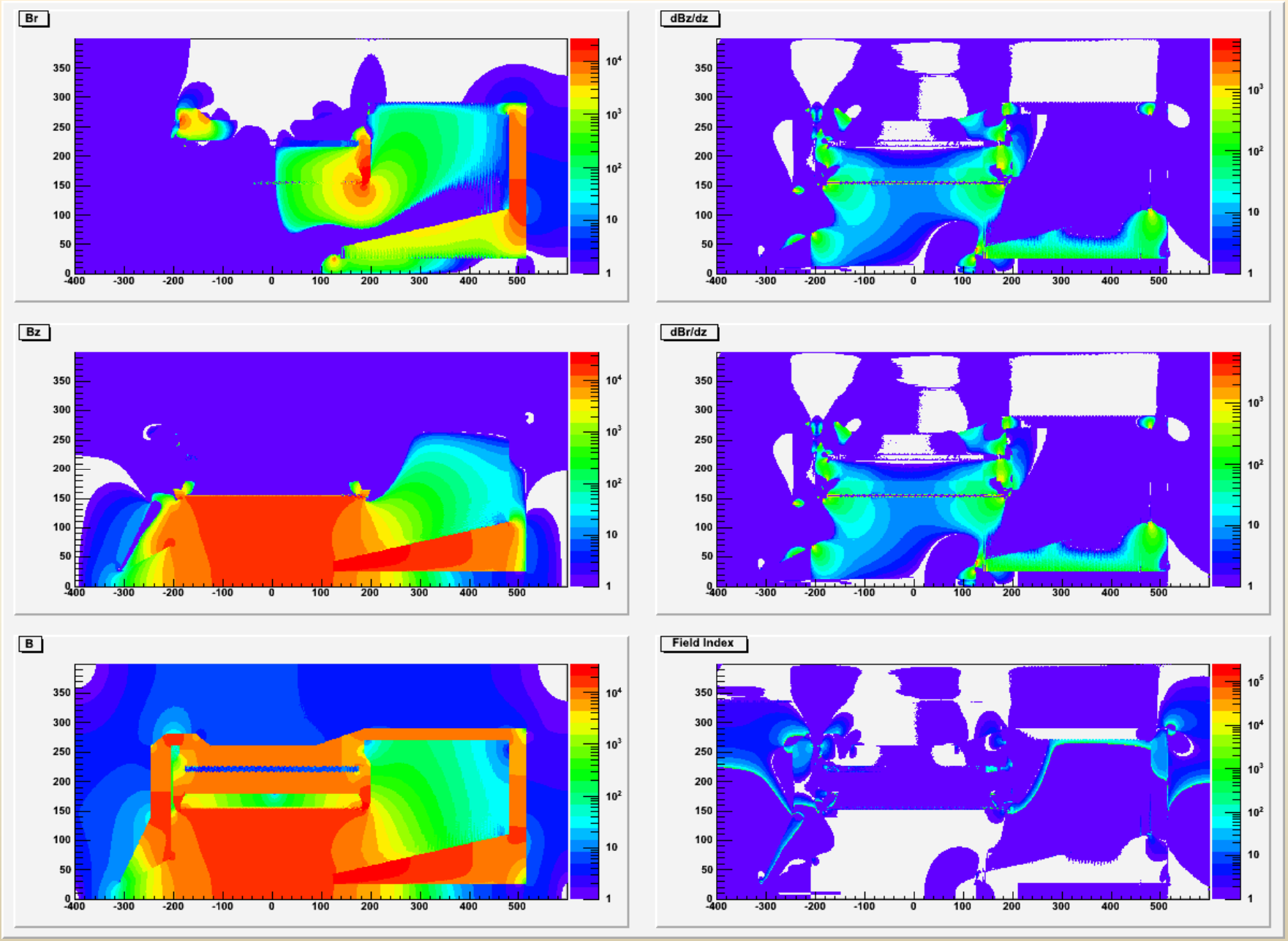




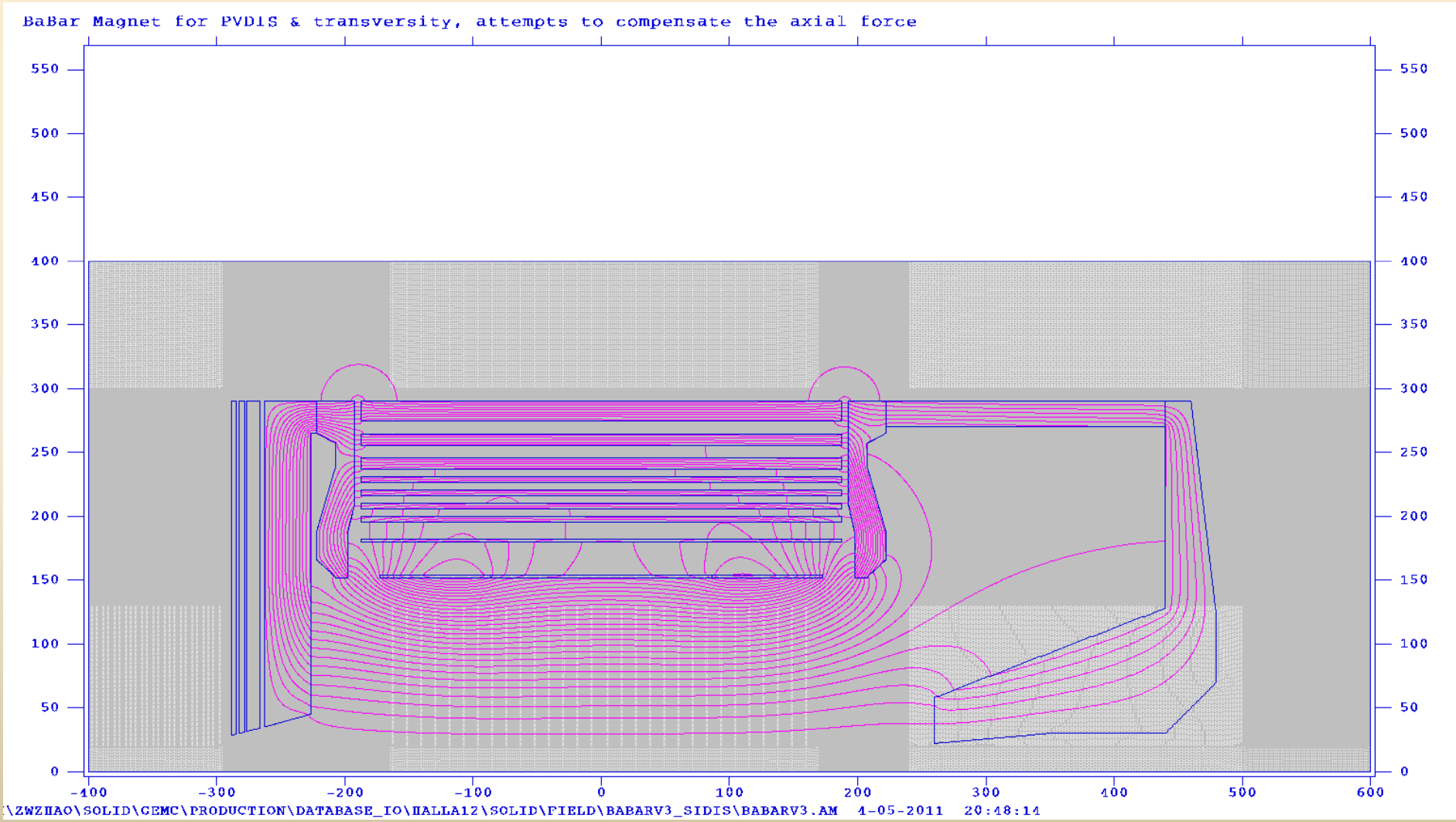
CLEOv6 PVDIS (long nose)



CLEOv6 SIDIS (long nose)



