NSLS2 Dual Field Dipole

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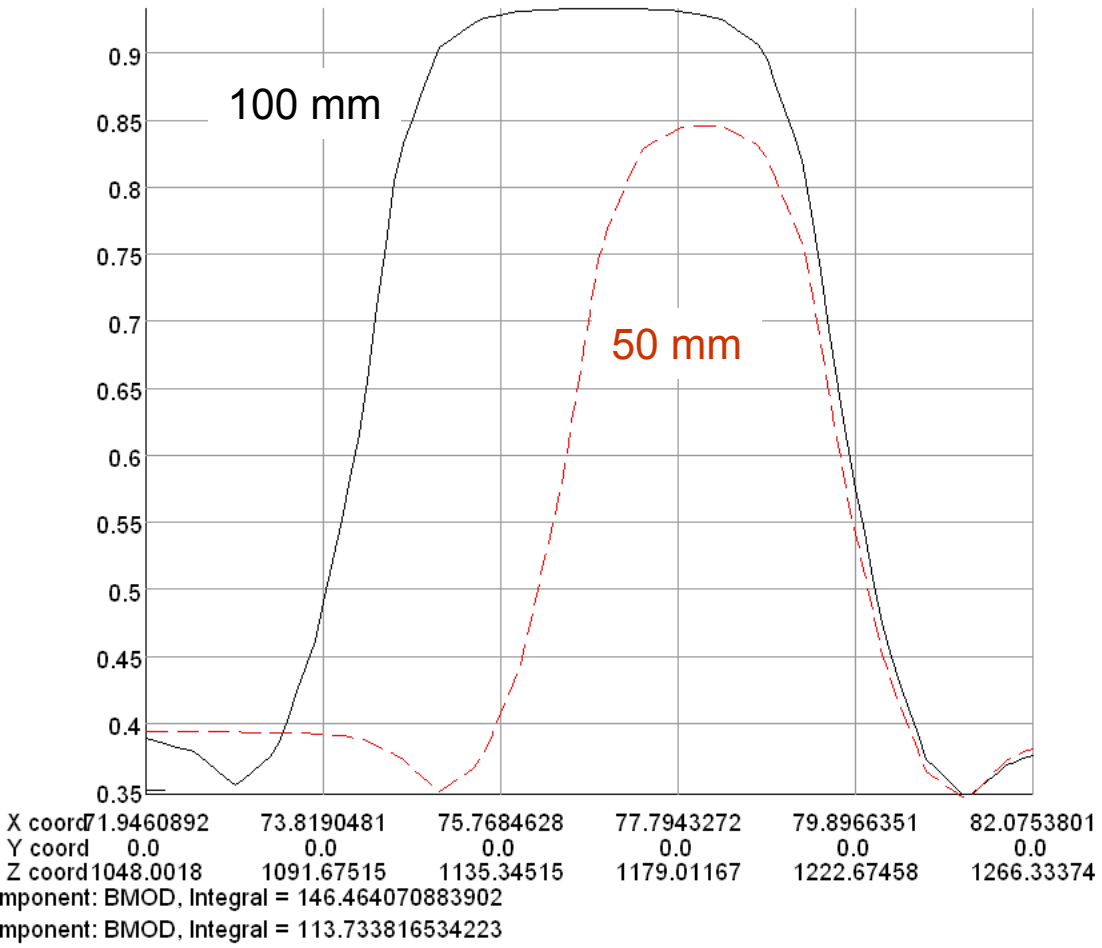
