

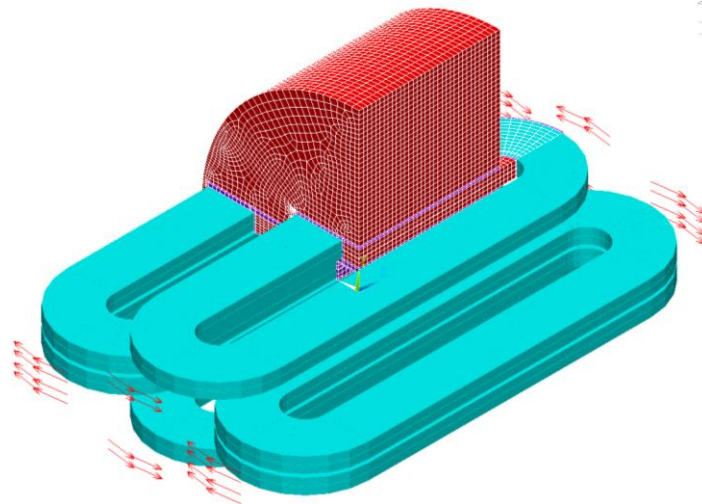


Design of the sub- scale coil for EDIPO 2

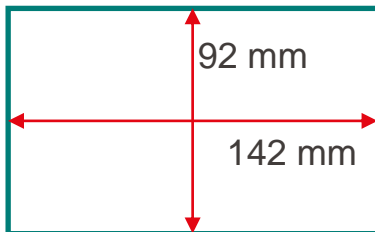
M. Daly

EDIPO2 Subscale
13.02.2024

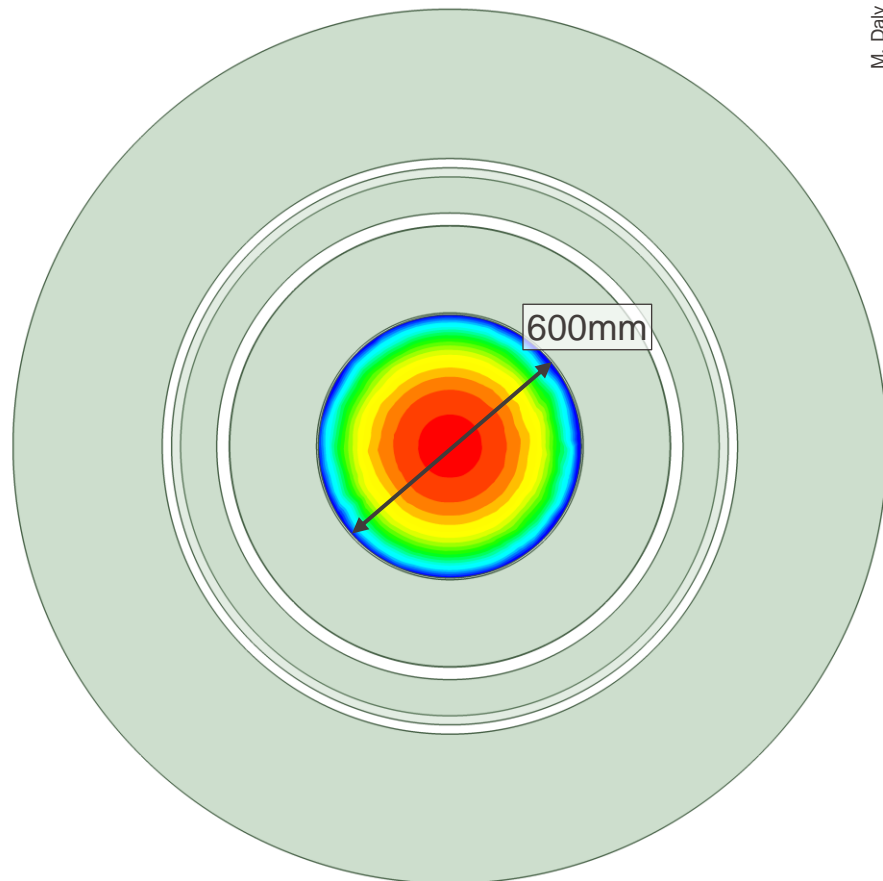
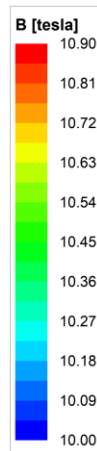
- Block coils (racetrack with or without flared ends)
 - Winding, tooling, feasibility of geometry, two layers or more, impregnation
 - Stress sensitivity of Nb_3Sn
- Detachable poles
 - Coil behaviour
 - How to ensure reliable detachment
- Weak points of Coils
 - Layer jumps
 - Splices
 - Instrumentation
 - Coil ends
- Validate simulations
 - Conductor limits and quench simulations



