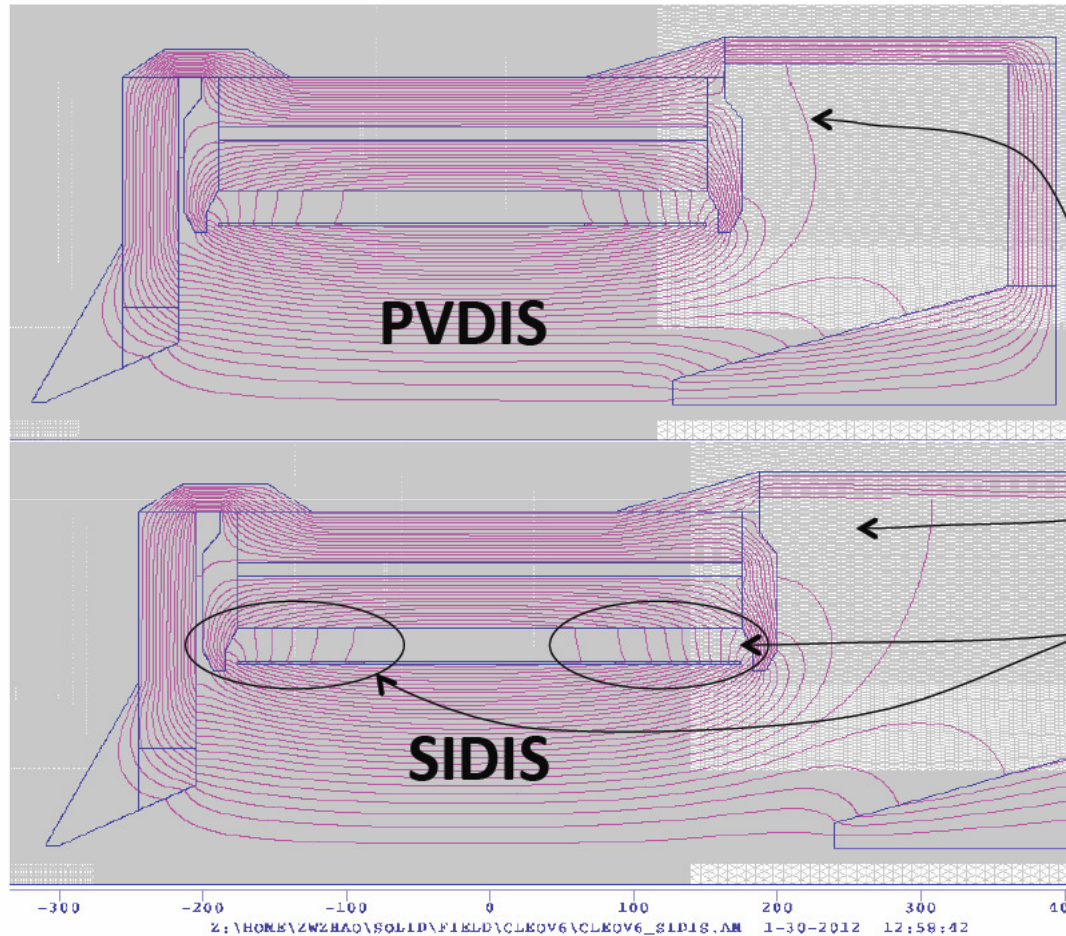


# CLEO Magnet and Yoke

Zhiwen Zhao

# Field Map

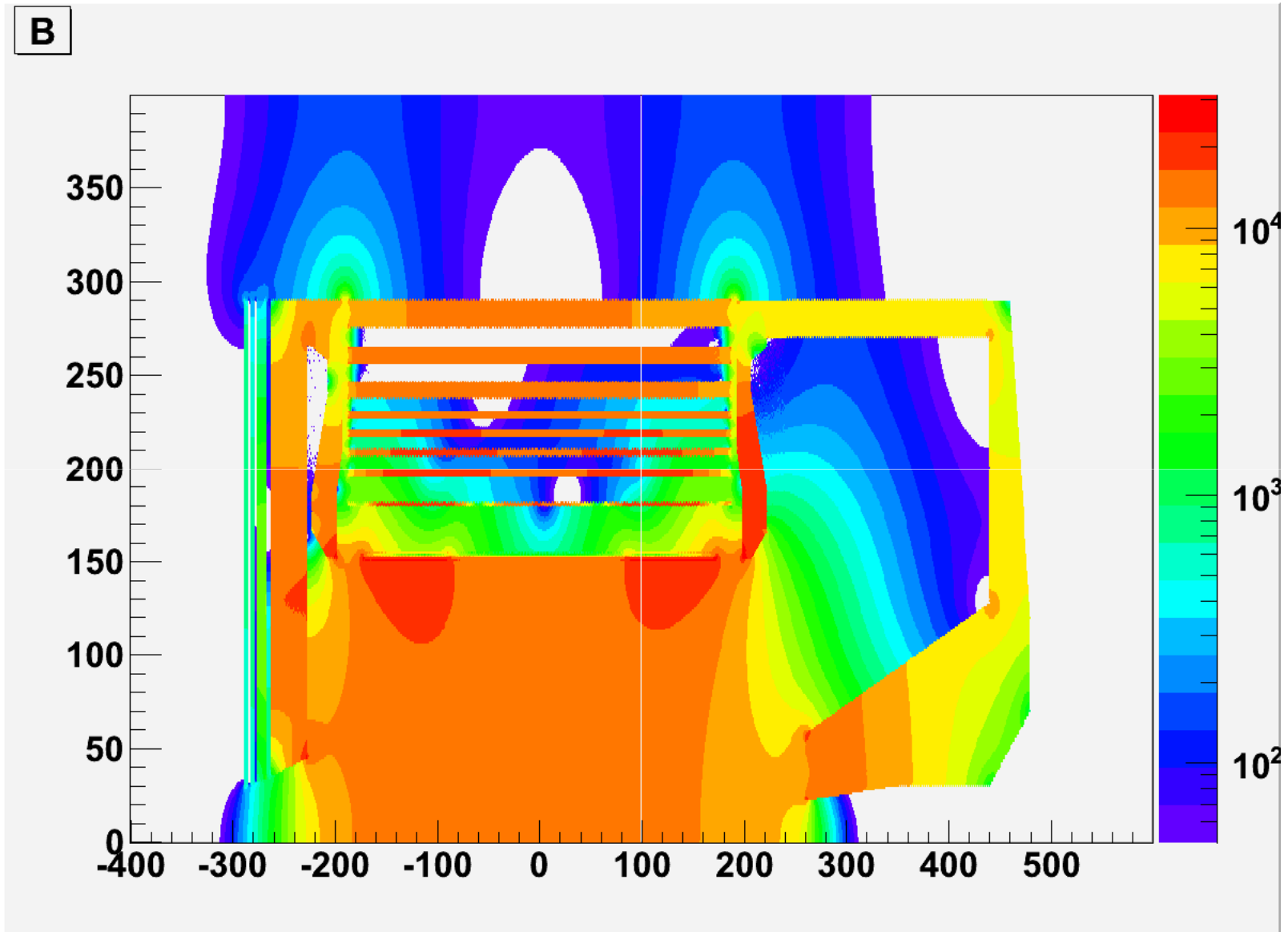


- Zhiwen is now working on field maps with feedback from me.
- Field Maps done in 2-D Poisson, eventually 3-D would be better.
- Optimization in progress
  - Minimize field in detector region
  - No longer need field free region for Cherenkov PMT
  - Balance forces on coil—**for both configurations**
  - Minimize excess iron