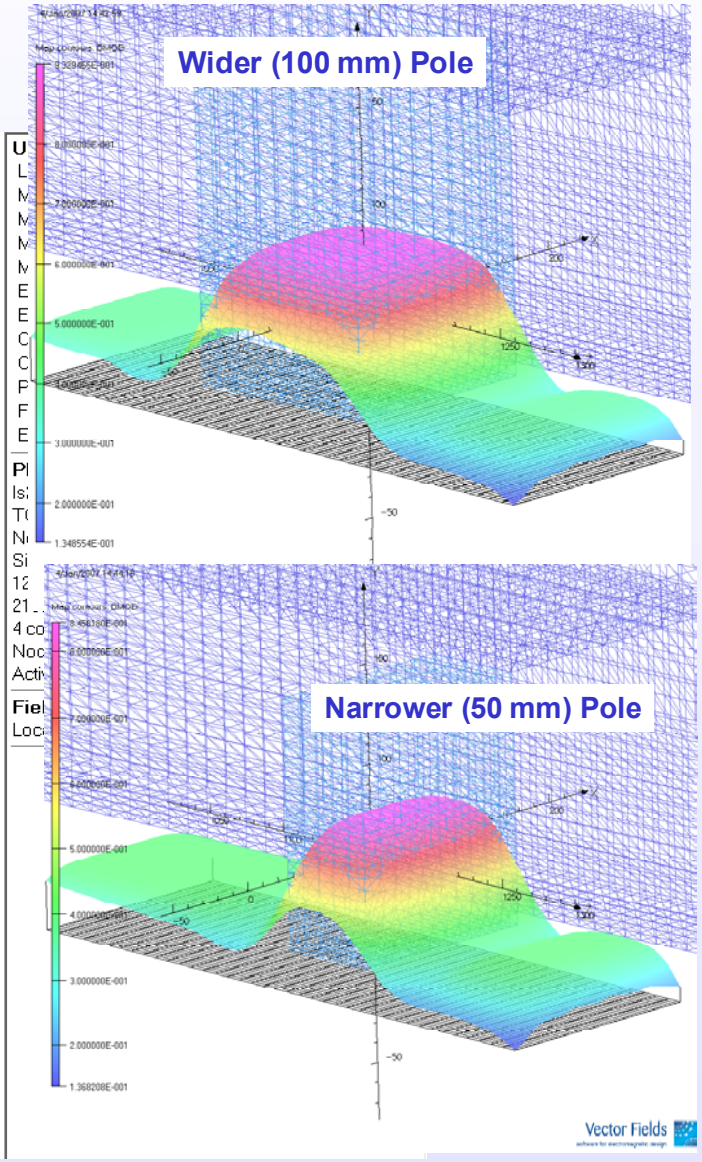
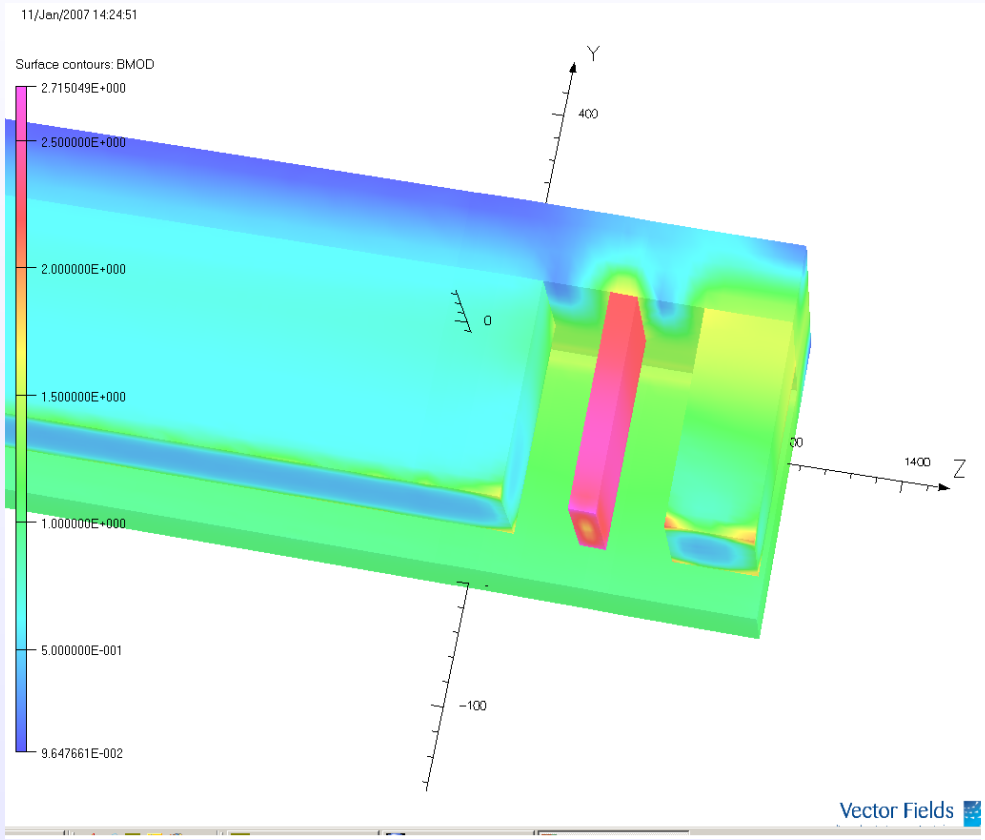
Case Study of Narrower Pole (50 mm instead of 100 mm wide)

