TRANSVERSE MAGNETS

- 0.9 T – 1.3 T frozen spin (NH_3 - HDice)
- 2 T high homogeneity $\Delta B/B <= 10^{-3}$ NH_3 (DNP)

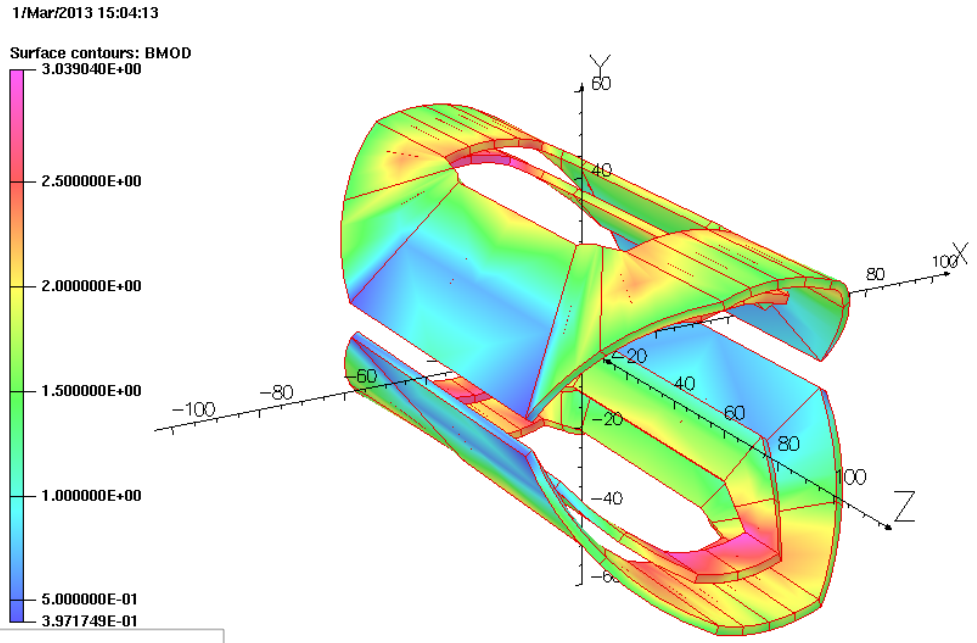
1T DIPOLE

thickness 2 mm (13 mm and x 37 mm)