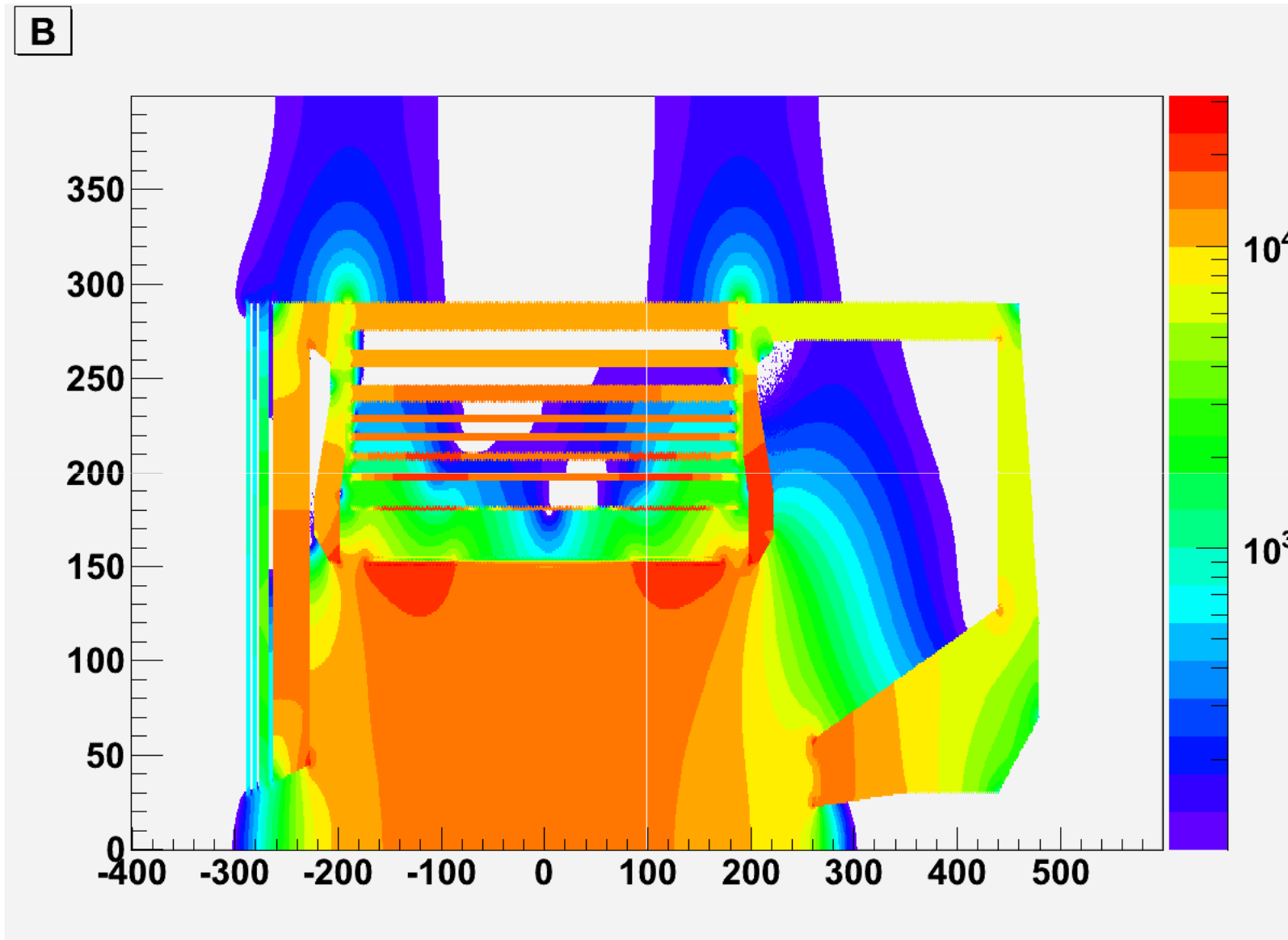
# Note

- In proposal, PVDIS and SIDIS have different yoke with BaBar magnet and optimized individually.
- Then we adopt the same BaBar yoke for PVDIS and SIDIS which essentially is SIDIS configuration because it needs large room. So it's not optimized for PVDIS.
- For CLEO, we will use two different yokes for SIDIS and PVDIS. The only difference though is SIDIS will have an additional 90cm wide donut shape which holds the heavy gas Cherenkov.