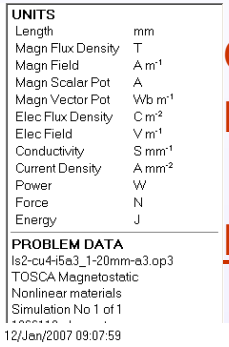
Conclusion from the last meeting: 100 mm or even 50 mm wide pole was too big. For 2 mrad, we need more like 20 mm wide pole.





Computer Models with 20 mm Wide Powered Tooth

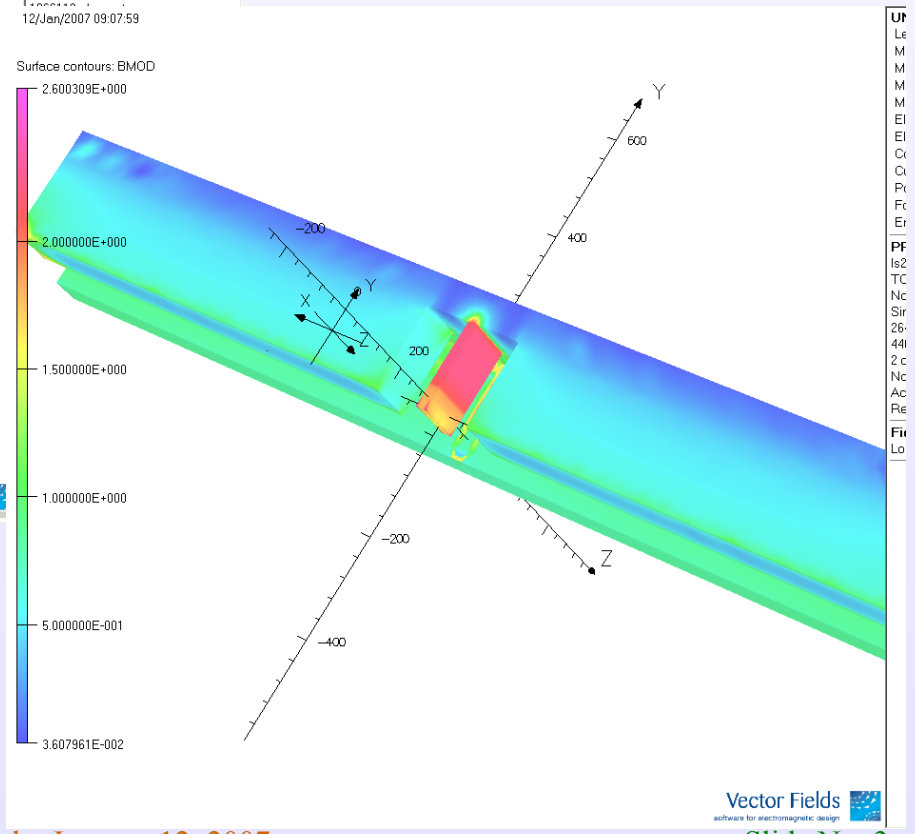




Old model : Tooth towards one side

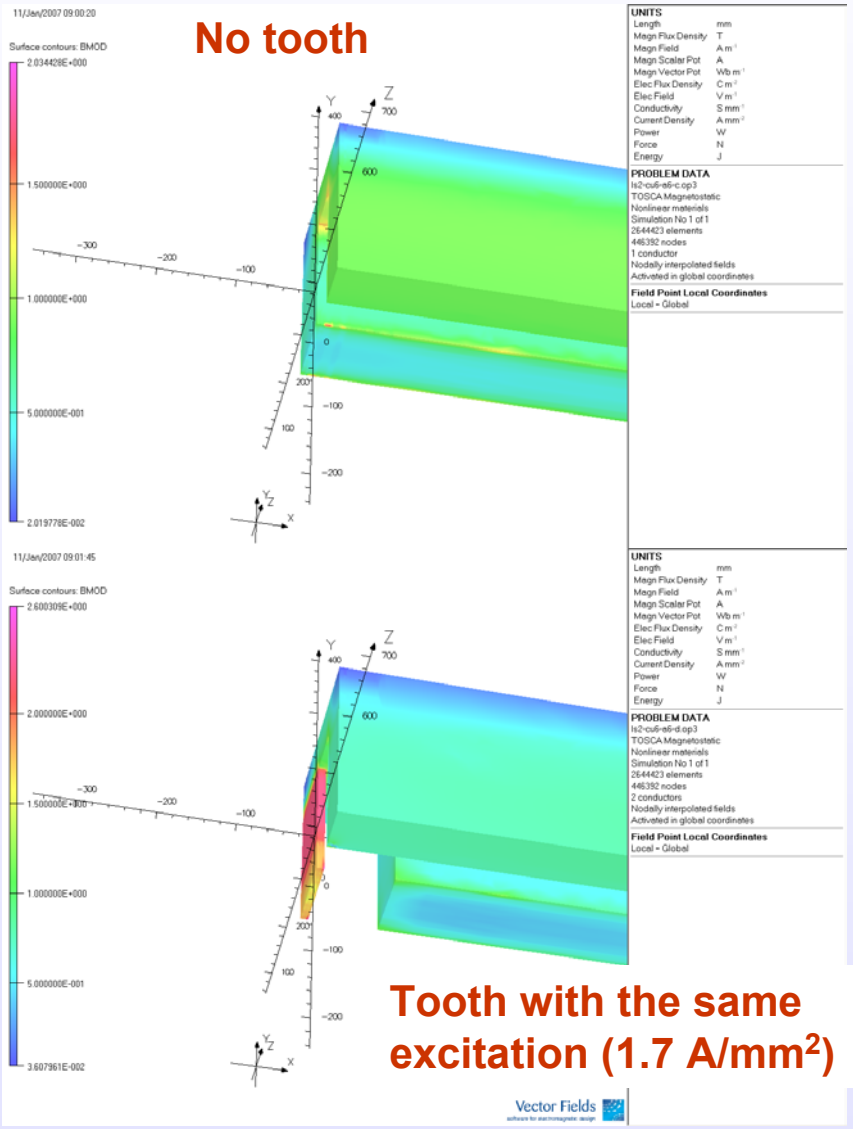
New model : Tooth in the middle

