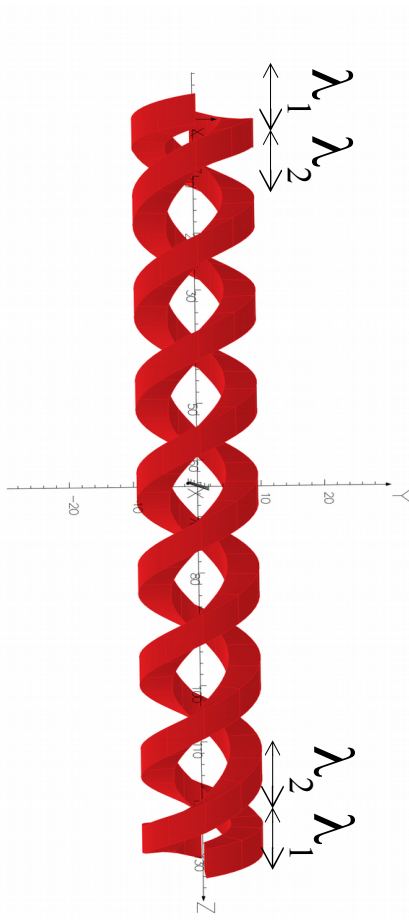


The status of the helical undulator field modeling with OPERA

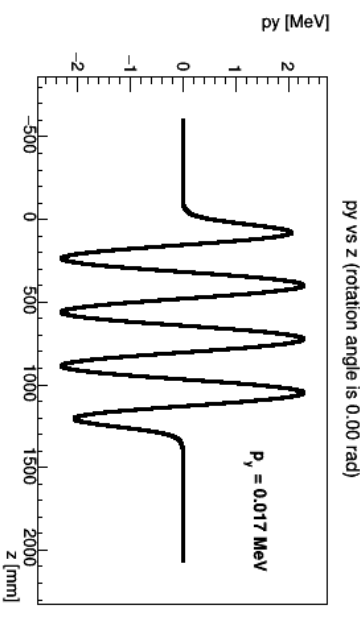
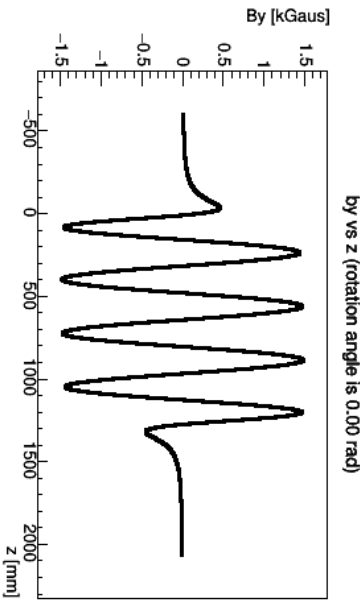
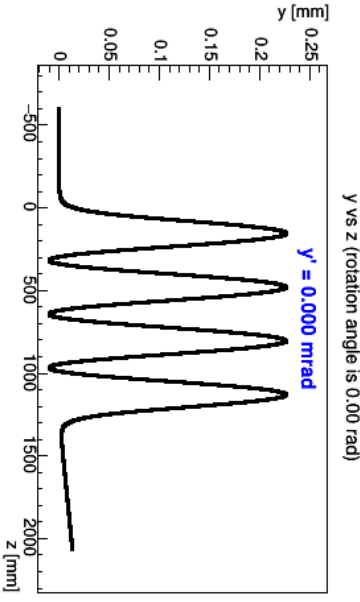
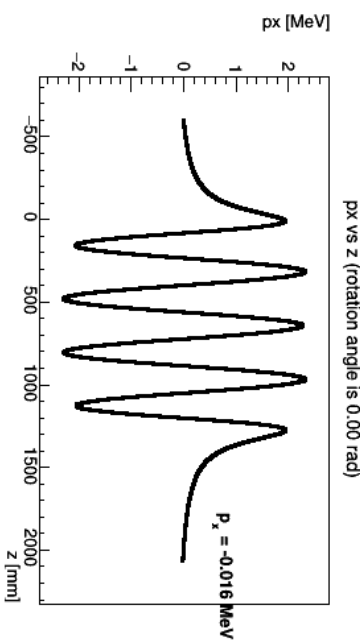
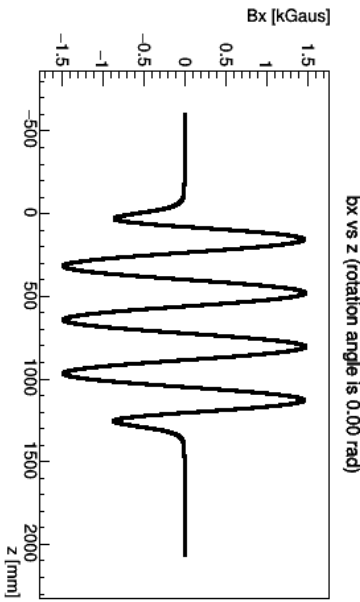
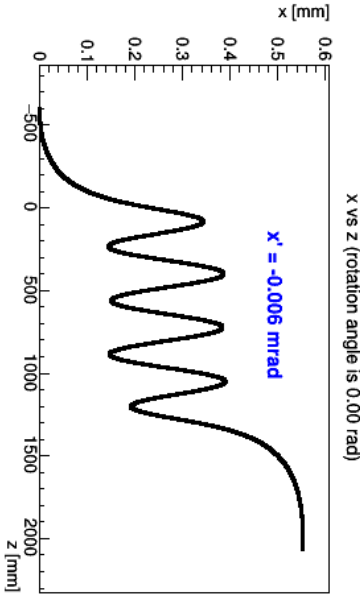
Jim Crittenden