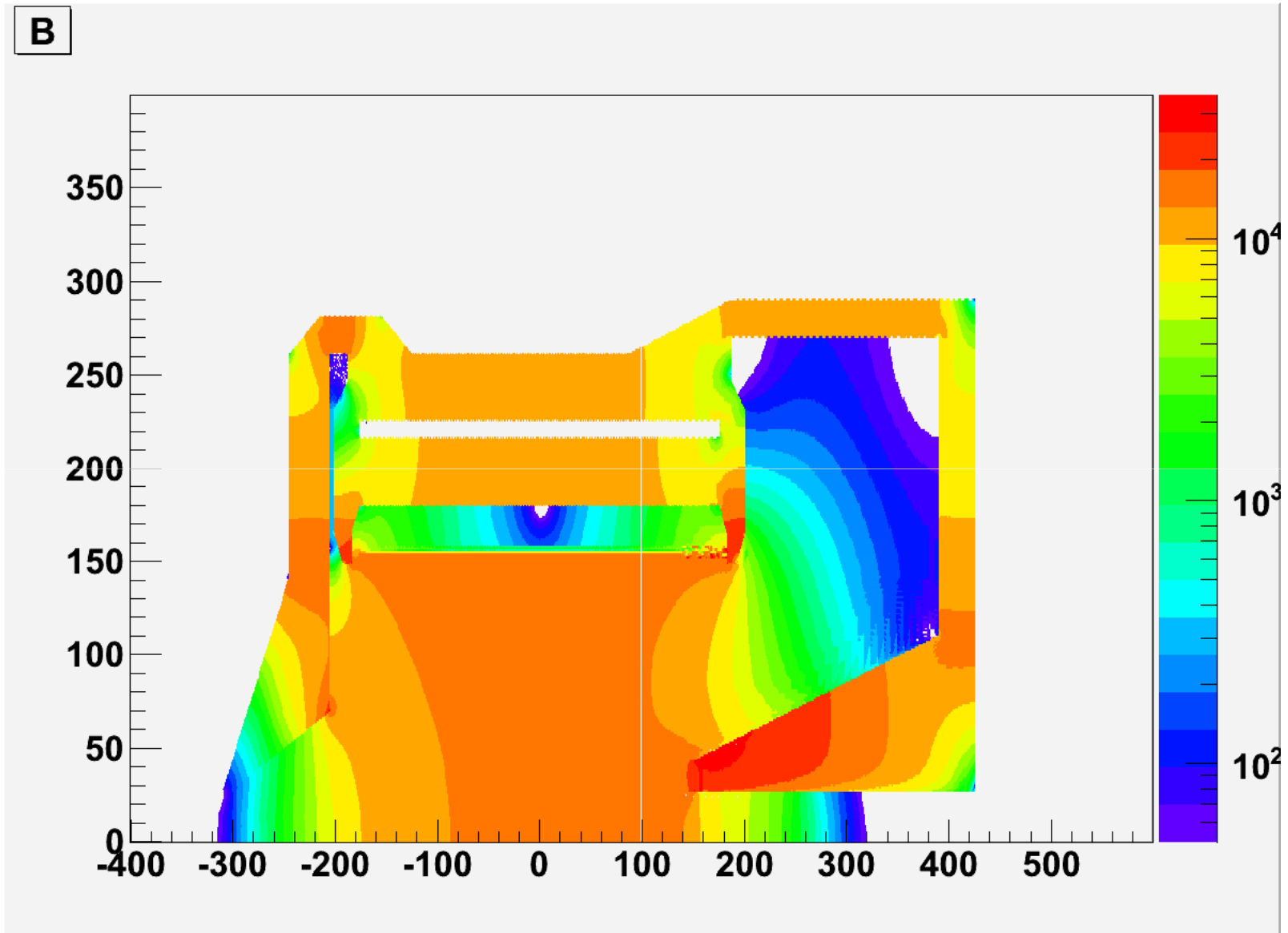
# BABARv4 min 50G



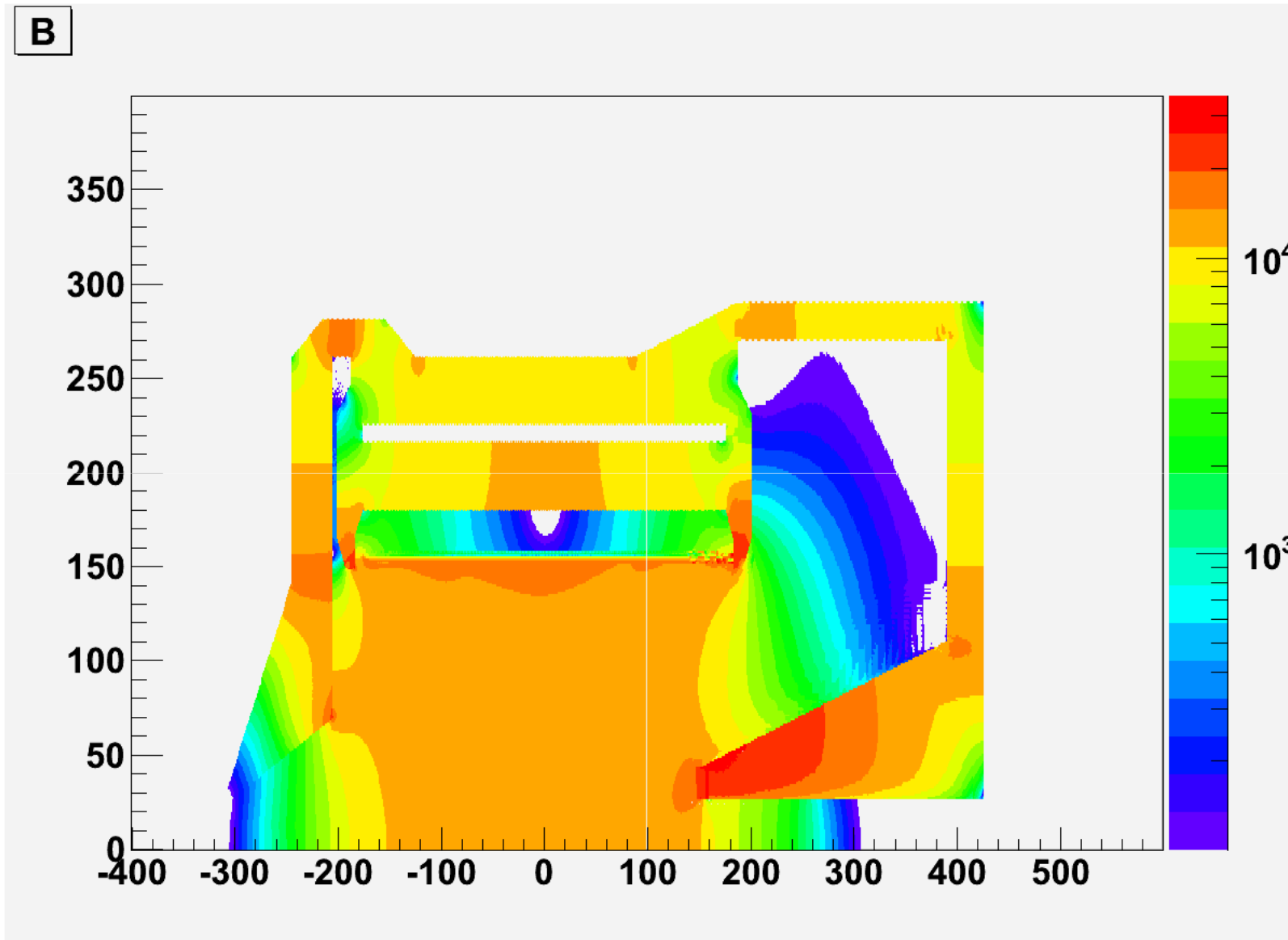
# BABARv4 min 100G



