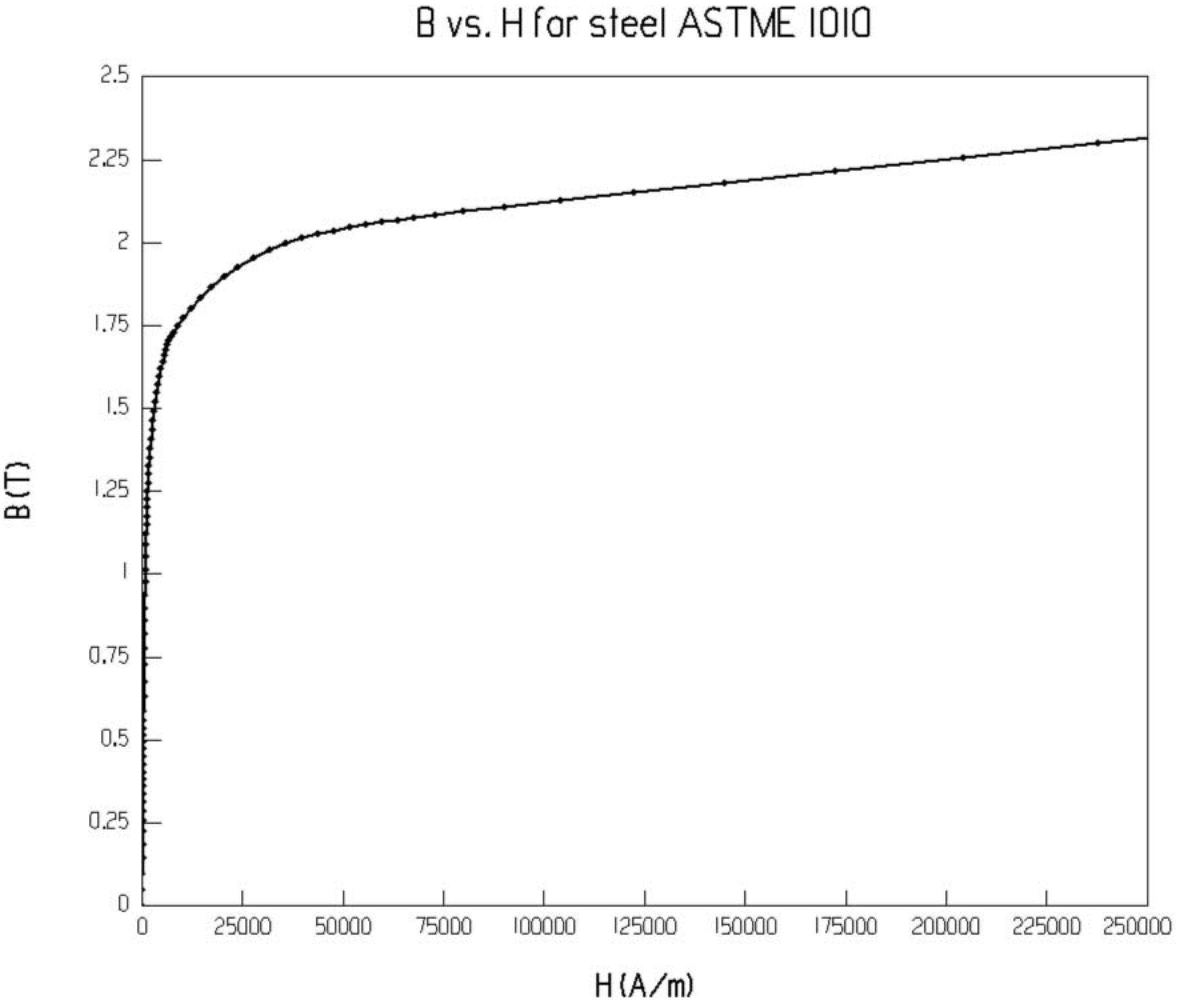
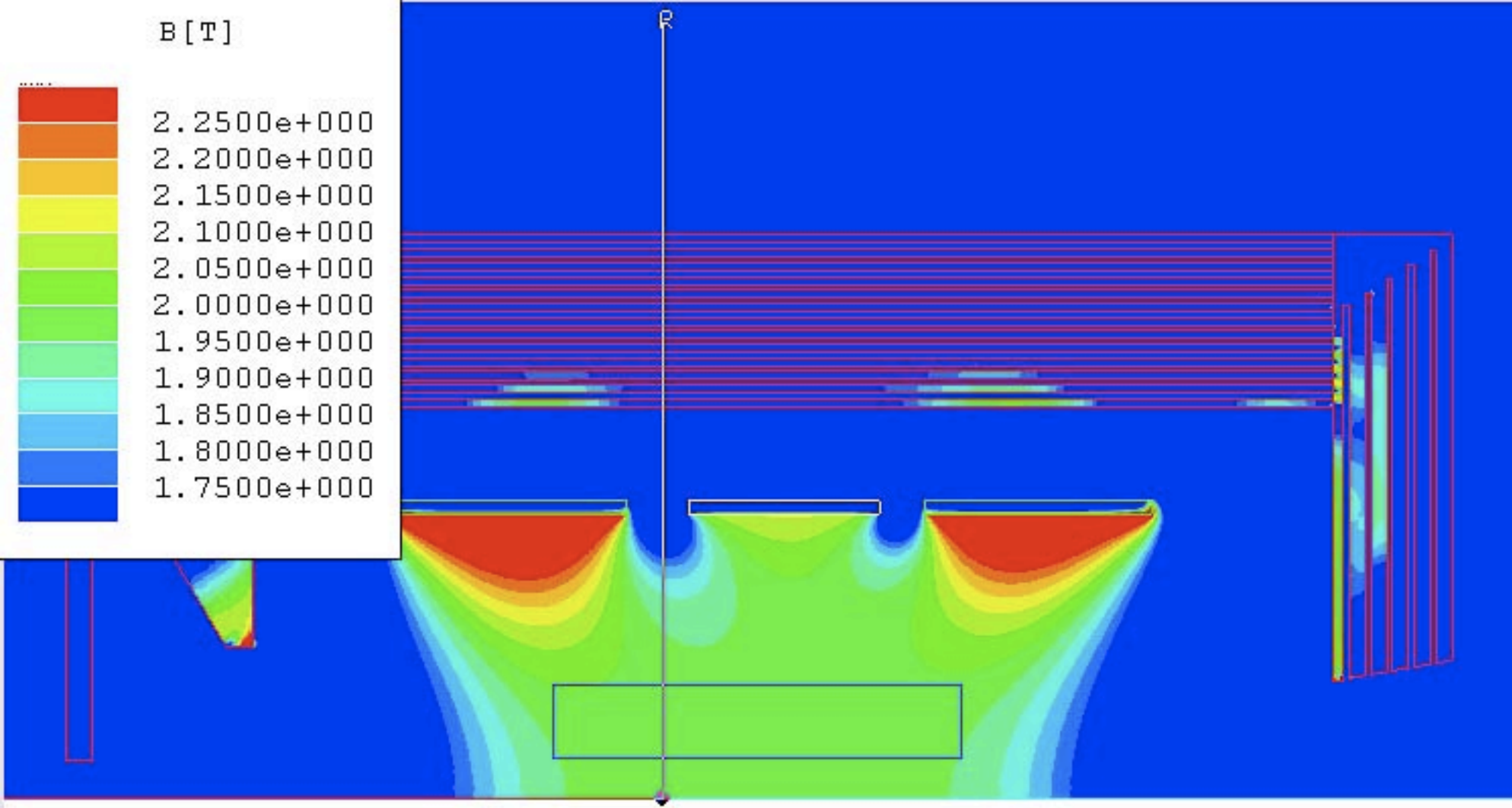
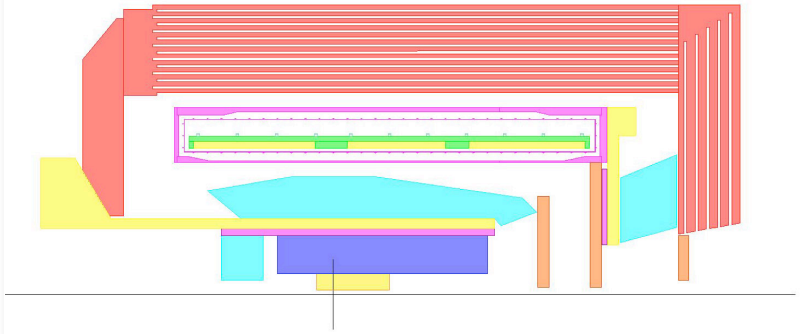