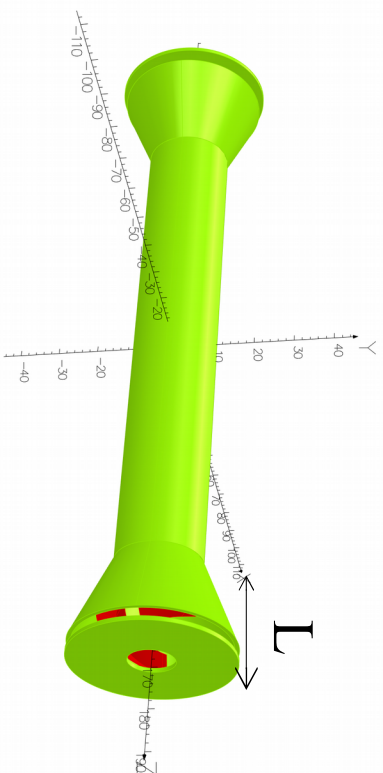
Vardan Khachatryan



$\lambda_1 = 0.31 \lambda_0$, 0.3 turns
 $\lambda_2 = 0.77 \lambda_0$, 0.3 turns

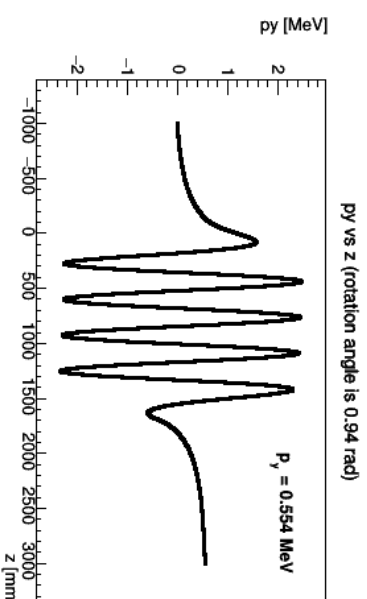
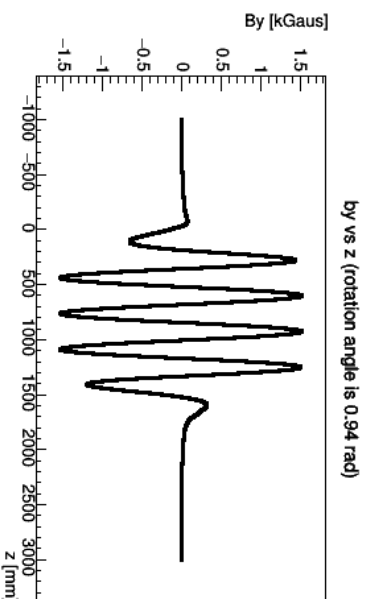
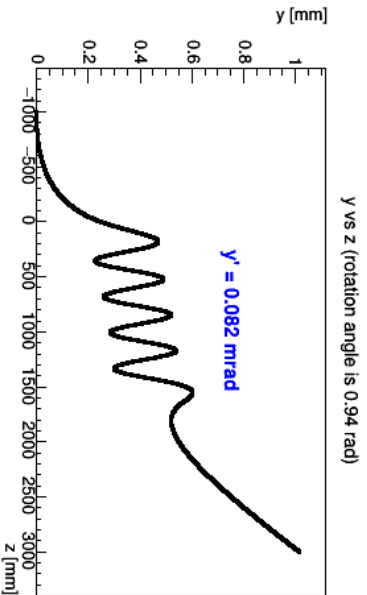
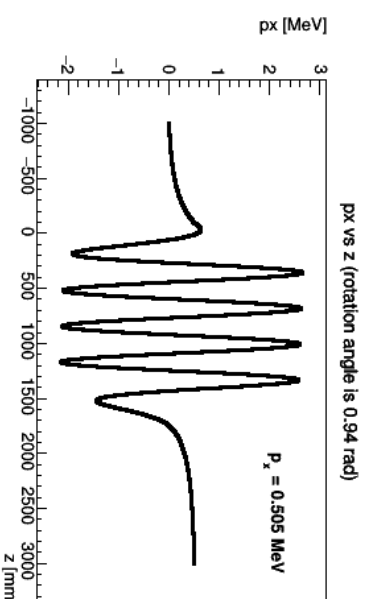
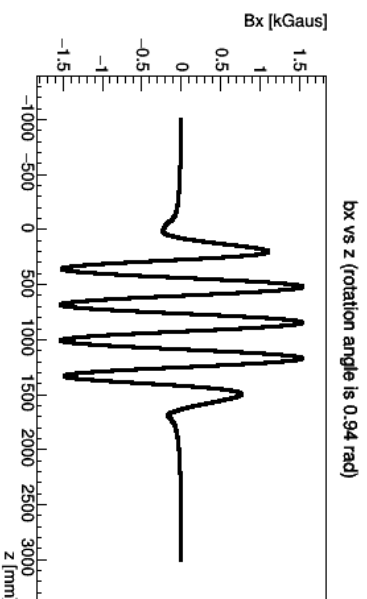
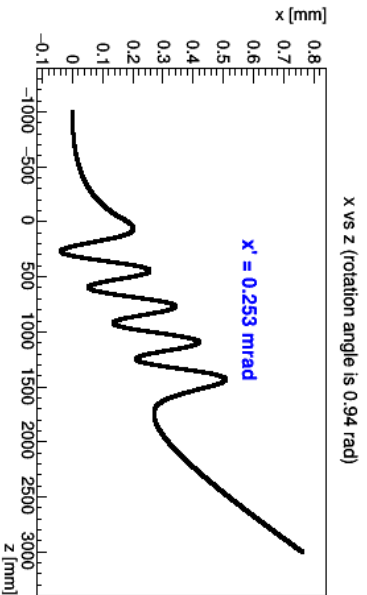
Opera