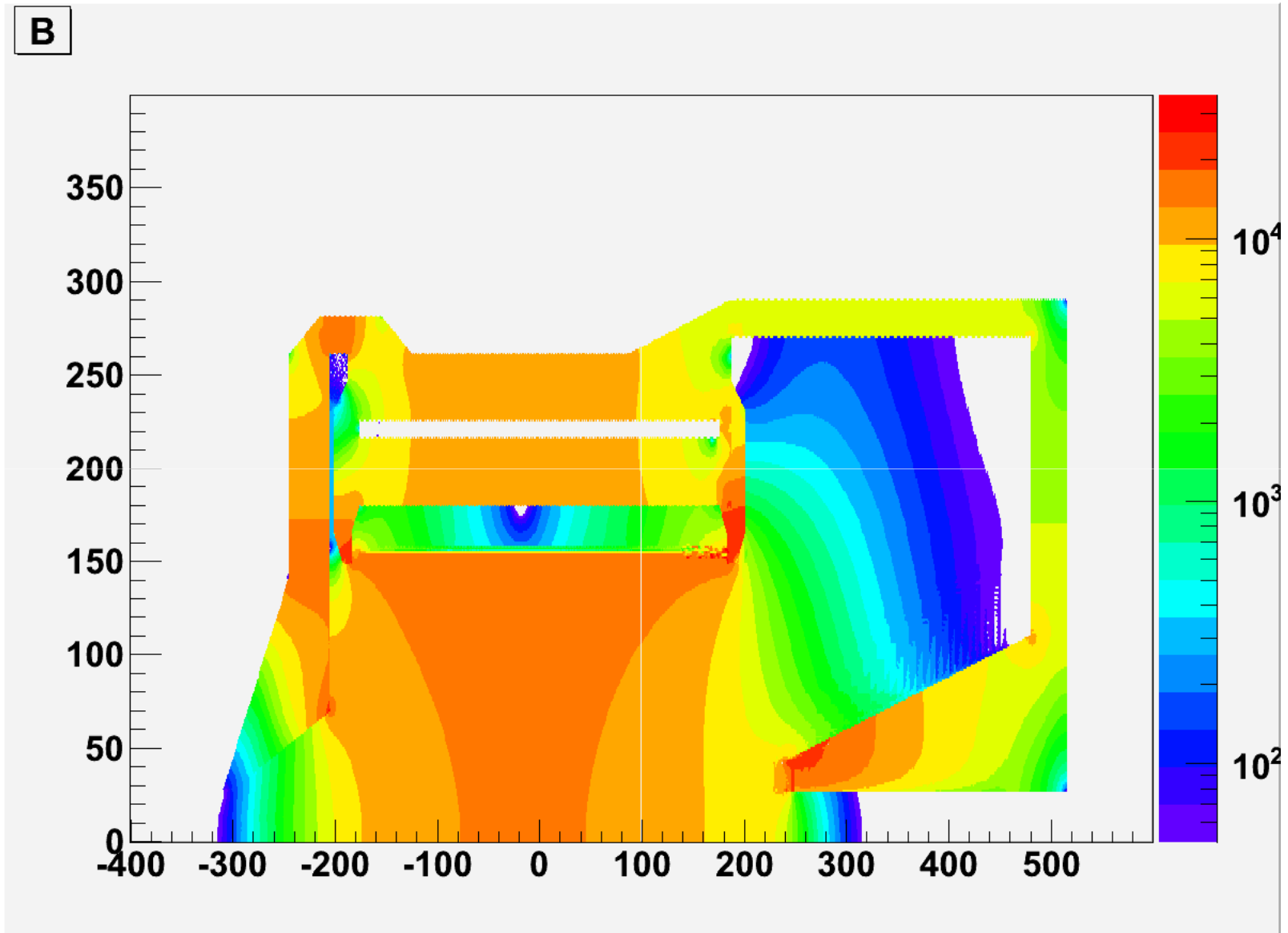
# CLEOv6 PVDIS min 50G



# CLEOv6 PVDIS min 100G

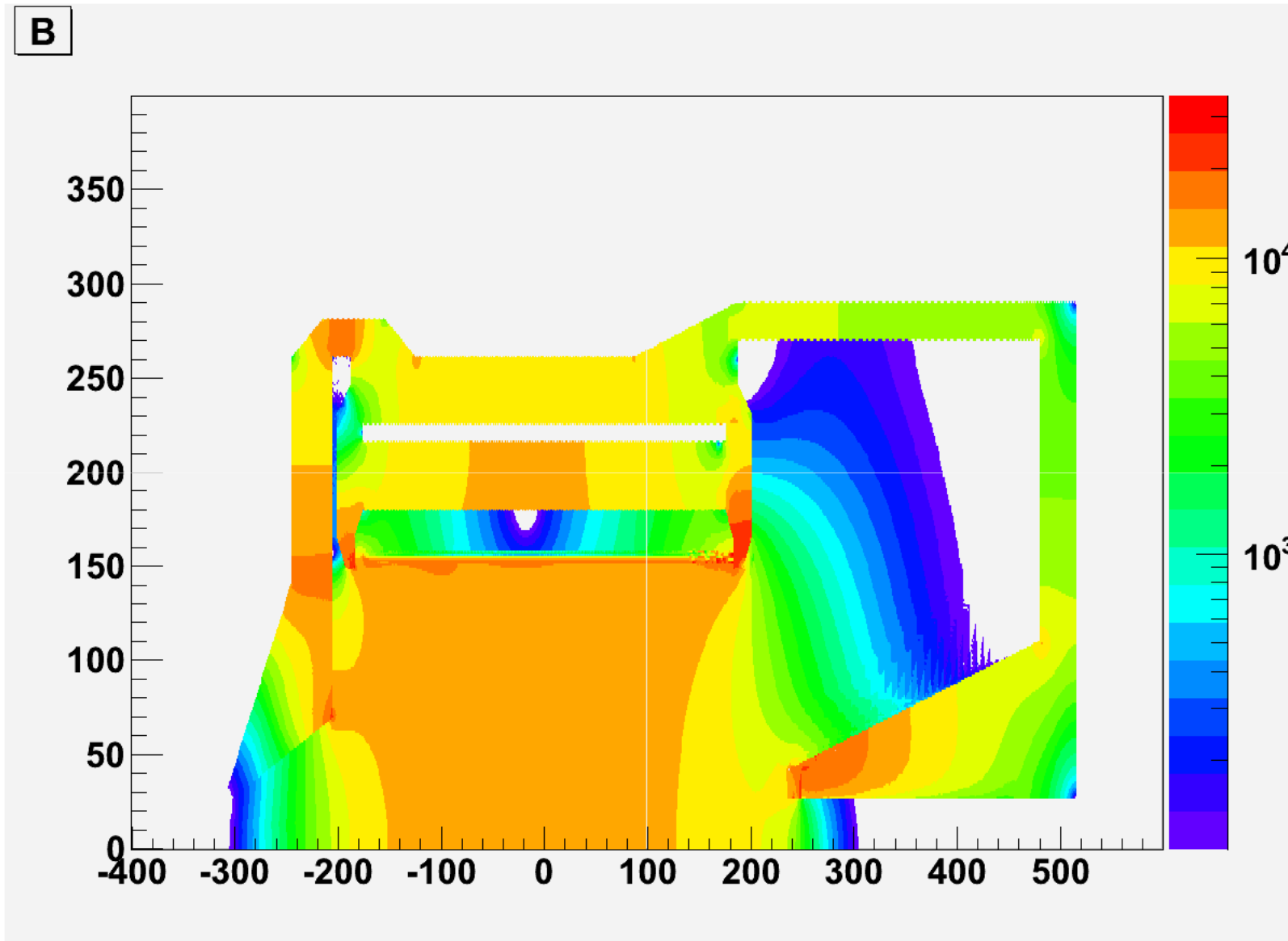


# CLEOv6 SIDIS min 50G