BABARv4


BaBar Magnet for PVDIS & transversity, attempts to compensate the axial force
550
500
450
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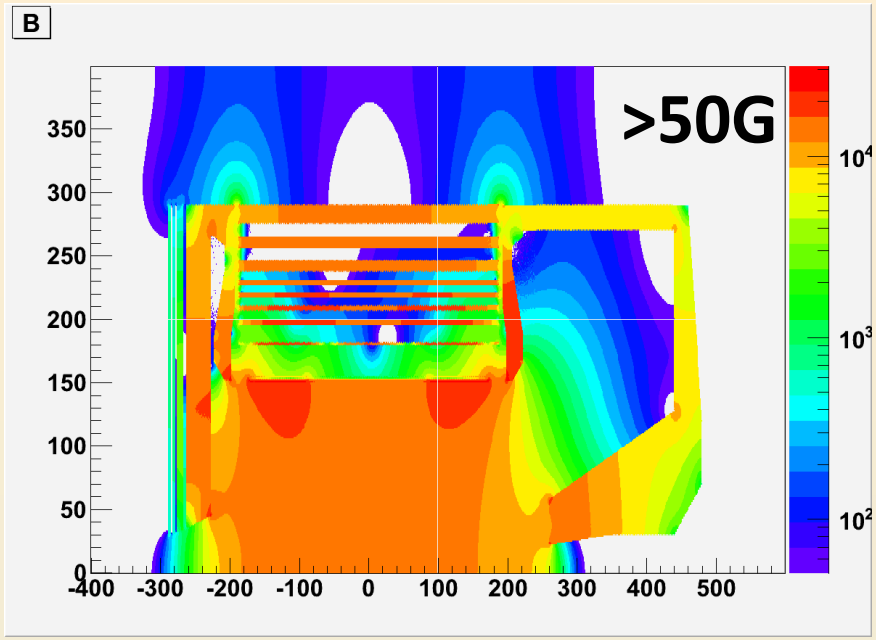
\ZWZHAO\SOLID\GEMC\PRODUCTION\DATABASE_IO\HALLA12\SOLID\FIELD\BABARV3_SIDIS\BABARV3.AM 4-05-2011 20:48:14

BABARv4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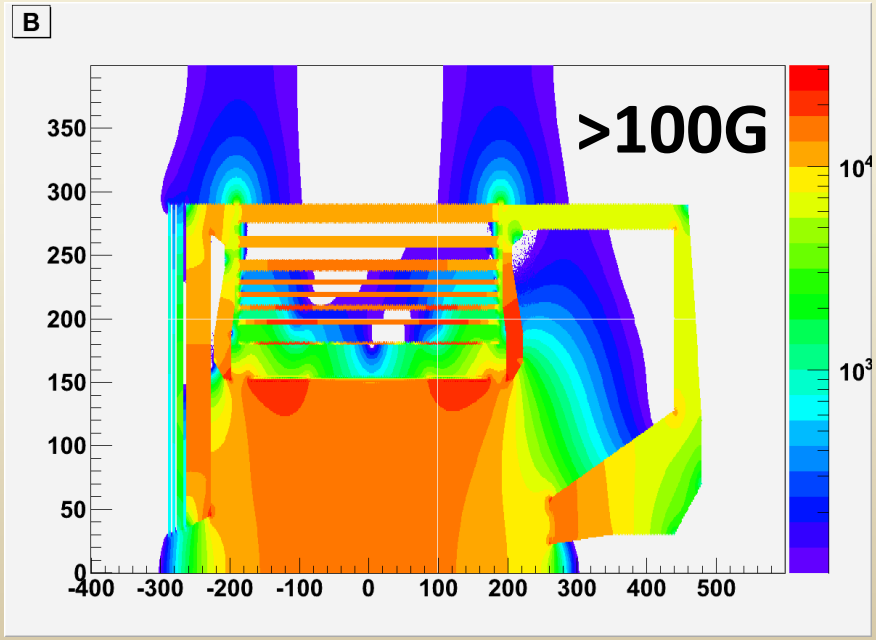
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10^4
10^3

BABARv4