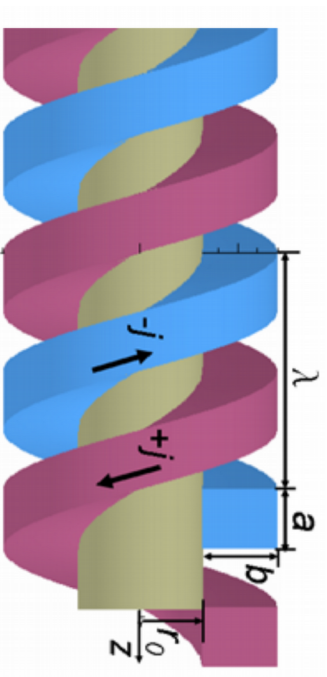


$$L = 0.75 \lambda_0$$

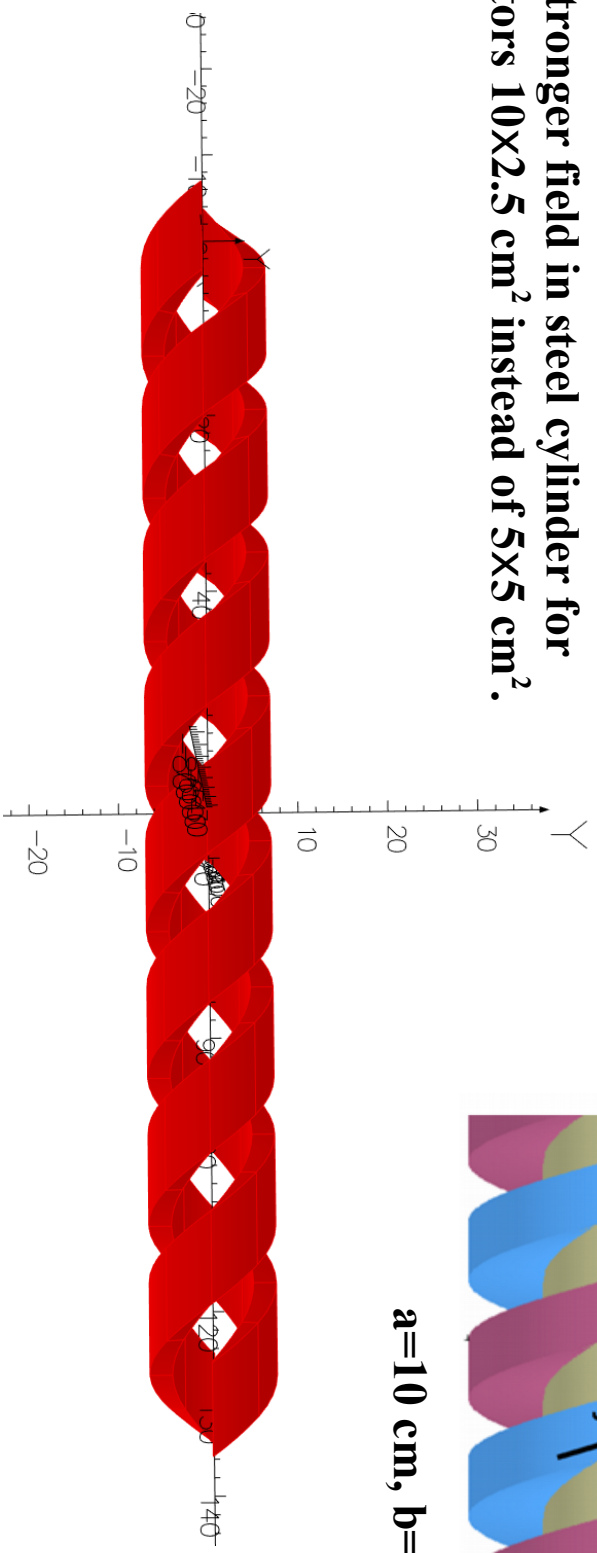
Opera



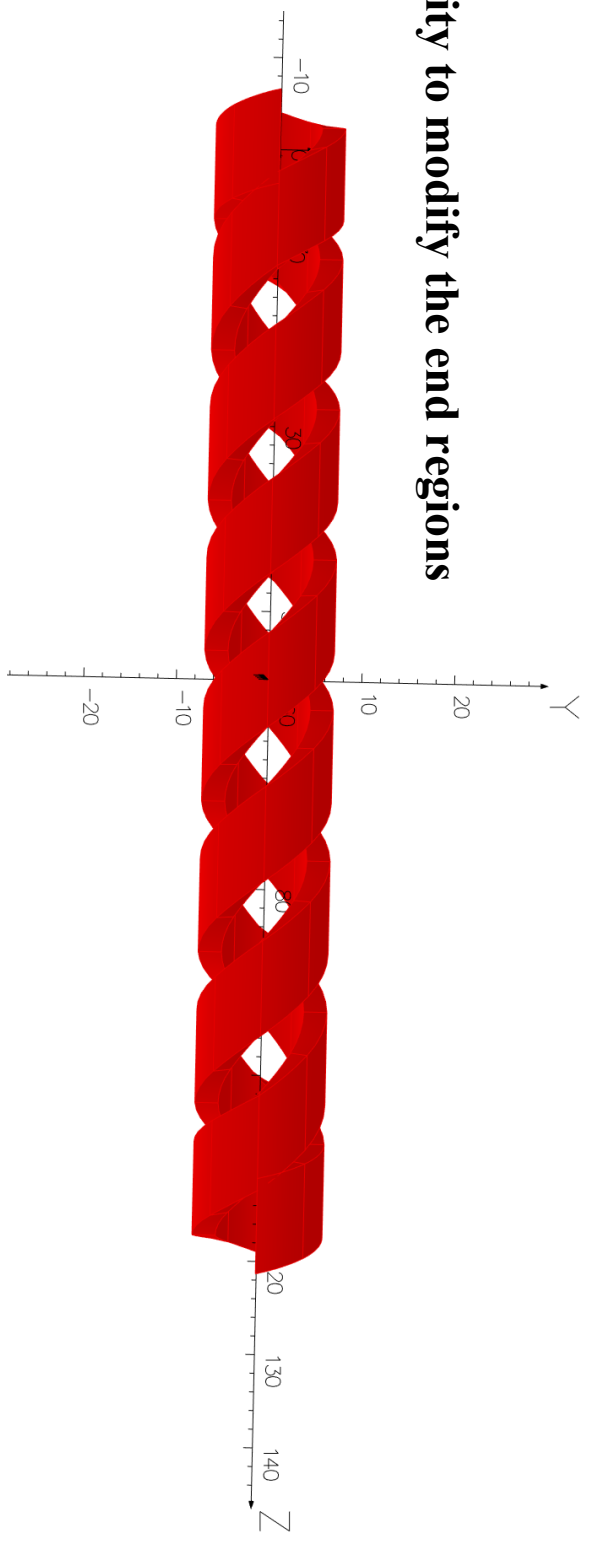
~20% stronger field in steel cylinder for conductors $10 \times 2.5 \text{ cm}^2$ instead of $5 \times 5 \text{ cm}^2$.