B vs. H for steel ASTME 1010
B(T)
2.5
2.25
2
1.75
1.5
1.25
1
0.75
0.5
0.25
0
0
25000
50000
75000
100000
125000
150000
175000
200000
225000
250000
H(A/m)

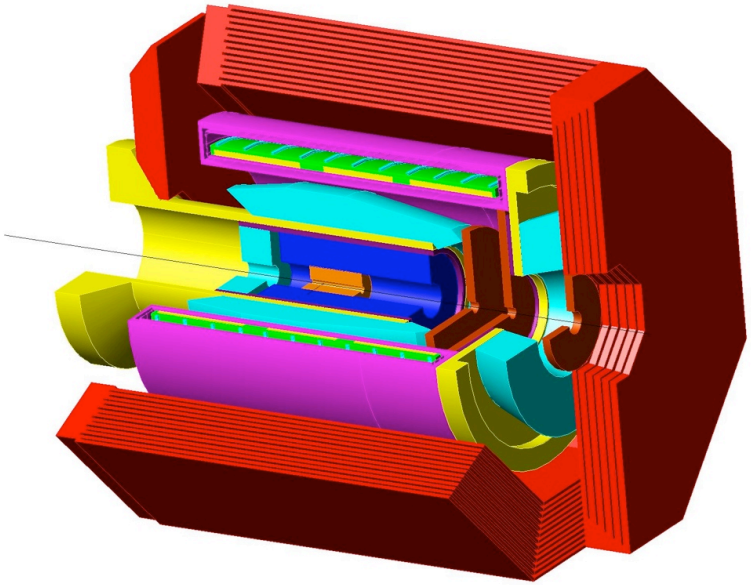

B[T]
2.2500e+000
2.2000e+000
2.1500e+000
2.1000e+000
2.0500e+000
2.0000e+000
1.9500e+000
1.9000e+000
1.8500e+000
1.8000e+000
1.7500e+000
R