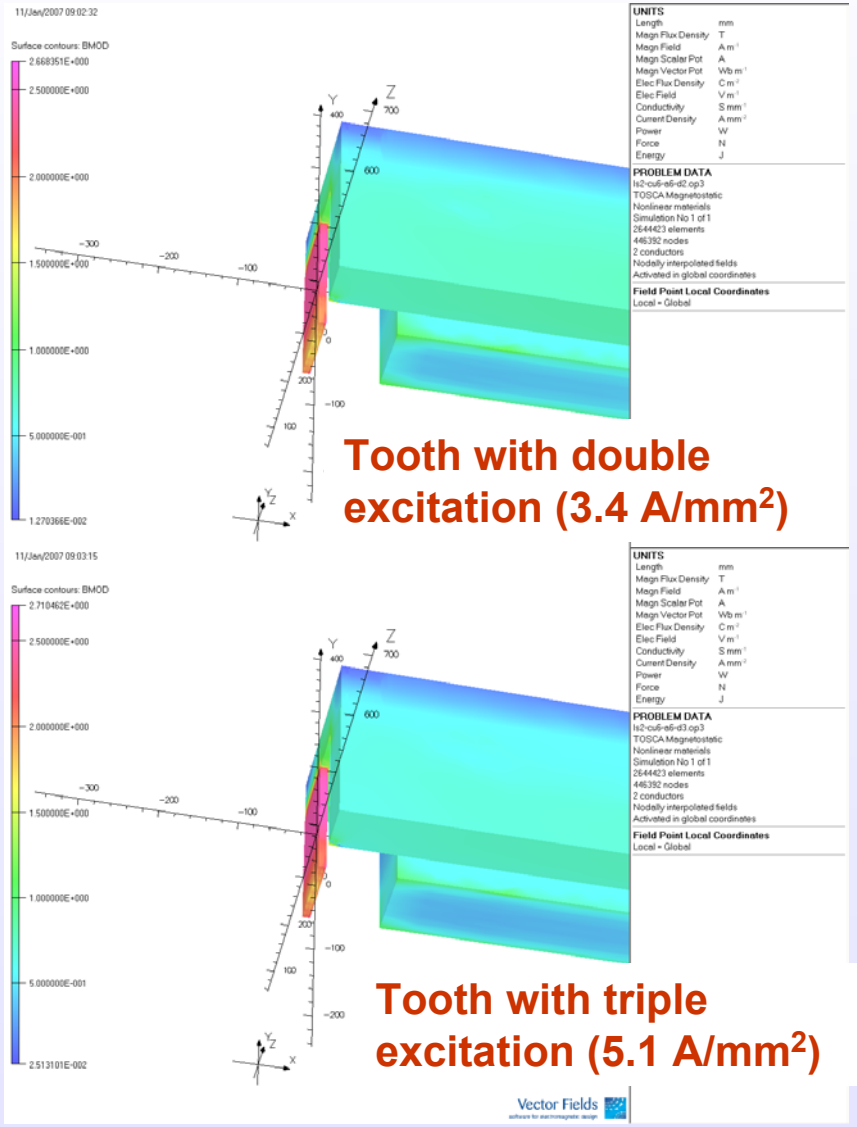
No major difference in final outcome



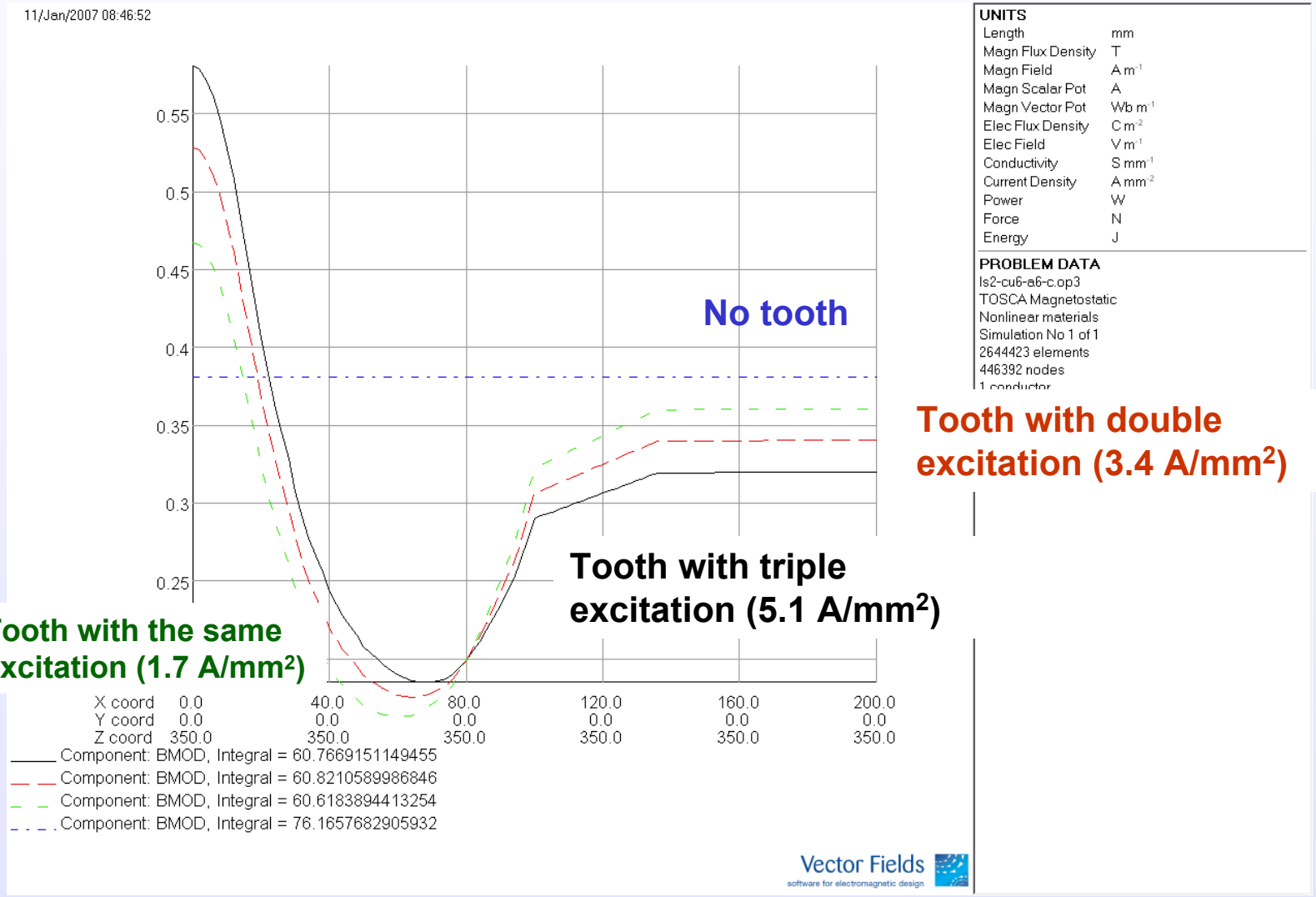
Coils and lower half of the model removed for clarity

