

ATF2

Magnets

First try at modelling ATF extraction septum in
POISSON
27th March 2007

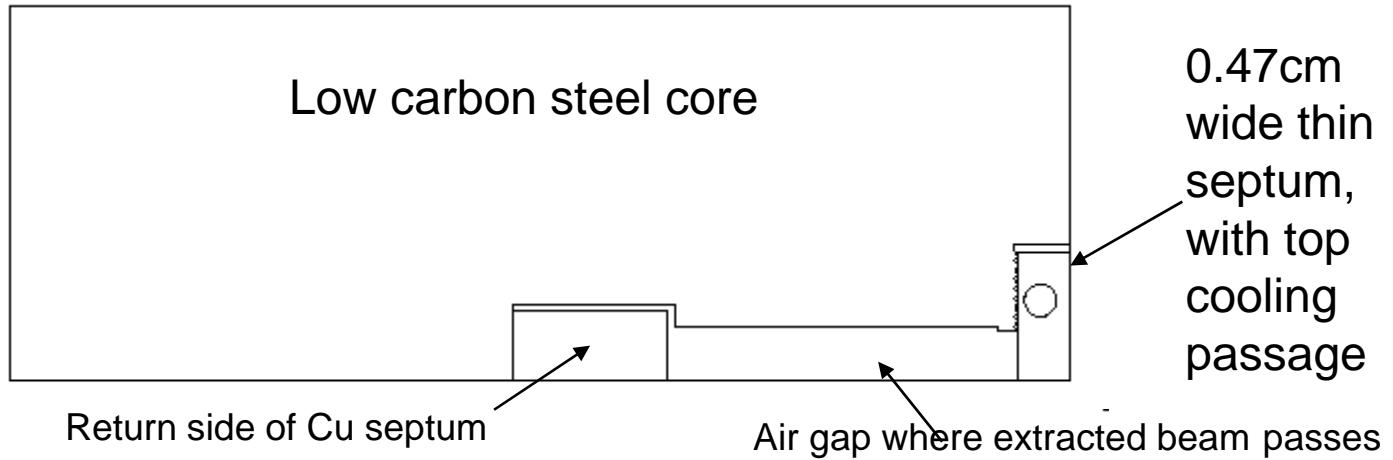
Cherrill Spencer, SLAC
Member of ATF2 Magnet Team



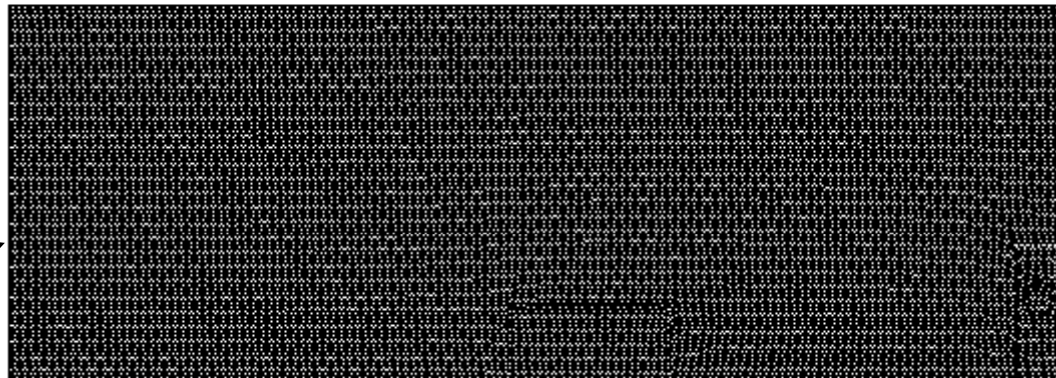
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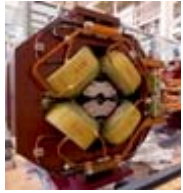
Existing ATF extraction septum giving some trouble to extracted beam