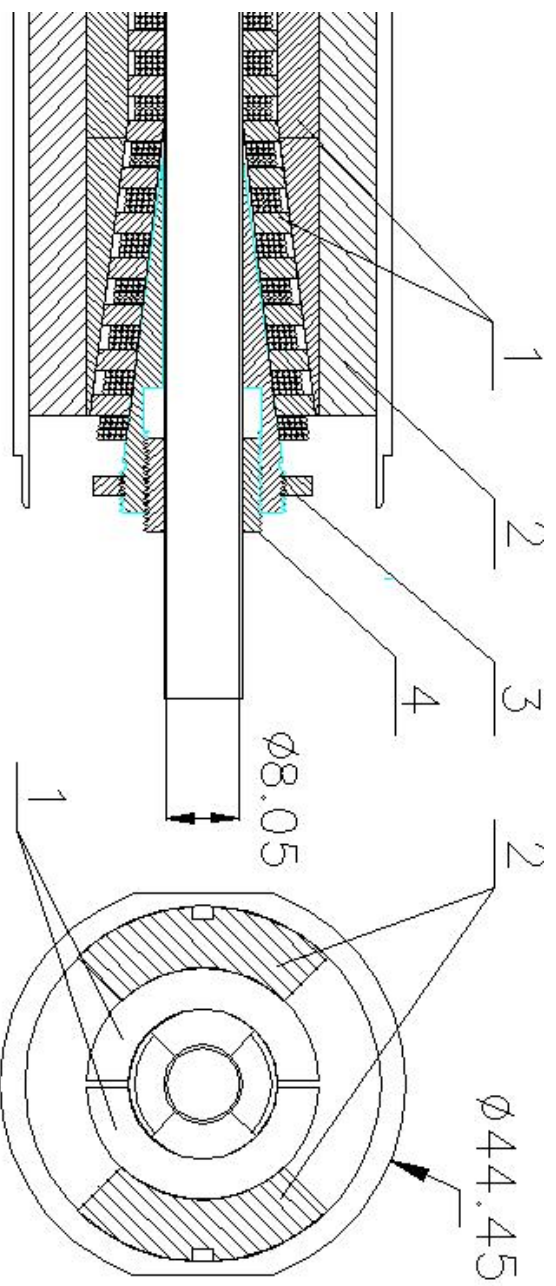
$a=10 \text{ cm}, b=2.5 \text{ cm}$



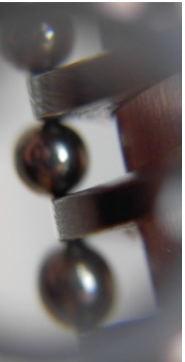
Less flexibility to modify the end regions



End region design



Details of design. 1–Iron yoke, 2–Copper collar, 3, 4–trimming Iron nuts.
Inner diameter of **Copper** vacuum chamber is 8mm clear.

