

B calculation of S-JACEE magnet

Sakamoto/Sugiyama
saga univ.

structure

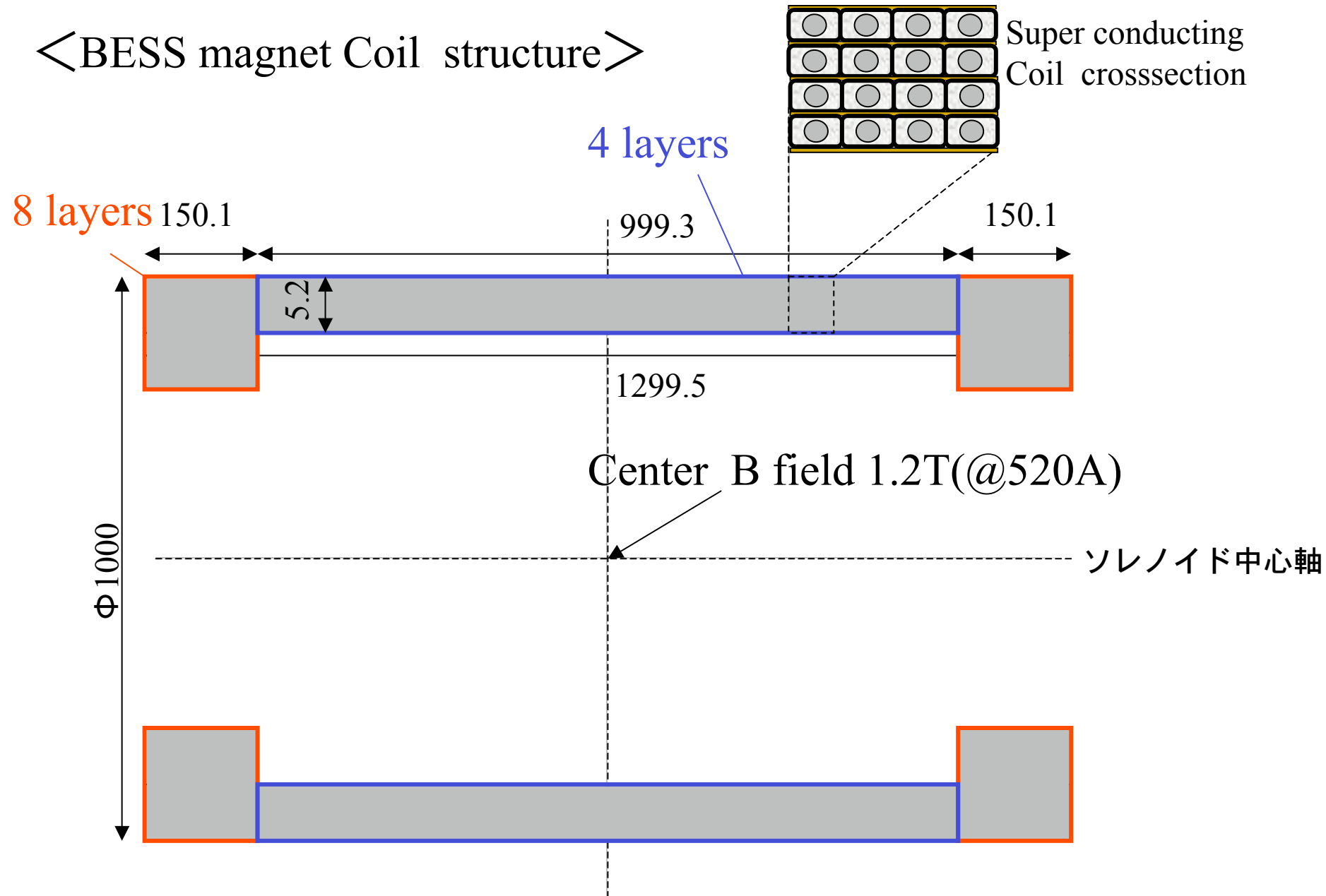
method

results

around TPC

stray field

<BESS magnet Coil structure>