Model top half of septum in POISSON, with 2000 amps in Cu septum coil



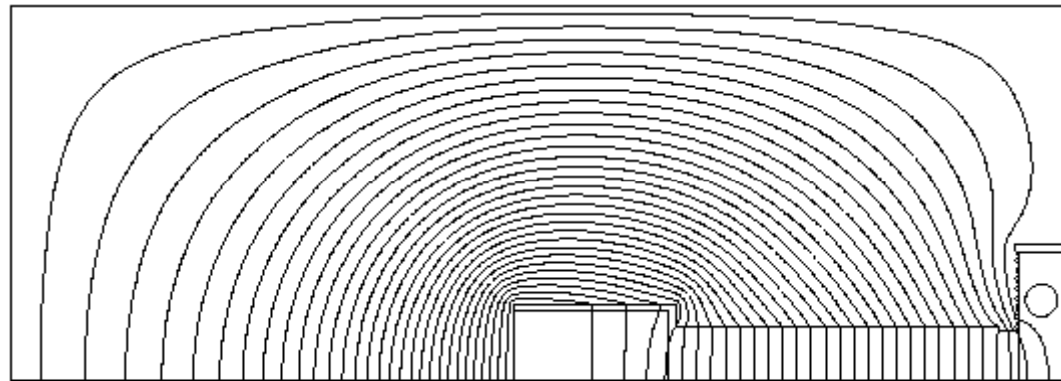
POISSON model showing ~14,000 triangles, 0.05cm wide





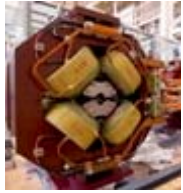
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POISSON FLUX PLOT with 2000 amps in septum conductor



Field at X=7.7cm, Y=0.0cm is 4996 gauss

I made model's "universe" end at the steel core edge— will extend it in next version



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Harmonic analysis around X= 7.7 cm

1TABLE FOR FIELD COEFFICIENTS FOR ATFextra SEP ,47cmwide SEPTUM C.HOLE
W/SS TUBE~.15cm rad 27M

0NORMALIZATION RADIUS = 0.45000

0 (BX - I BY) = I * SUM N*(AN + I BN)/R * (Z/R)**(N-1)

| 0 | N | N(AN)/R | N(BN)/R | ABS(N(CN)/R) | RATIO of multipole to dipole |
|---|----|-------------|------------|--------------|------------------------------|
| 0 | 1 | -4.9968E+03 | 0.0000E+00 | 4.9968E+03 | 1.0000E+00 |
| 0 | 2 | 9.4755E-01 | 0.0000E+00 | 9.4755E-01 | 1.8963E-04 |
| 0 | 3 | 1.1290E-01 | 0.0000E+00 | 1.1290E-01 | 2.2595E-05 |
| 0 | 4 | -2.5768E-01 | 0.0000E+00 | 2.5768E-01 | 5.1568E-05 |
| 0 | 5 | 7.9667E-02 | 0.0000E+00 | 7.9667E-02 | 1.5943E-05 |
| 0 | 6 | -6.0307E-02 | 0.0000E+00 | 6.0307E-02 | 1.2069E-05 |
| 0 | 7 | -3.1581E-02 | 0.0000E+00 | 3.1581E-02 | 6.3202E-06 |
| 0 | 8 | 5.2997E-02 | 0.0000E+00 | 5.2997E-02 | 1.0606E-05 |
| 0 | 9 | -1.0434E-01 | 0.0000E+00 | 1.0434E-01 | 2.0881E-05 |
| 0 | 10 | 1.1193E-01 | 0.0000E+00 | 1.1193E-01 | 2.2401E-05 |
| 0 | 11 | -6.0307E-02 | 0.0000E+00 | 6.0307E-02 | 1.2069E-05 |
| 0 | 12 | 2.4397E-01 | 0.0000E+00 | 2.4397E-01 | 4.8825E-05 |