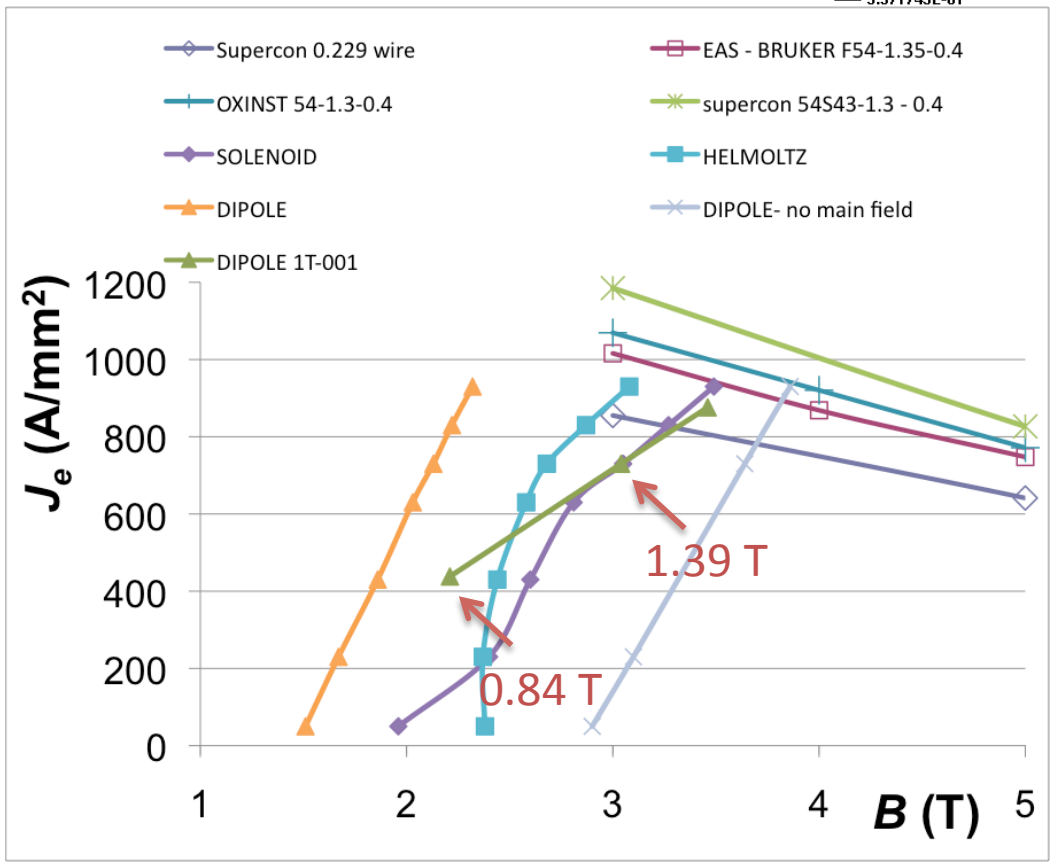
inner radii 30 mm and 36.8 mm

overall lenght 120 mm

straight length 70 mm



Opera



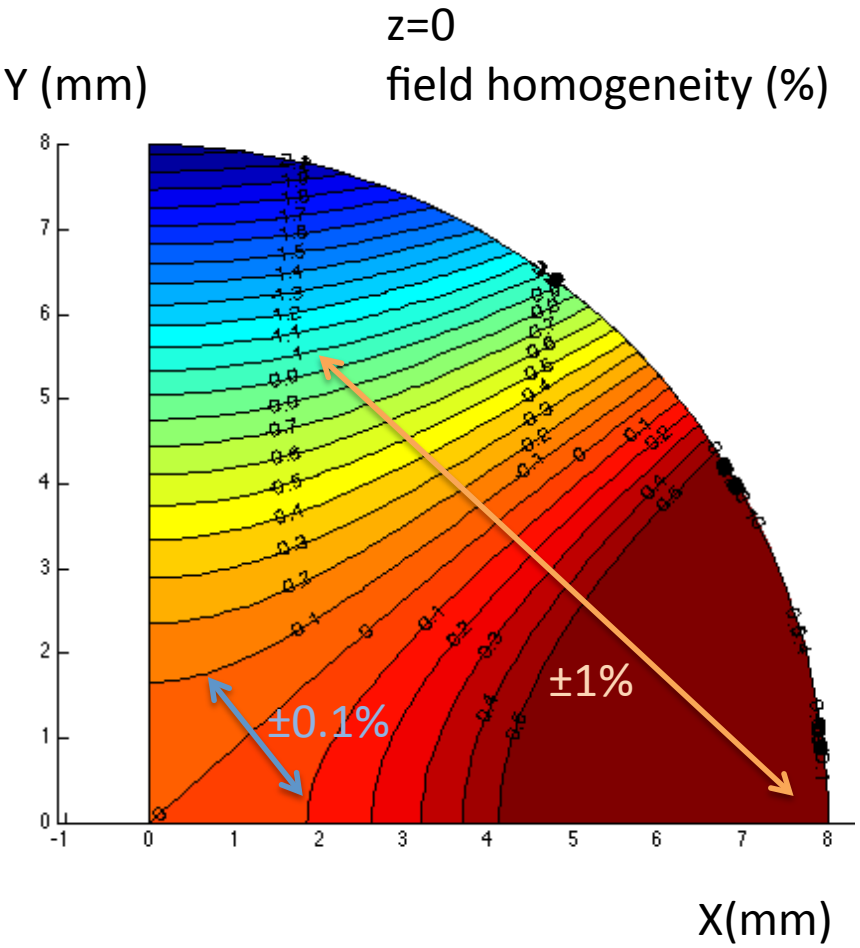
NbTi WIRE

- Je=730 A/mm²
- B@(0,0,0) = 1.39 T
- safety margin about 20%
- wire d = 0.4 mm
- I = 133 A