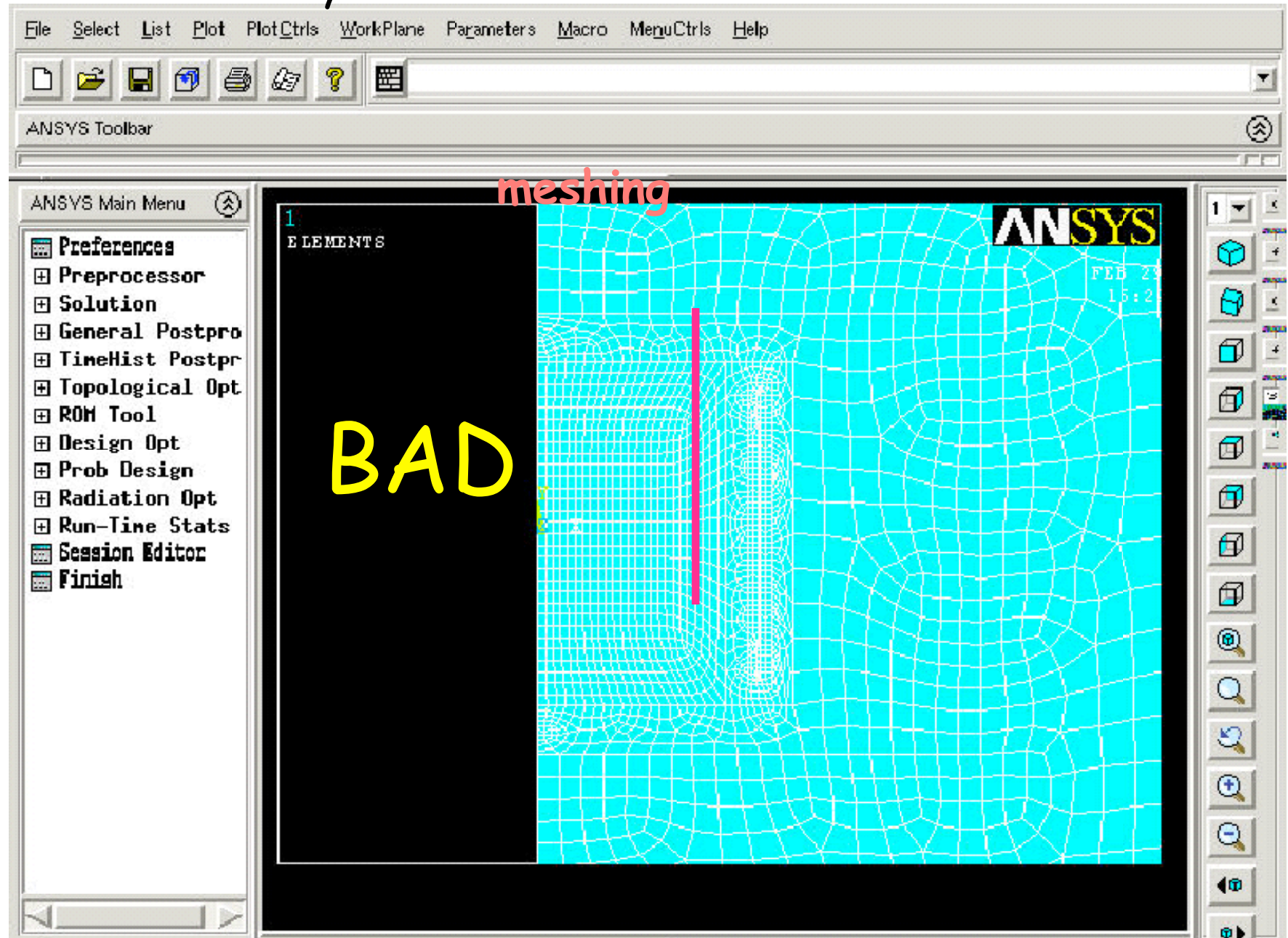
Total # of turns : 3383[turns]

※寸法の単位は[mm]

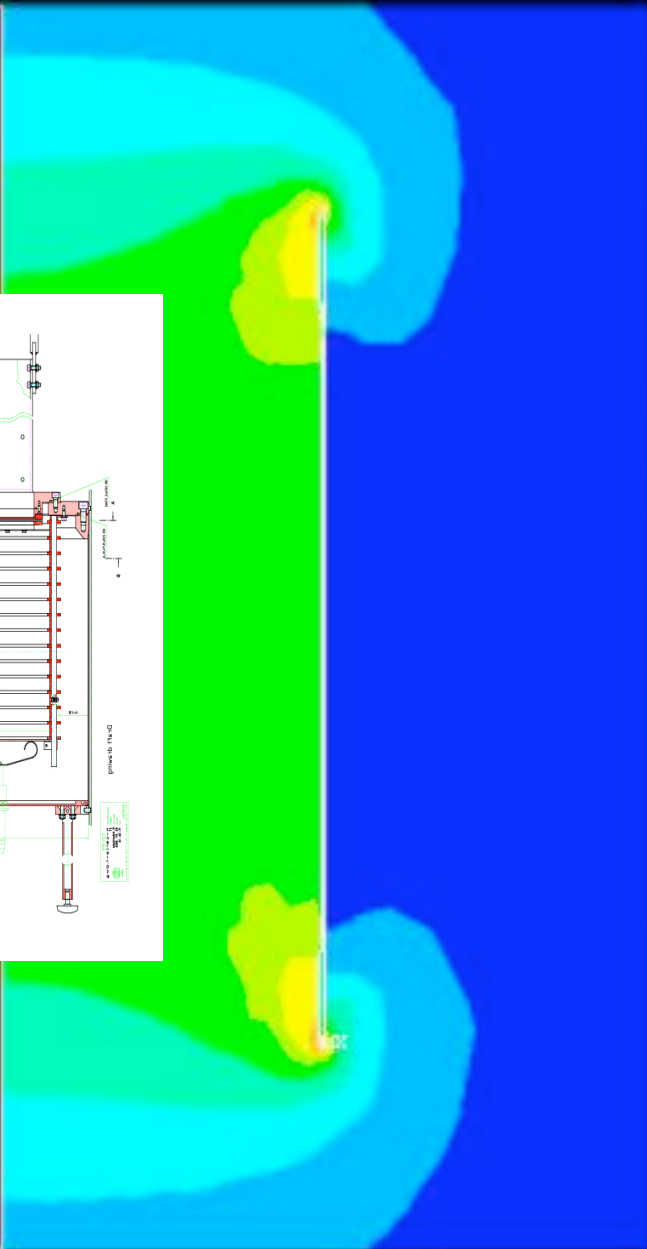
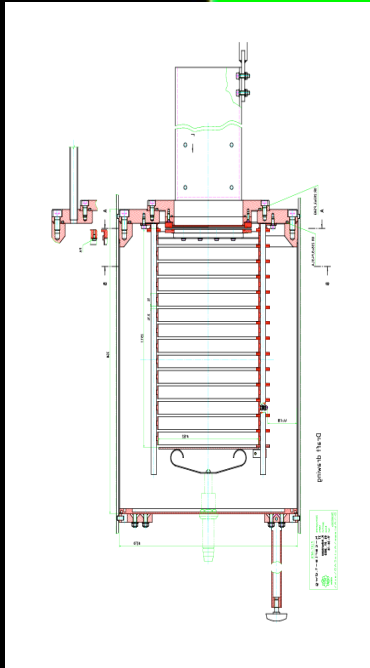
B field calculation Finite element analysis using ANSYS7.2