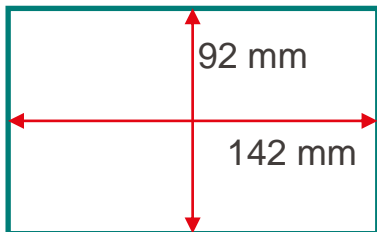
- SULTAN sample cavity



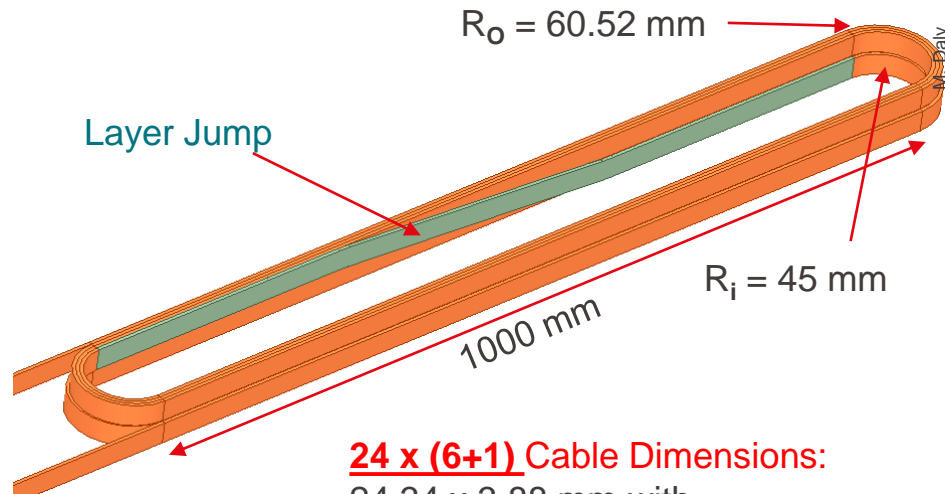
- Follow similar preparation to SULTAN Samples
- 15 kA or 100 kA sample current
- Closed loop cooling (cooling plates and pressurized He)