Tooth Excited at Different Level (to understand the limit caused by saturating iron)



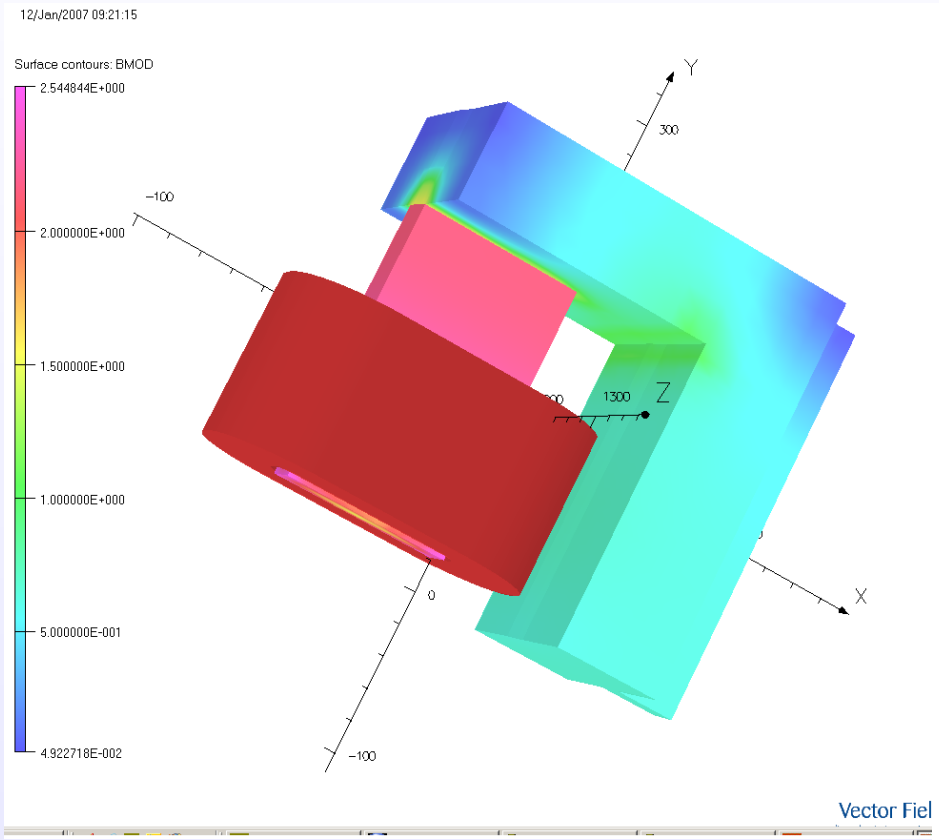


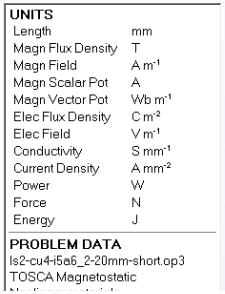
Axial Profile for Different Excitation of Tooth