Results shown at the last meeting was wrong

Geometry was incorrect! Rcoil was 1m instead of 0.5m



Bsum

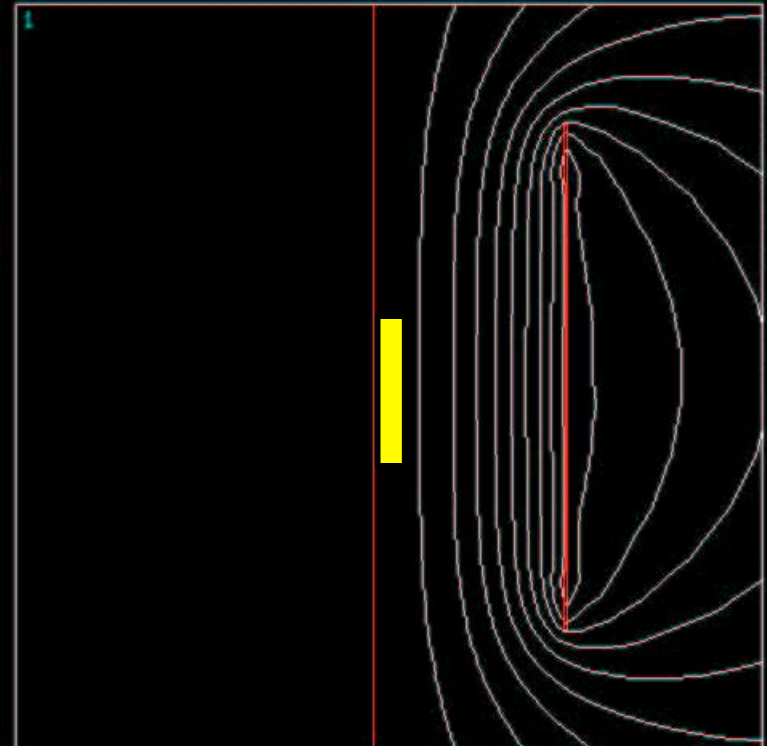


```

ANSYS 7.1
MAR 18 2004
21:55:05
NODAL SOLUTION
STEP=1
SUB =6
TIME=1
BSUM      (AVG)
RSYS=0
PowerGraphics
EFACET=1
AVRES=Mat
SMN  =.382E-05
SMX  =2.249

```

	.382E-05
	.24993
	.499857
	.749783
	.99971
	1.25
	1.5
	1.749
	1.999
	2.249



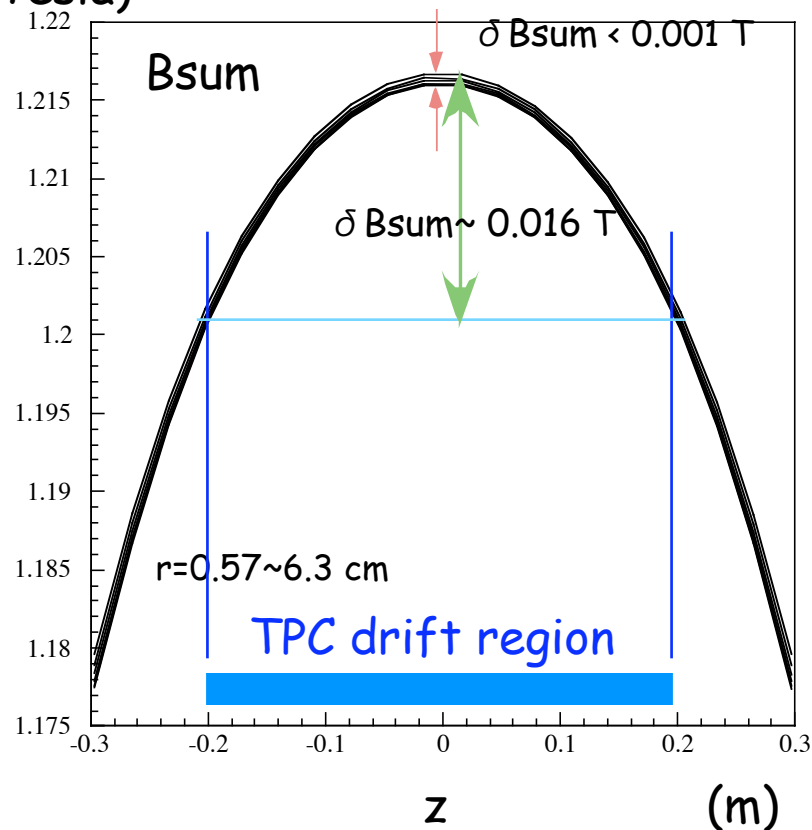
```

ANSYS 7.1
MAR 18
21:56:4
NODAL S
STEP=1
SUB =6
TIME=1
AZ
RSYS=0
SMX  =.1
A  =.0
B  =.0
C  =.0
D  =.0
E  =.0
F  =.0
G  =.1
H  =.1
I  =.1