- SULTAN sample cavity

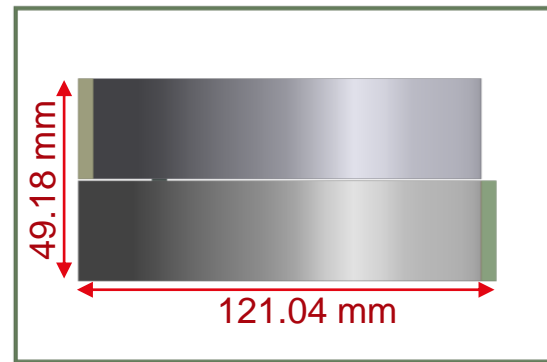


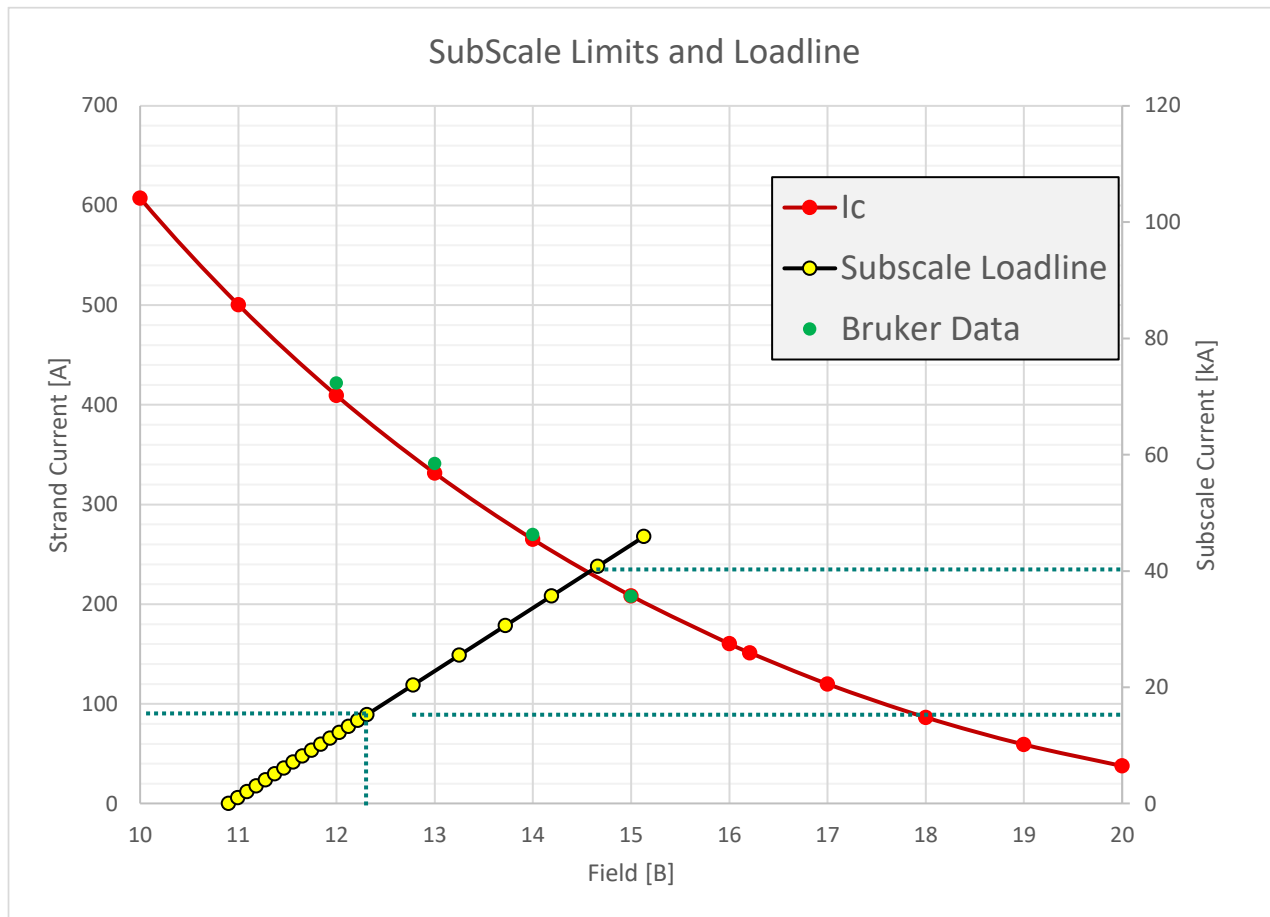
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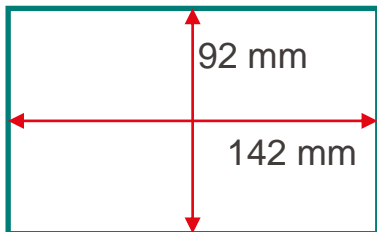
24 x (6+1) Cable Dimensions:

24.34 x 3.88 mm with
0.2mm insulation included

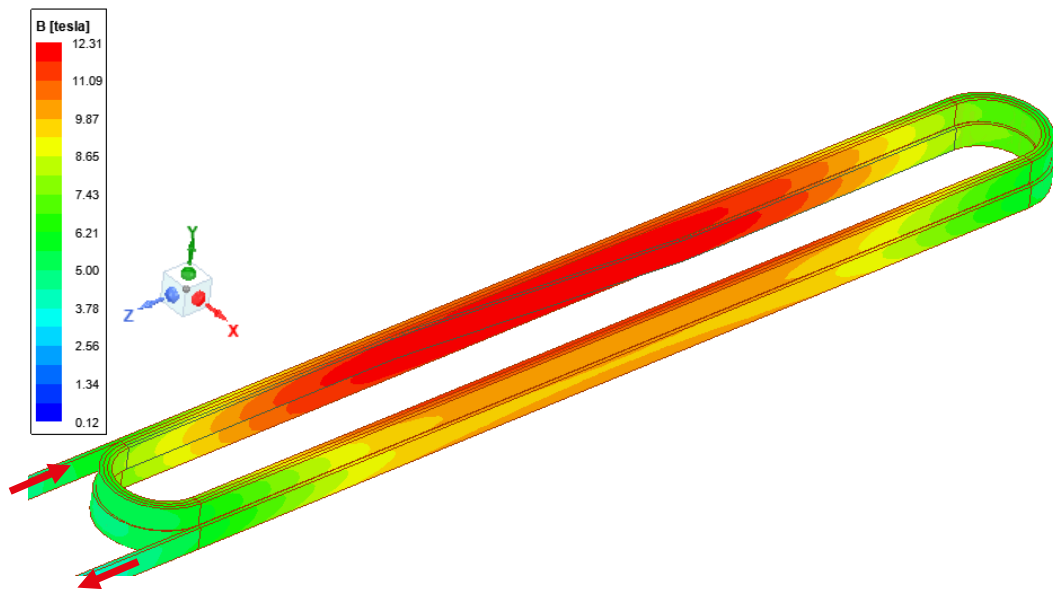




- SULTAN sample cavity

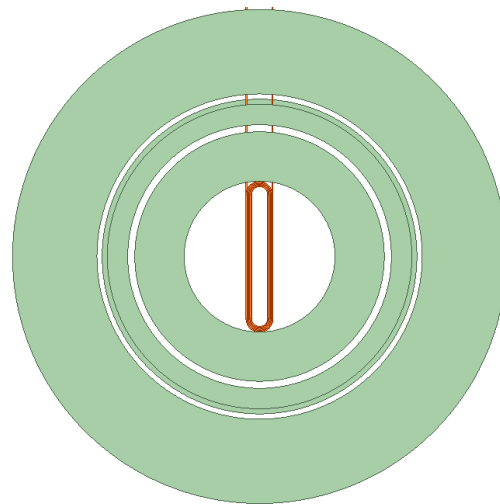
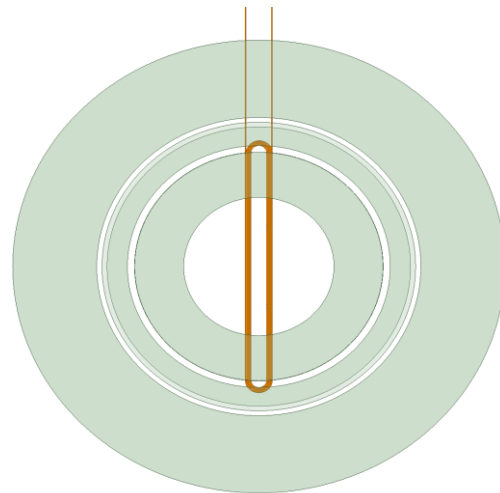
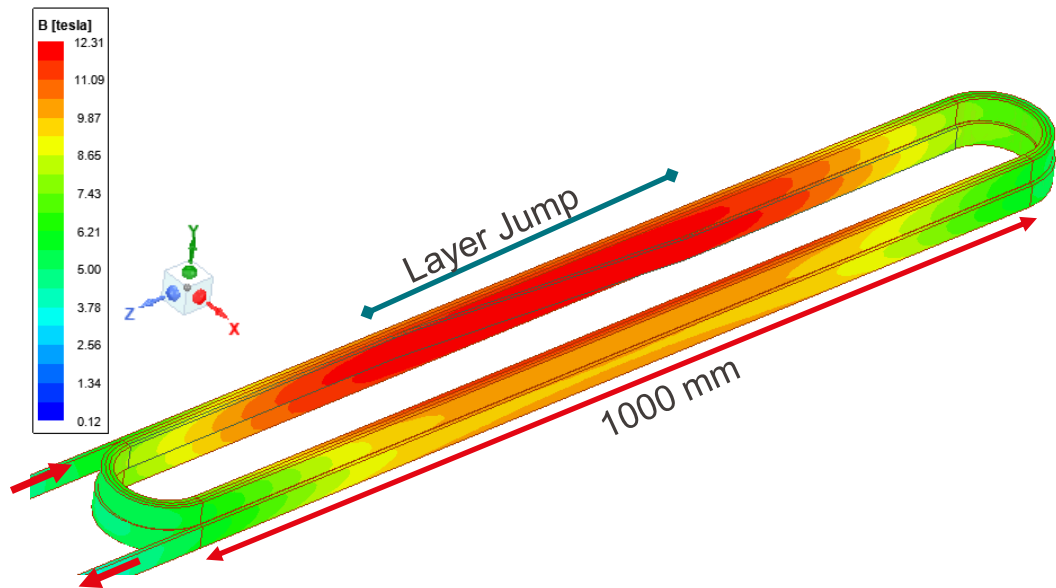