The PANDA Solenoid Magnet Genova Last Design

Andrea Bersani, INFN Genova

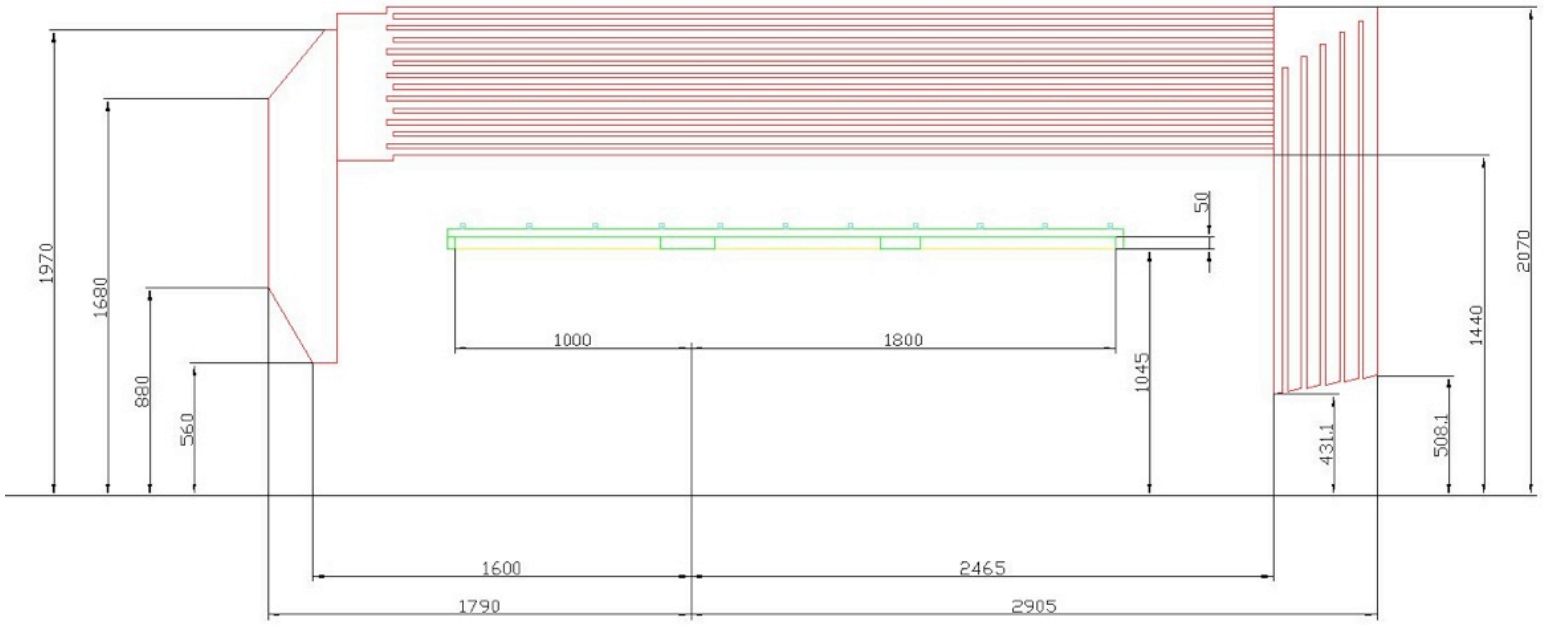
Design Features



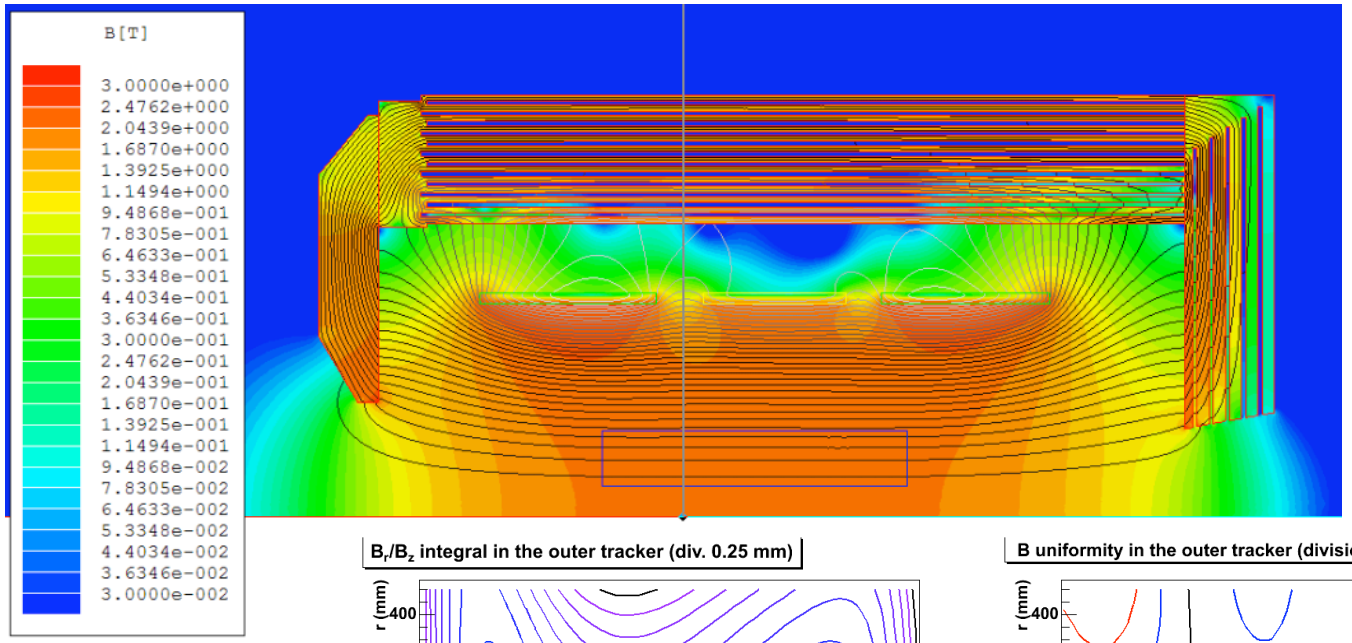


- 5000 A current in cable
- 50.4 and 36 A/mm^2 current density
  - 3.5 and 5.15x24.6 mm cable
- Based on Jost's design
- Compliant with geometric constraints