```

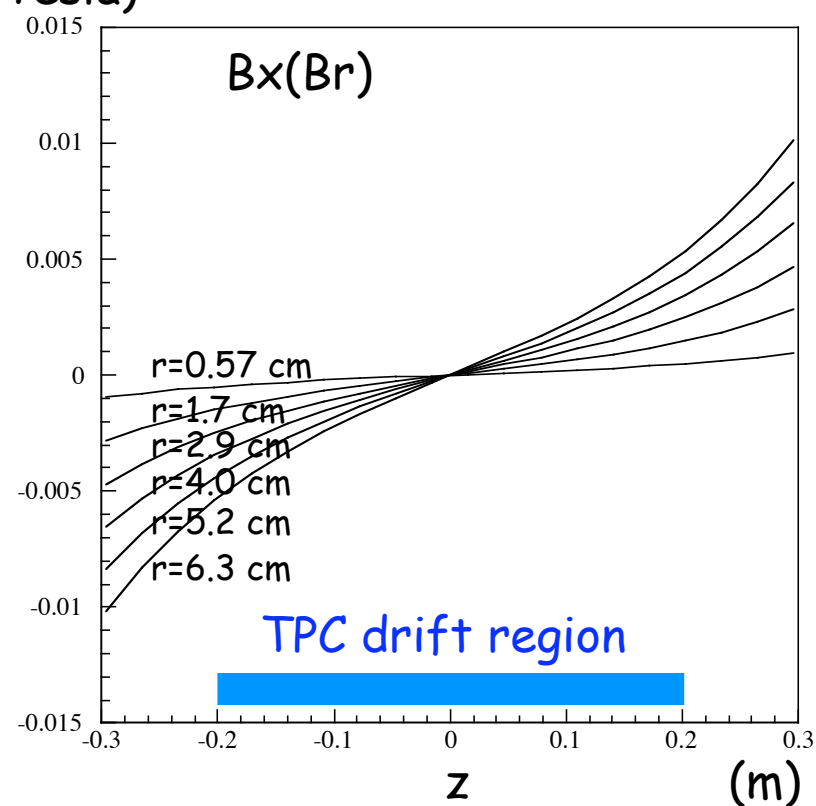
Magnetic field around TPC region

(Tesla)



$d|B| \sim 0.016$ T (1.3 %)
if ceter is aligned

(Tesla)