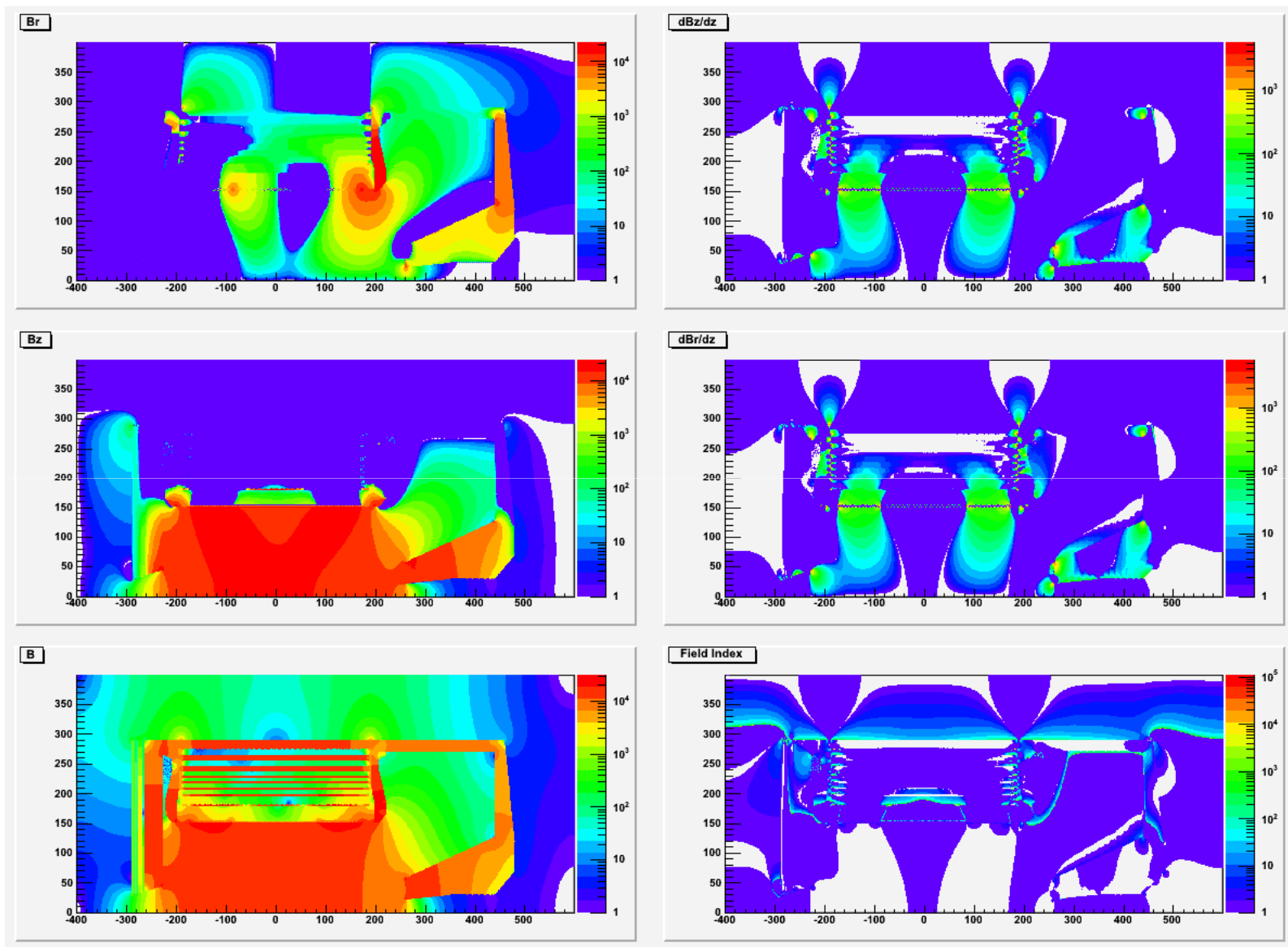




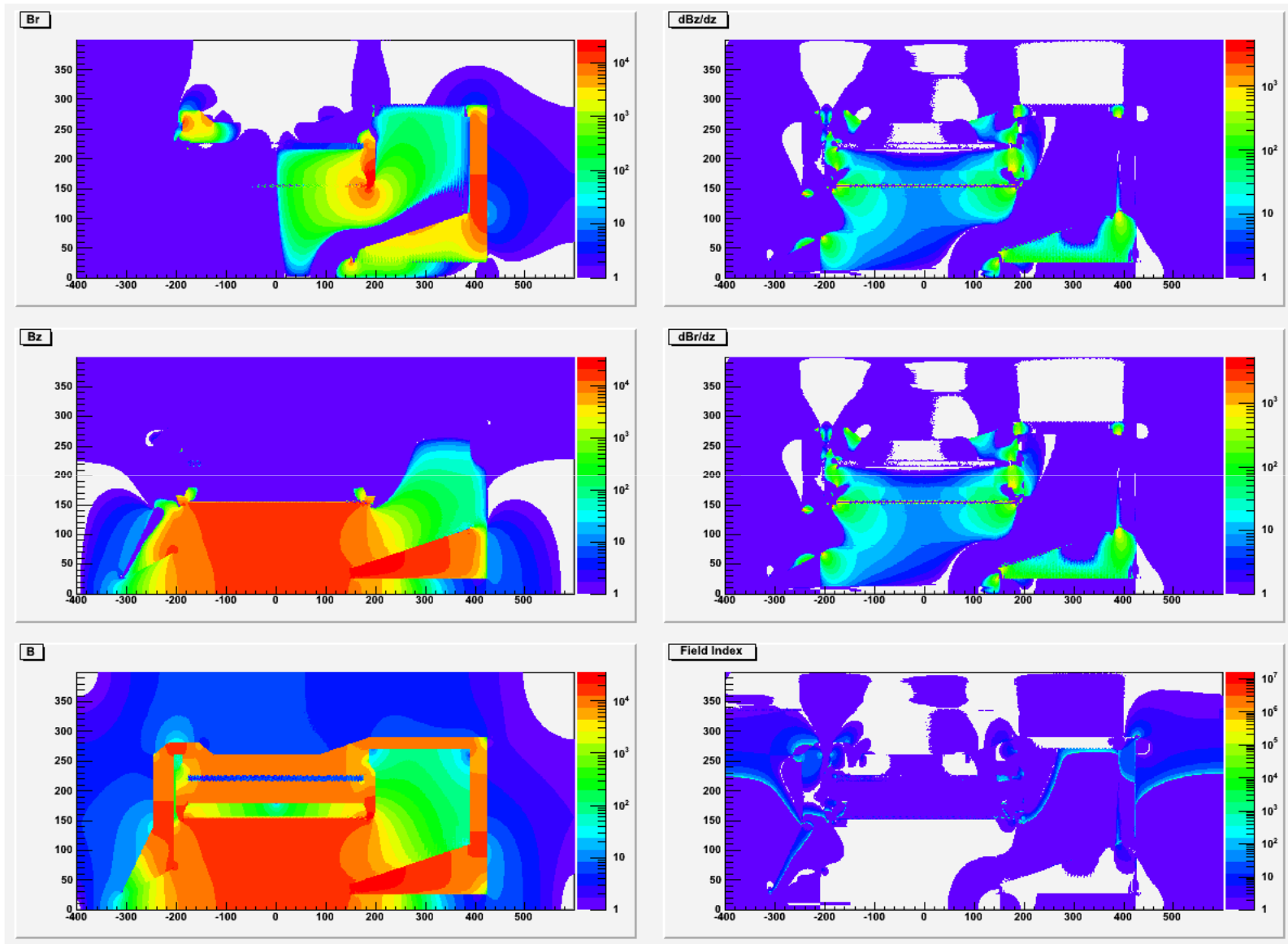
# CLEOv6 SIDIS min 100G



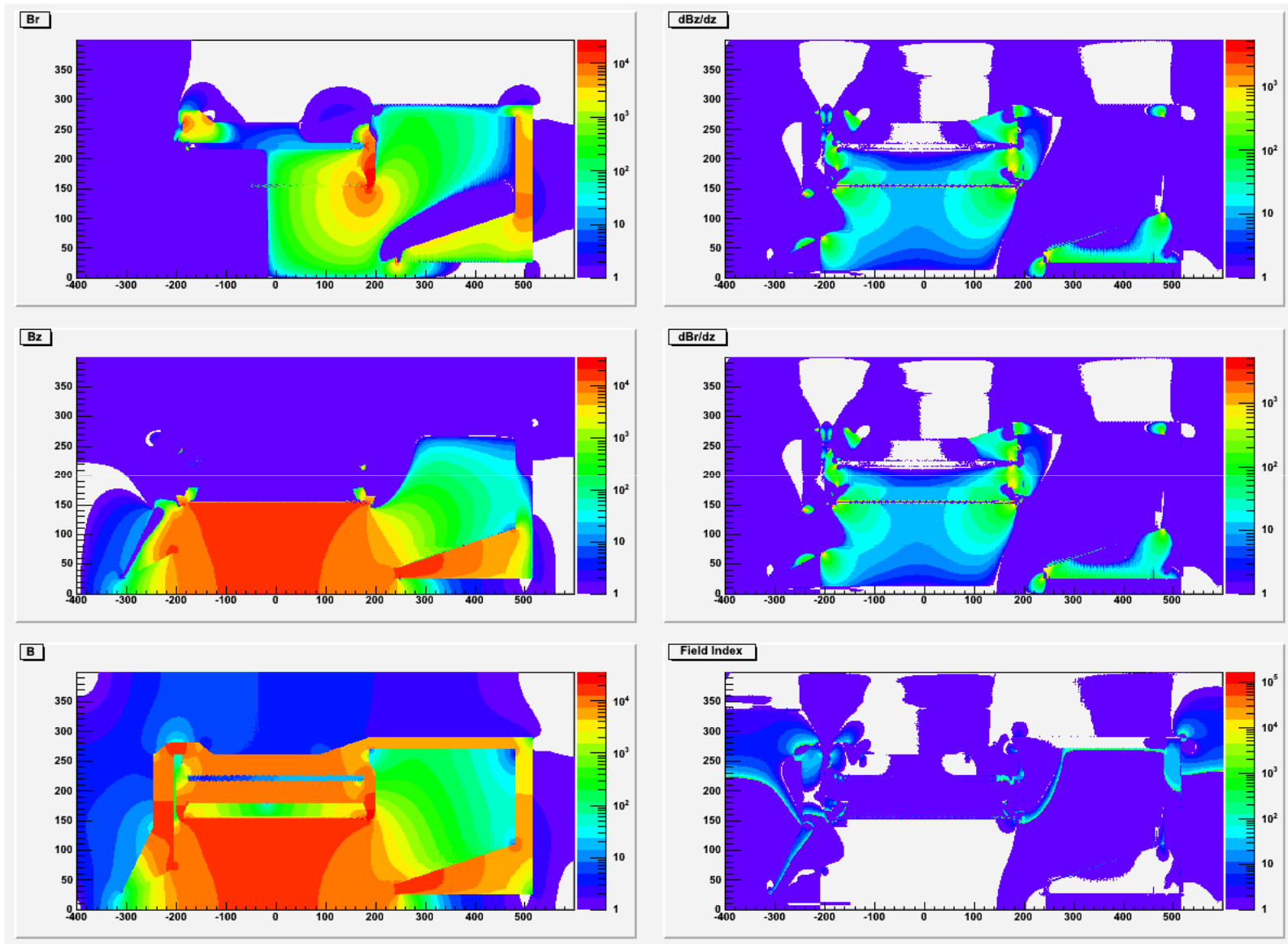
# BABARv4



# CLEOv6 PVDIS



# CLEOv6 SIDIS



# Summary

- CLEOv6 has smaller field than BABARv4 at the region where Cherenkov detectors will be.
- CLEOv6 PVDIS has homogeneous region where the baffle is. We should try to make a baffle to match configuration.
- The large Br could be a concern for the GEM, we need to look into it.
- Magnetic Force need to be checked to make sure it's ok for engineering.