Very Narrow Pole Poses its challenges

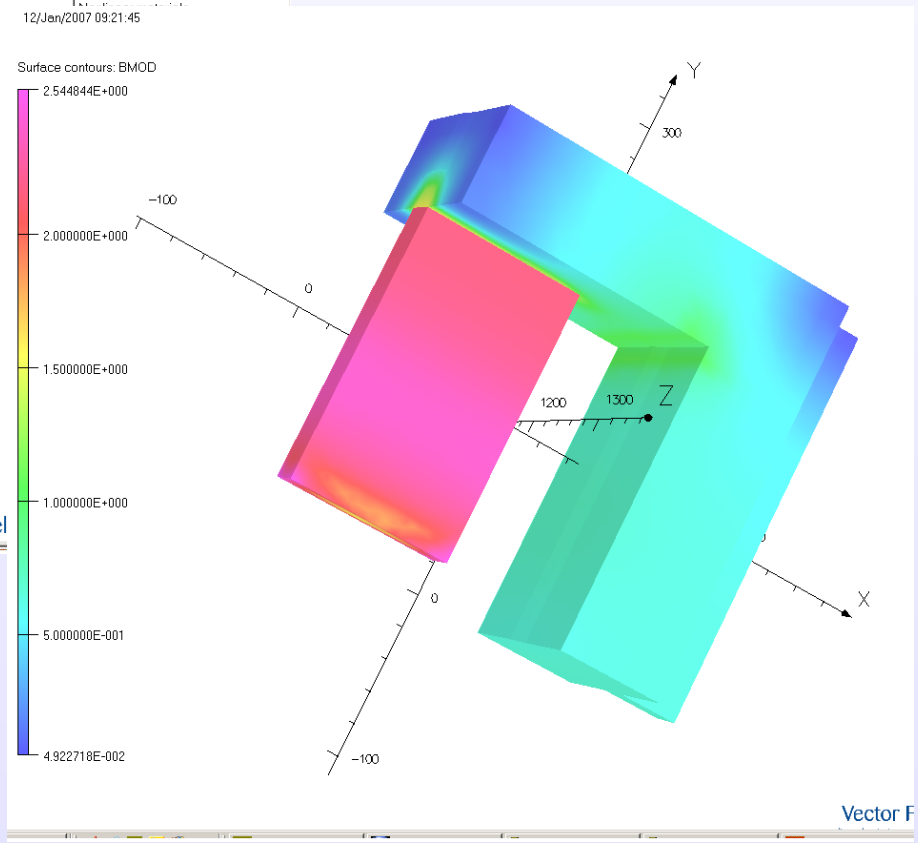
Question: How much can we get by stand alone magnet?