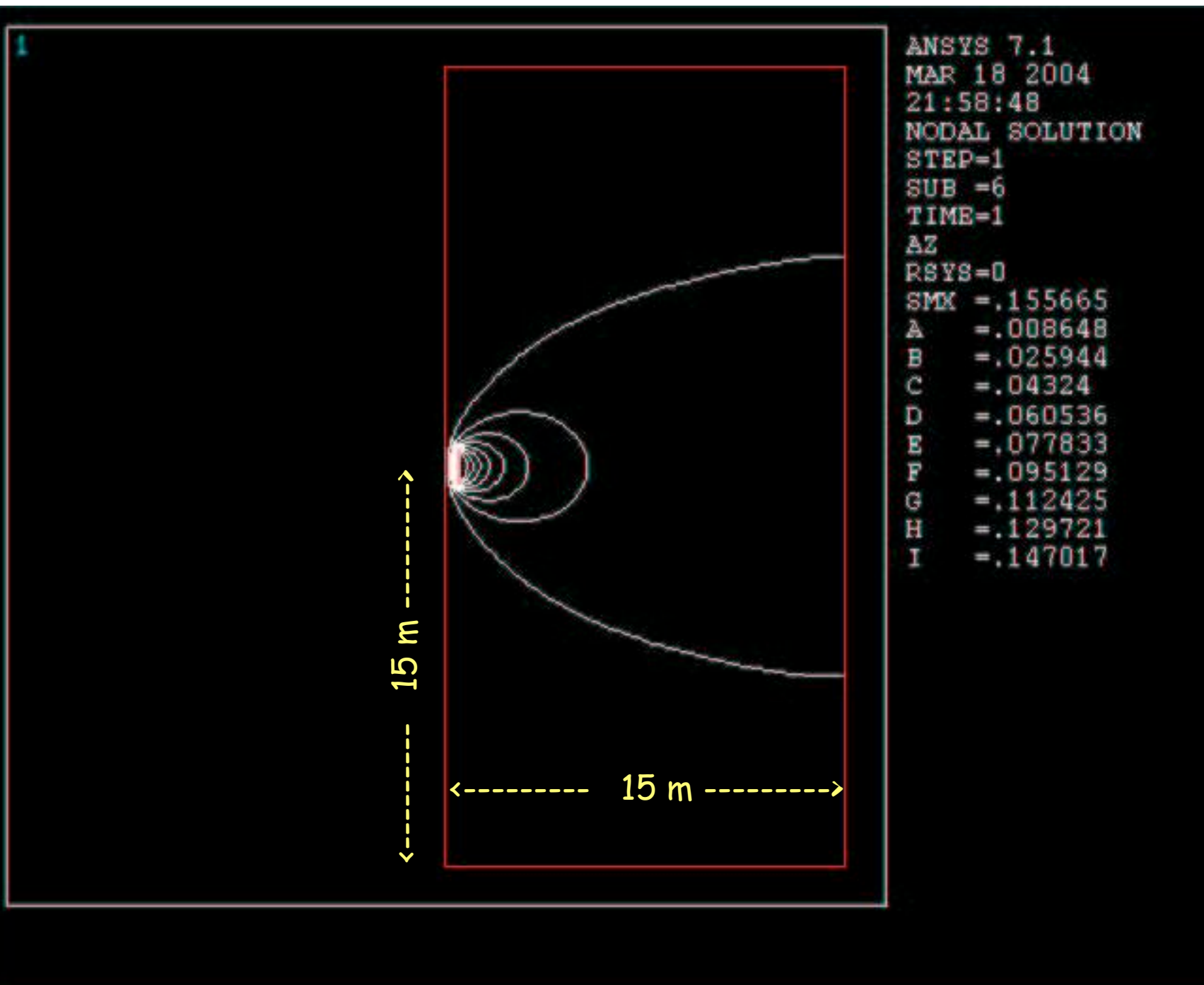


Max. $|B_r| < 0.005$ T (0.4 %)
for TPC drift region
(40 cm)