- 15 kA
- 5 turns (more or less)
- $B_{\text{background}} = 10.9 \text{ T}$
- 1000 mm Straight segments

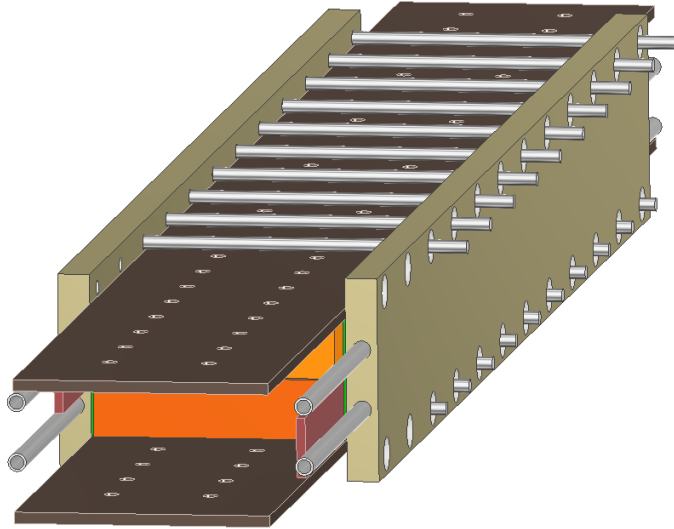


Ansys Mechanical (N)	X	Y	Z
Positive Lorentz Forces	1044517	50479	15
Negative Lorentz Forces	-1044326	-42543	-9994