Powered at 6.1 A/mm^2

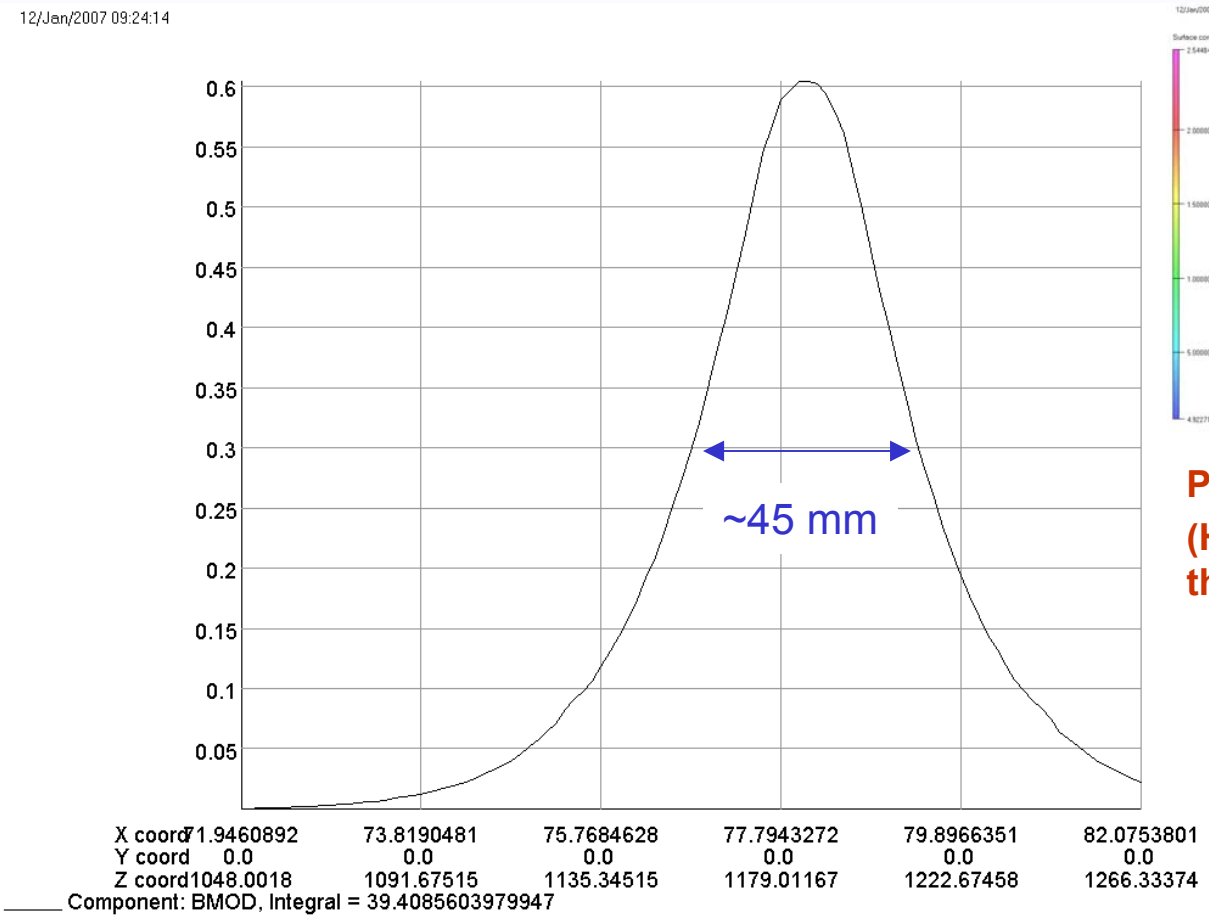
(High number despite including the help from the base coil)

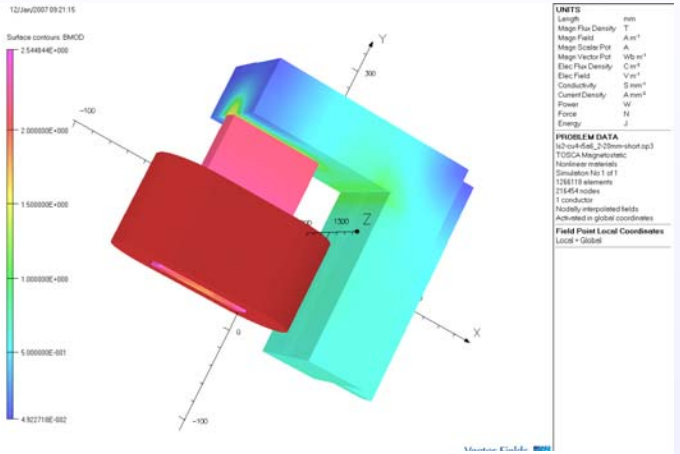


Note: High saturation at the pole.

Next step: Shaping the iron

Is Field Profile Acceptable?





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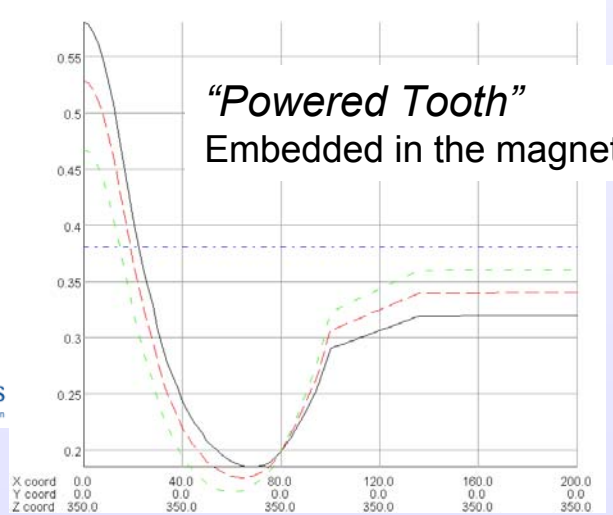

"Powered Tooth"
Embedded in the magnet

Remember we have: 20 mm wide powered tooth, 35 mm pole gap and 100 mm pole width.