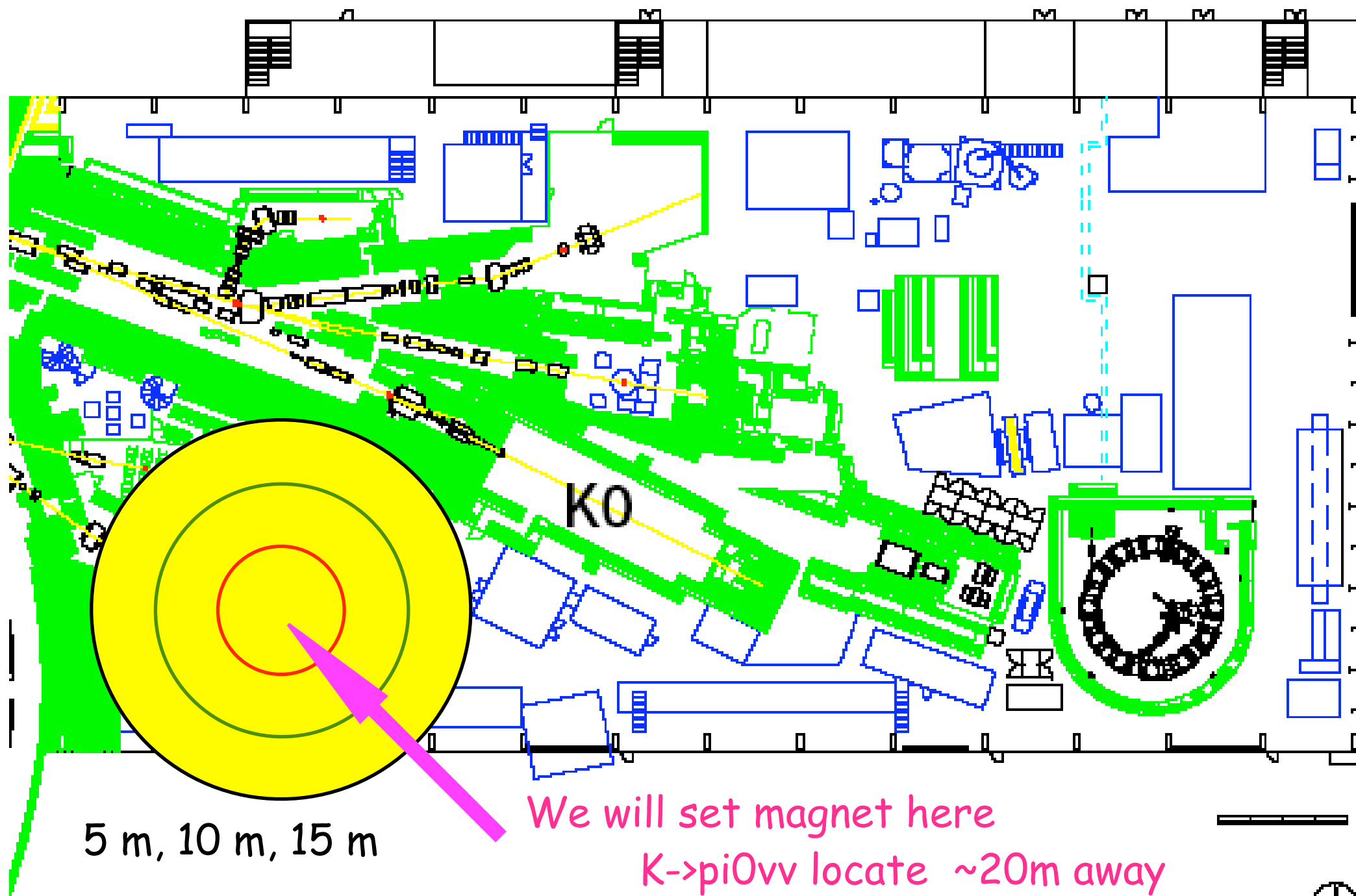
$B = 1.216$ T at $r=0, z=0$

$dB \sim 1.3\%$ $z=20$ cm $r=0 \sim 6$ cm

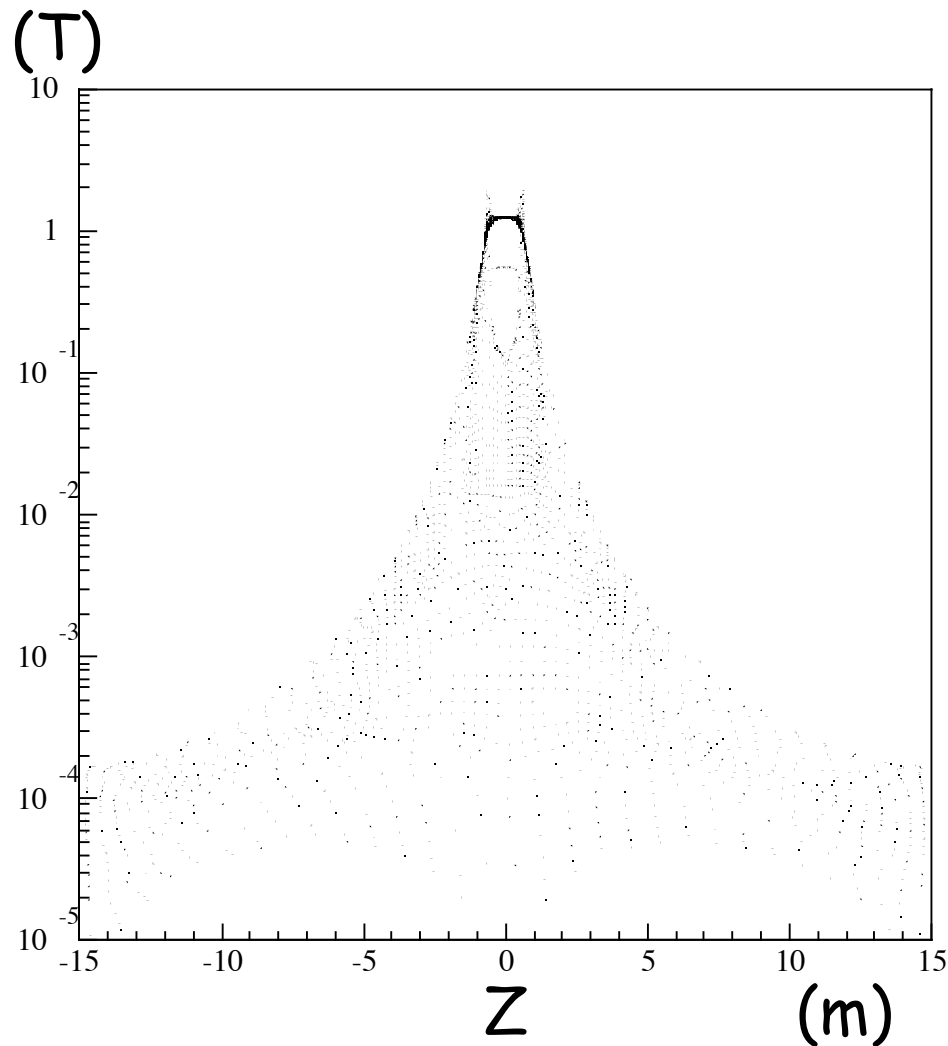
Stray Field around coil