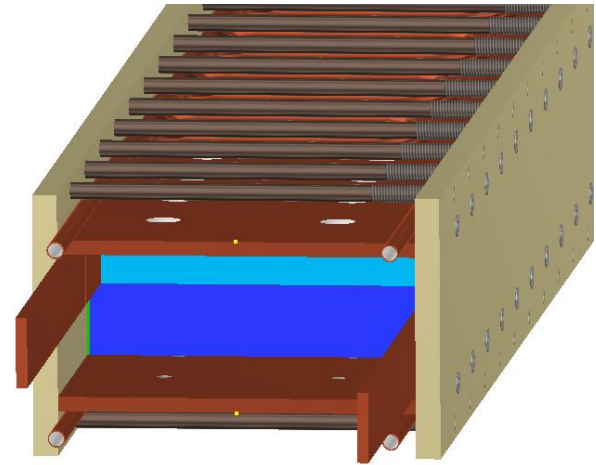
Subscale: Dimensions

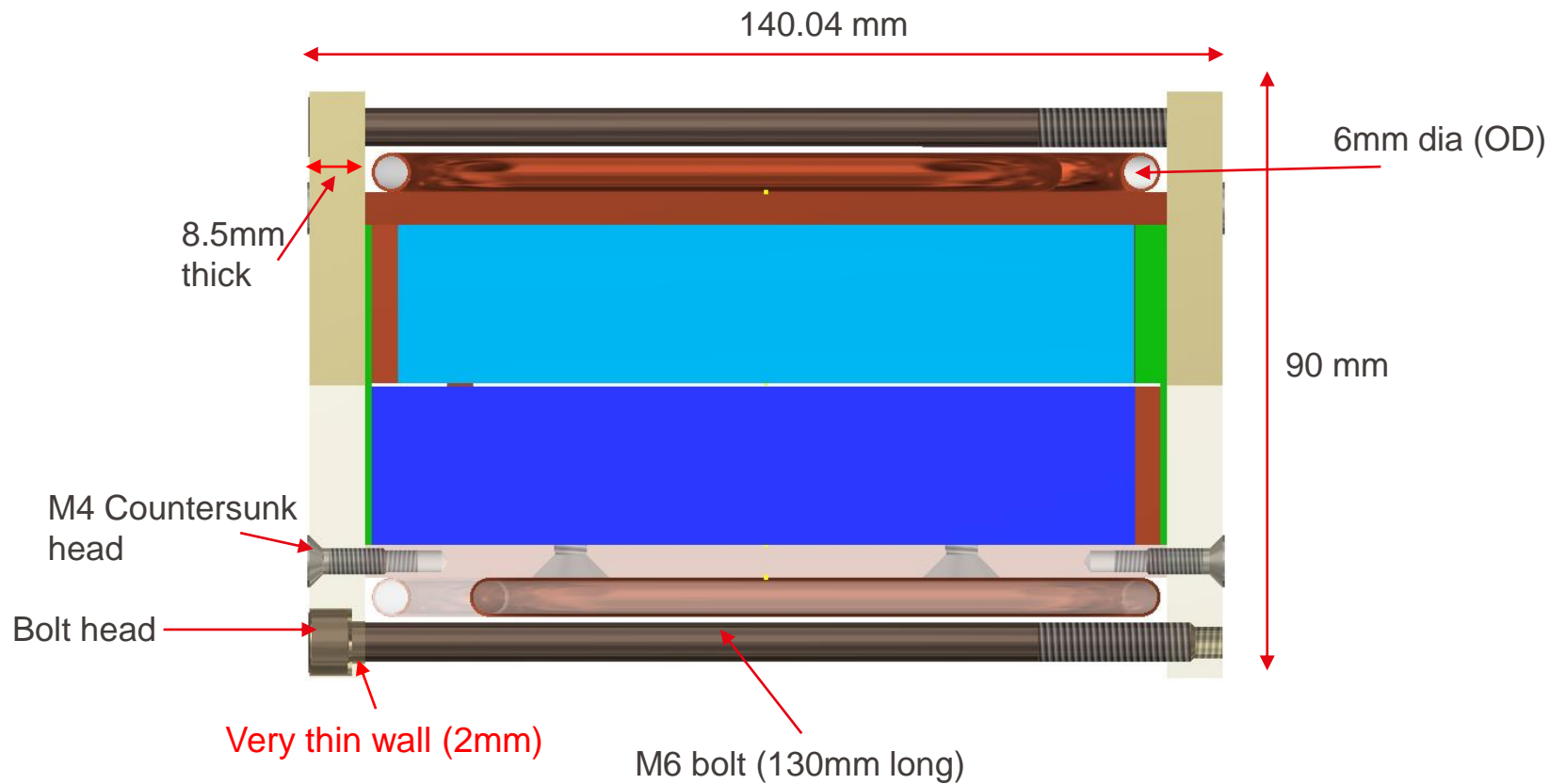


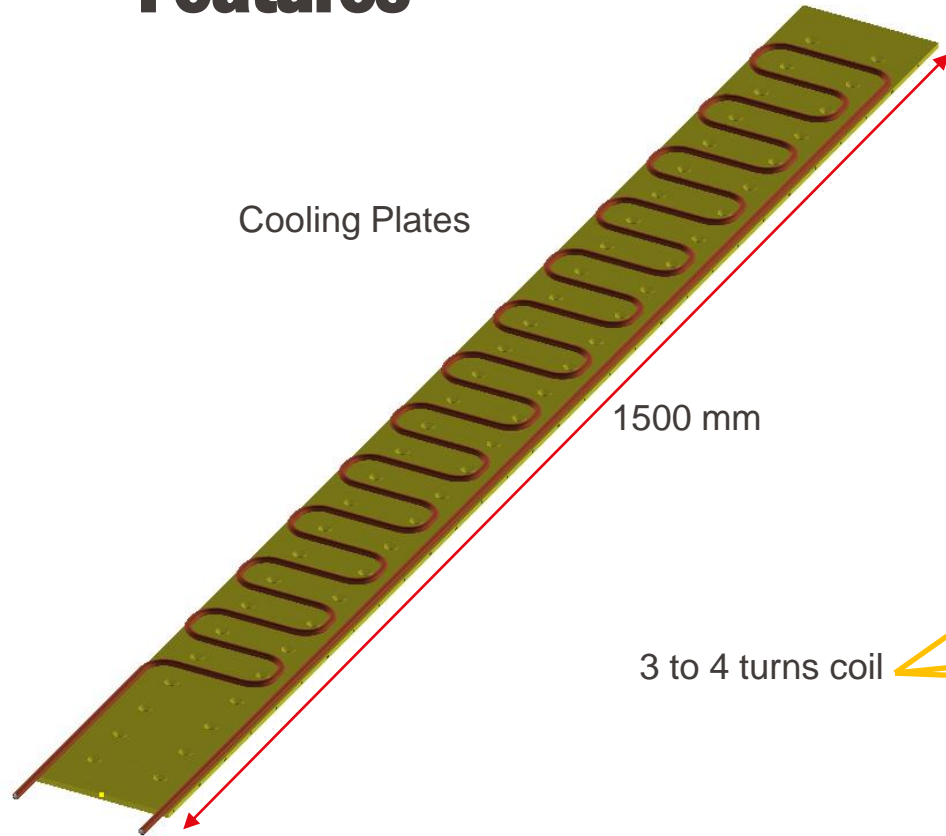