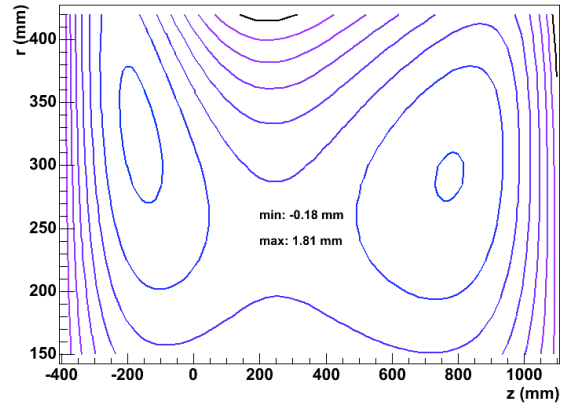
Dimensions


1970
1680
880
560
50
1000
1800
1045
431.1
508.1
1440
2070
1600
2465
1790
2905

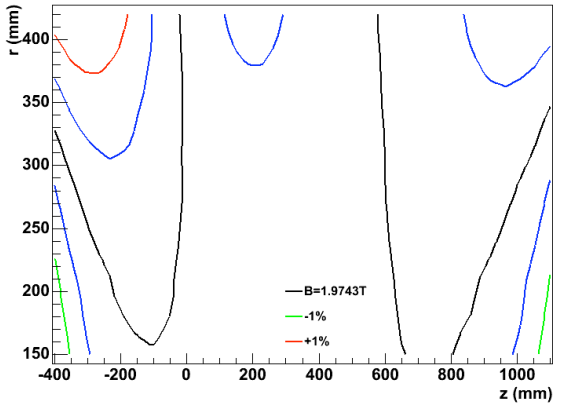
Magnetic Field



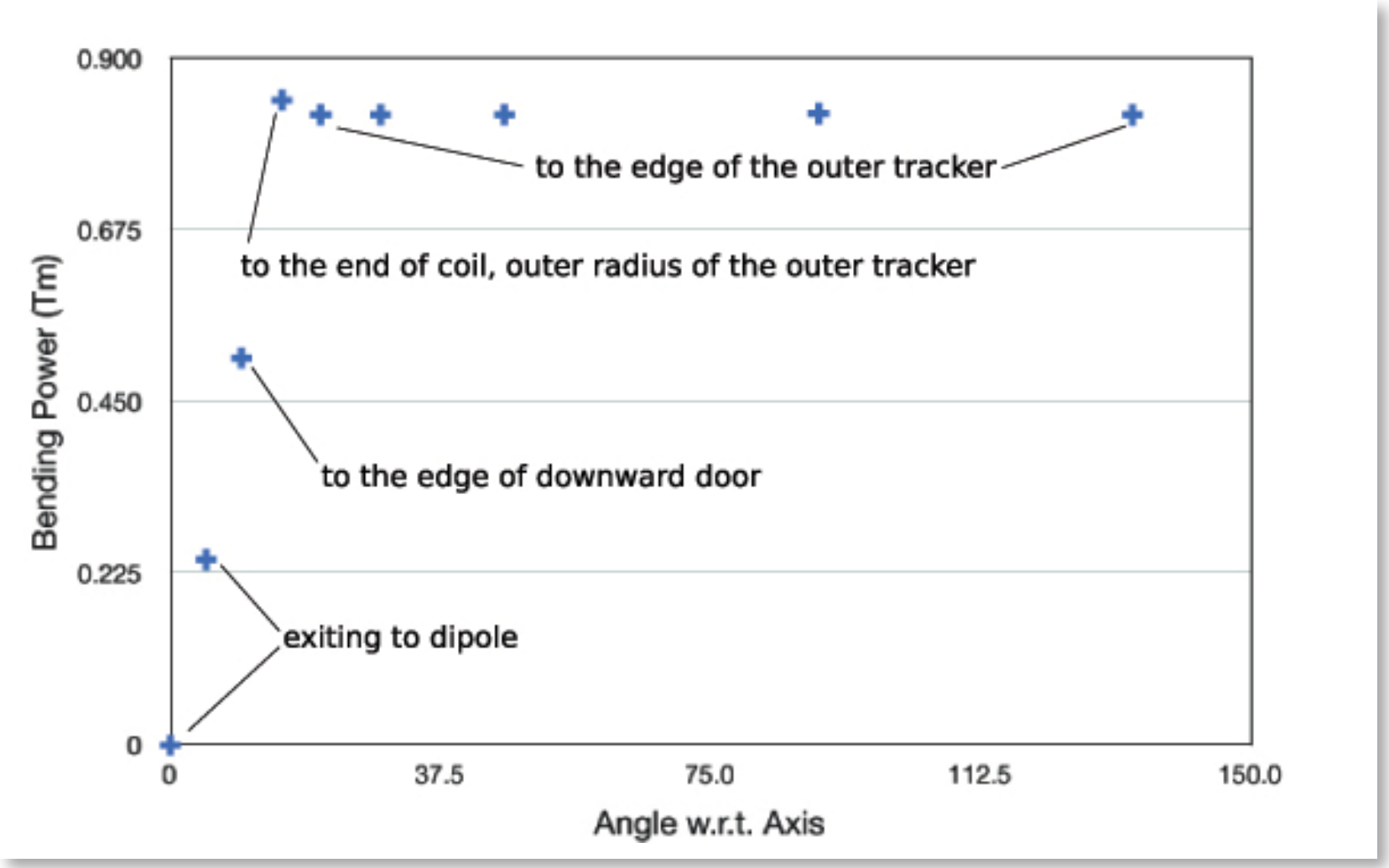
B_r/B_z integral in the outer tracker (div. 0.25 mm)



B uniformity in the outer tracker (division: 0.5%)



Bending Power



Summary

- Our guidelines (and our results):
  - 2T central field (1.9734T)
  - better than ±2% homogeneity (±1.6%)
  - Br/Bz integral between 0 and 2mm (between -0.18 and 1.81mm)
  - 5000A maximum current in cable (for leads, power supply...)
  - 2 layers, energy to mass ratio ~5KJ/Kg
  - force well down 100t (<60t)
  - cable as square as possible (form factors 7 and 4.8)
  - use of Jost's yoke (slight modification of upward door)
- All mechanical, magnetic, thermal requirements fulfilled
- All (preliminary) referees' requirements fulfilled

Magnetic Field with Upward Clamp