1T DIPOLE - 2

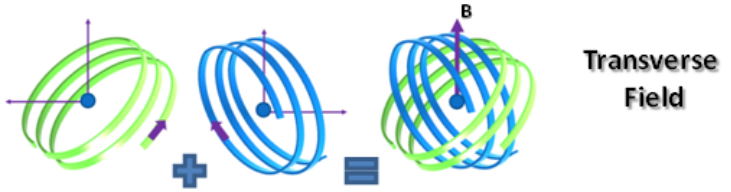
- forces (outer coil)
  - straight 3 kN : σ=1.2 Mpa
  - curved elements: σ=2.8 MPa
- quench protection
  - energy @ 730 A/mm^2 : 632 J
  - induction L=7.2 10^{-2} H
  - max voltage 1000 V
  - no reaction time
  - dump resitance 7.54 Ohm
  - max temperature about 130 K
- field quality B= 0.9-1.3 T

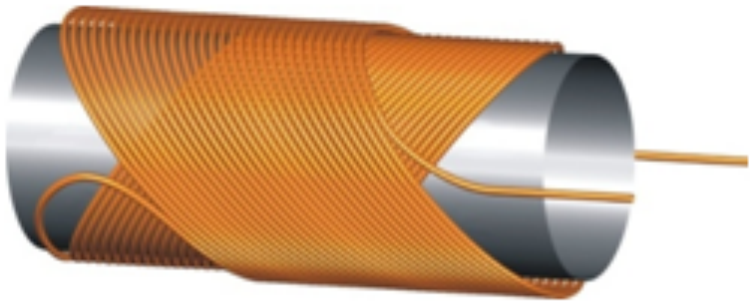
- next
  - geometry to improve acceptance
  - field in z direction
  - force analisys
  - quench protection



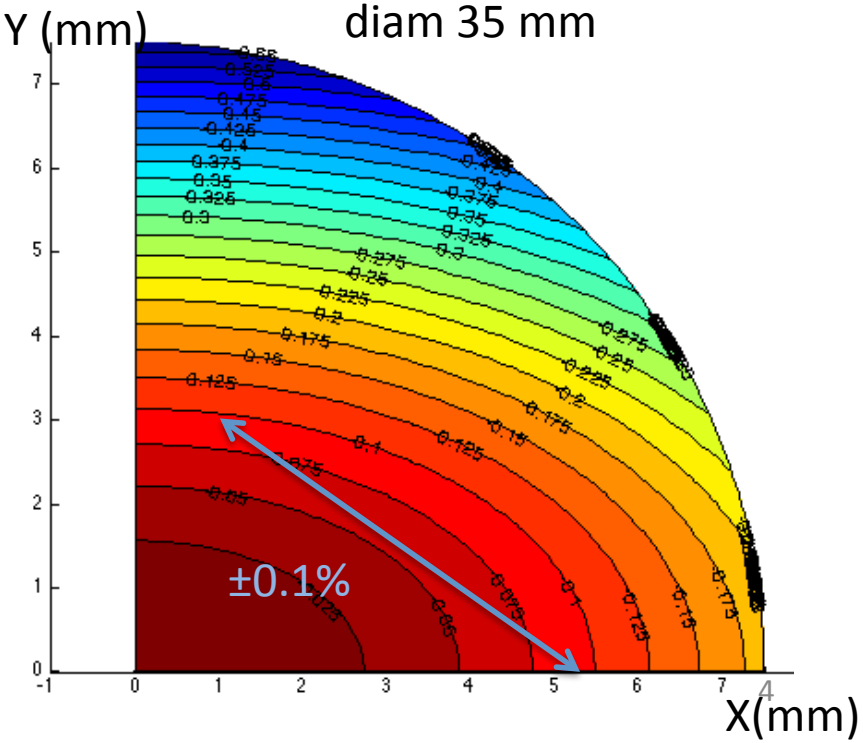
2T DOUBLE HELIX

- high field homogeneity
- patented for SC magnets
- xy no acceptance
- length: to be calculated





low field (0.2 T)
transverse double helix
diam 35 mm



CONCLUSIONS

- 1 T dipole
  - rough magnetic design
  - analize forces
  - improve geometry, quench protection
- 2 T dipole
  - double helix magnet solution
  - contact the company (A.M.L.)