- 2 Layer Subscale 02



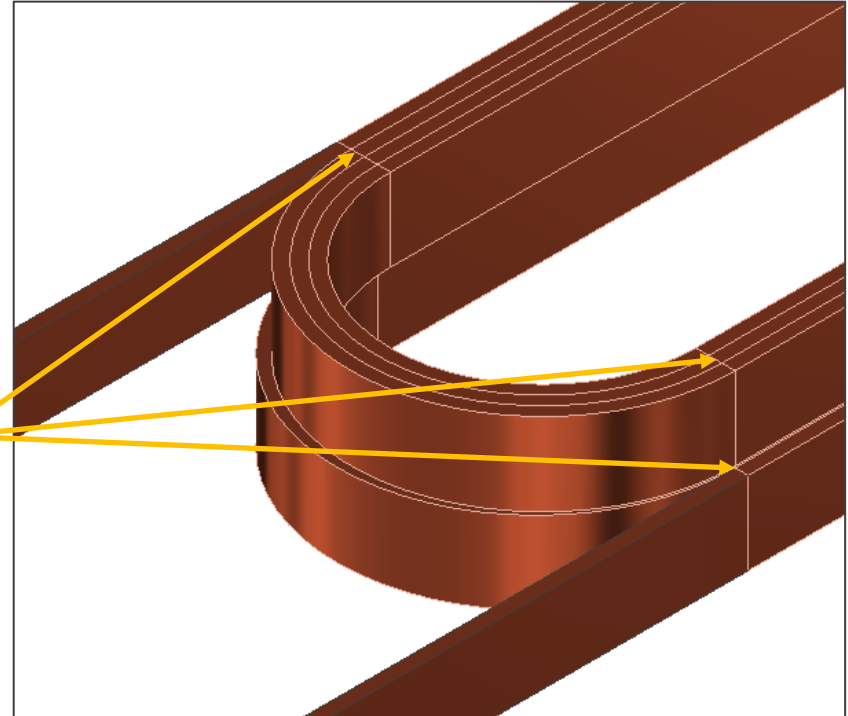
- 2 Layer Subscale 03

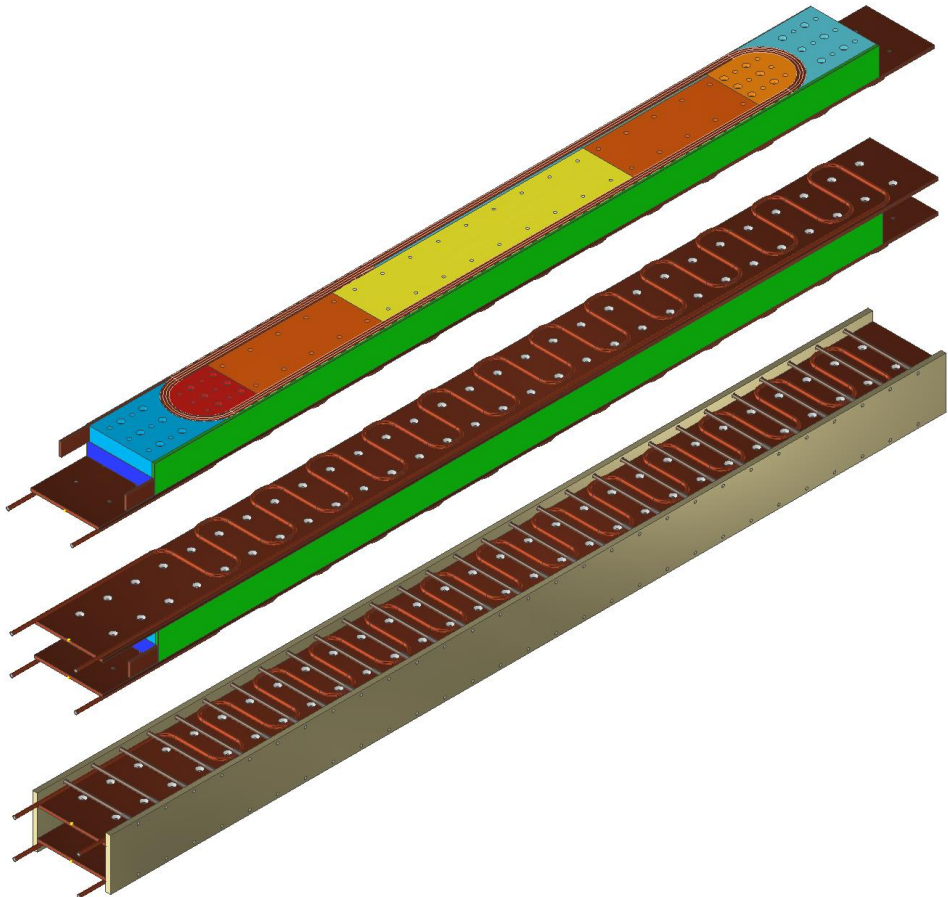
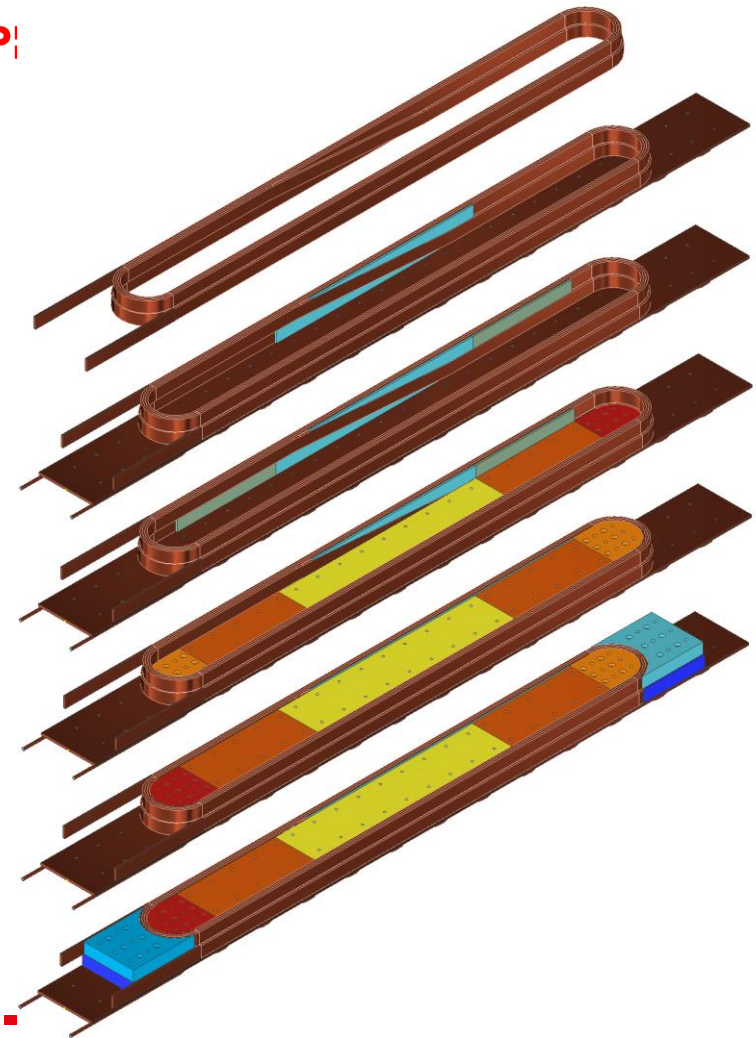






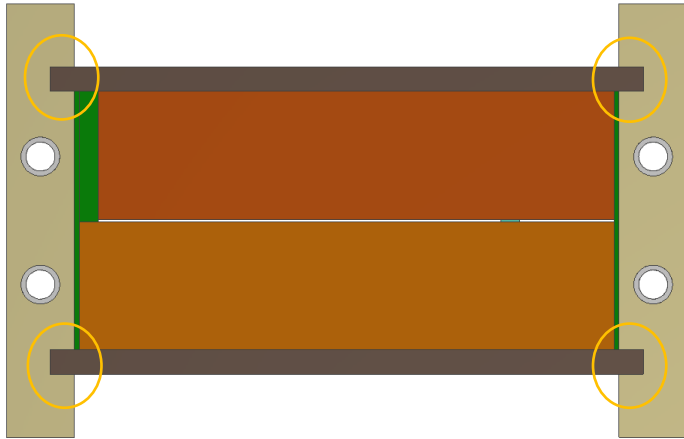
3 to 4 turns coil





Alternative designs

- Counter Y-direction forces



- Leads (1m)