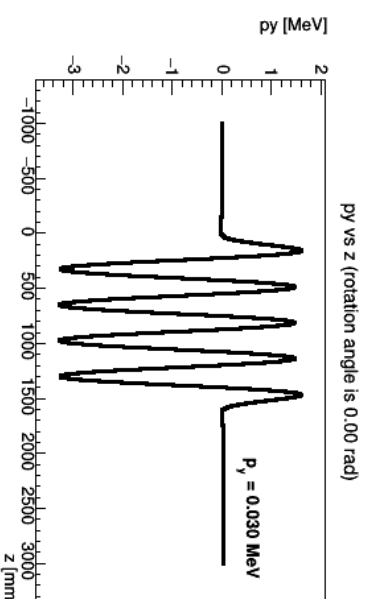
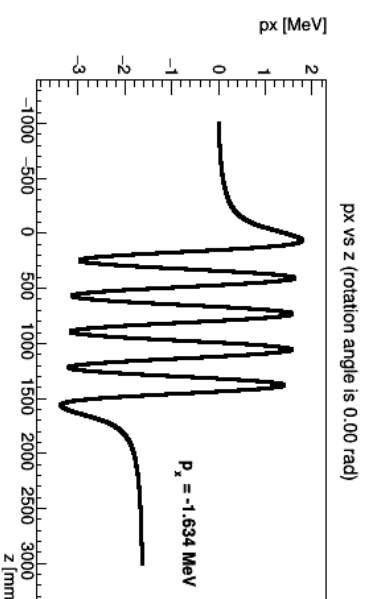
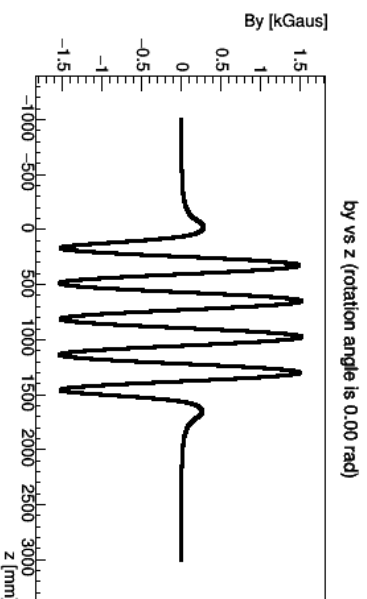
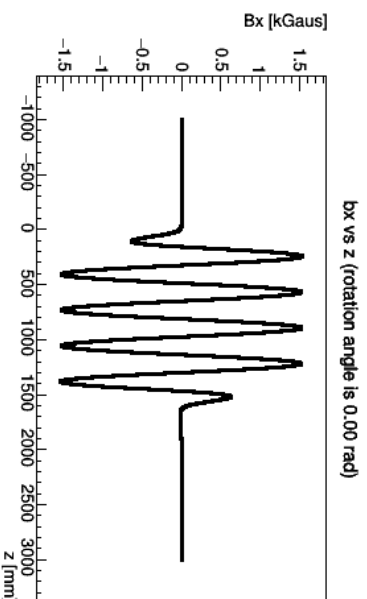
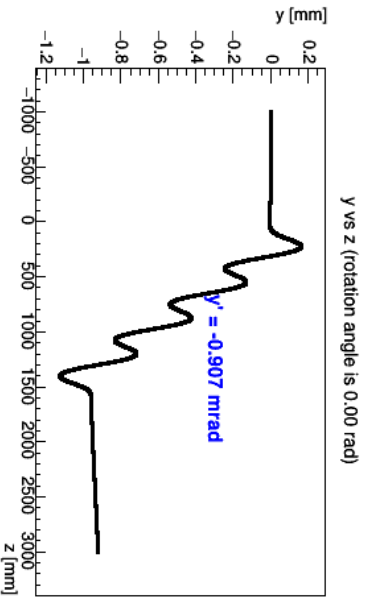
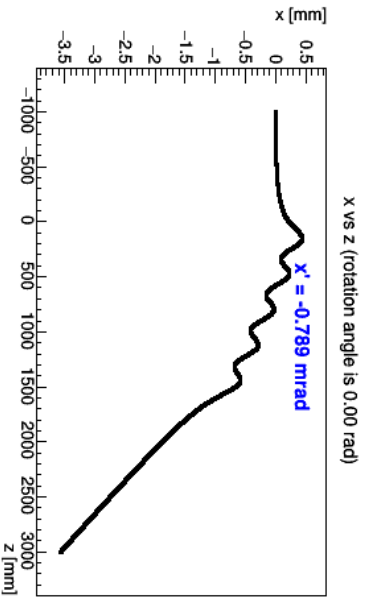
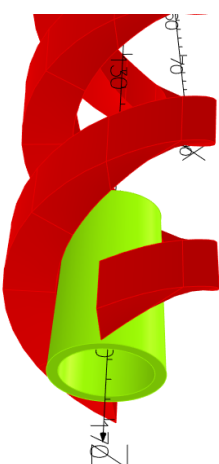