KEK-PS East Counter Hall



Bsum at far region



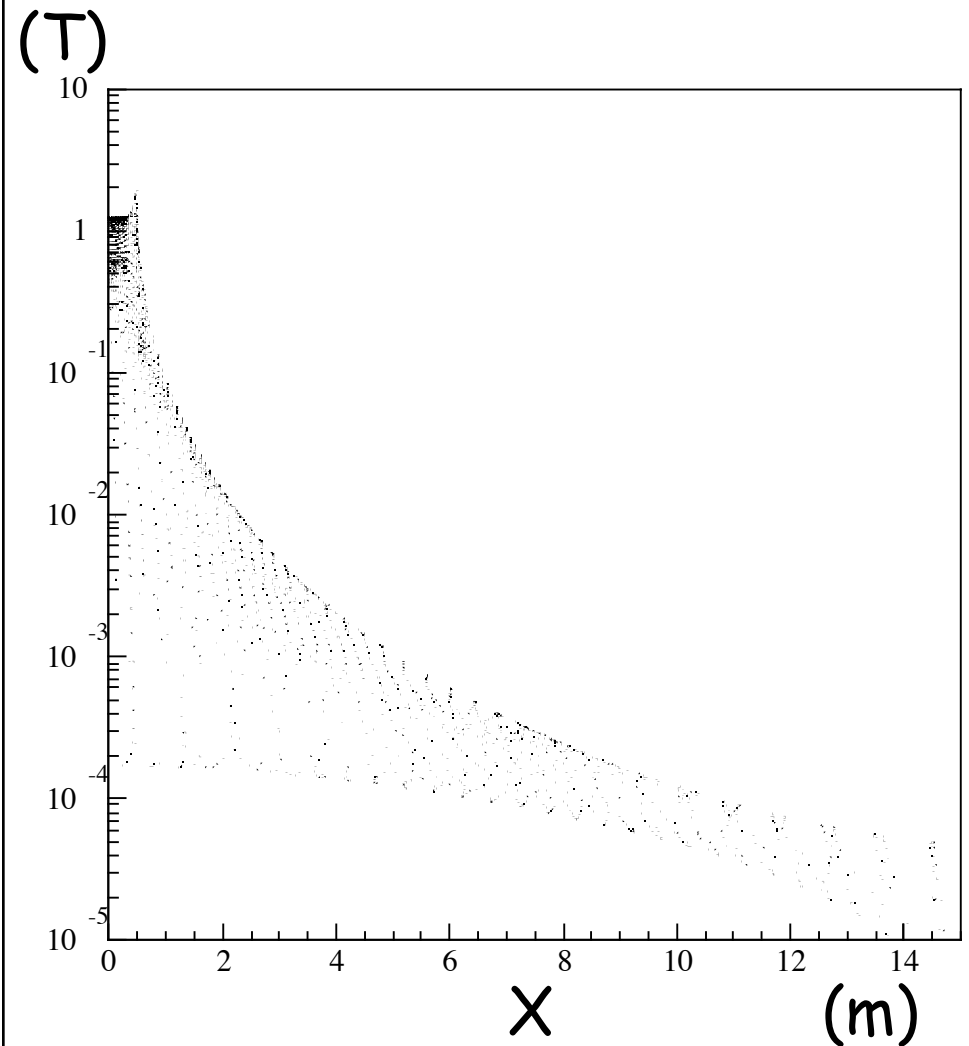
Max. Bsum at Z

2 mT @ 5 m

.3 mT @ 10 m

.2 mT @ 15 m

Bearth 0.06 mT



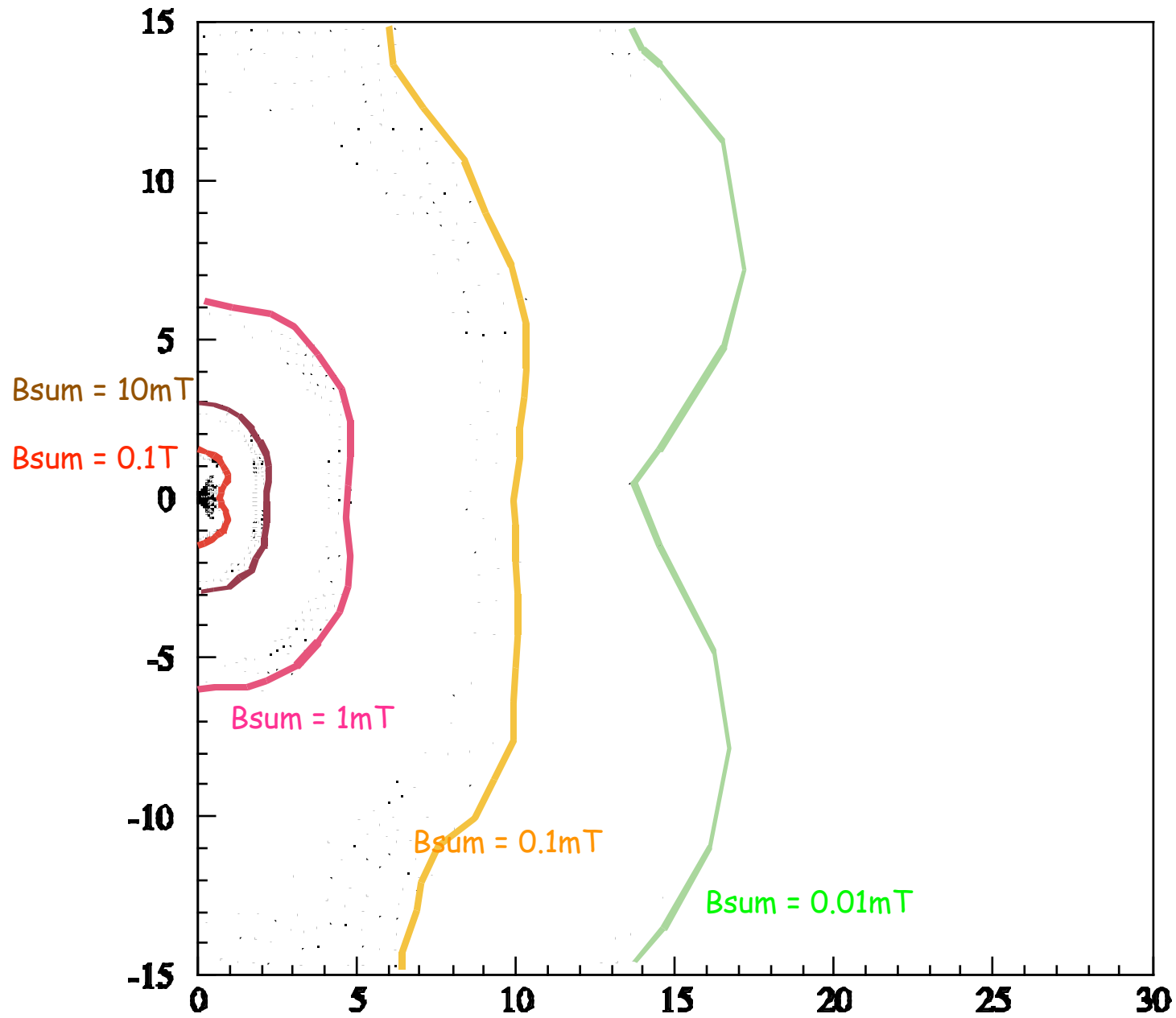
Max. Bsum at X

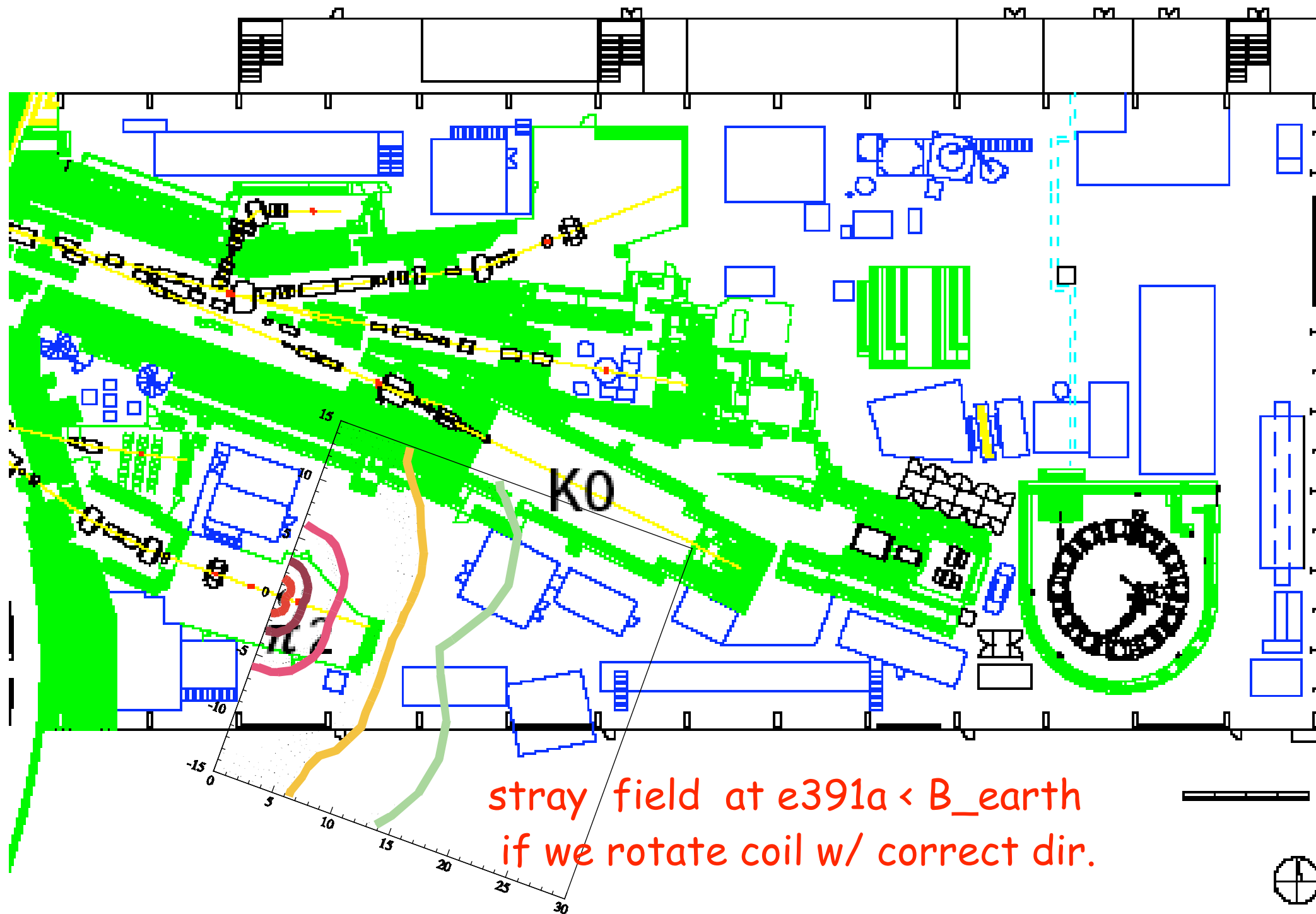
1.5 mT @ 5 m

.2 mT @ 10 m

< .1 mT @ 15 m

Bsum contour





stray field at $e391a < B_{\text{earth}}$
if we rotate coil w/ correct dir.