Period kept even

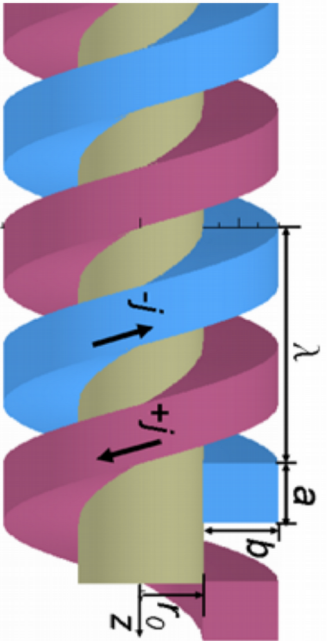


We developed simplified tapering allowing smooth end without diameter expansion

Alexander Mikhailichenko, "THE STATUS OF POSITRON SOURCE DEVELOPMENT AT CORNELL", LCWS2007, May 30-June 4, 2007 Hamburg, DESY



Back-ups



$$\lambda = 32.5 \text{ cm}$$

$$r_0 = 4.5 \text{ cm}$$

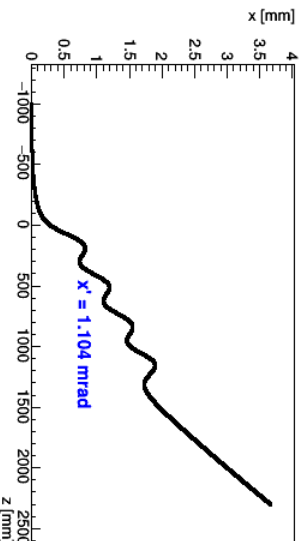
$$b = 5 \text{ cm}$$

$$a = 5 \text{ cm}$$

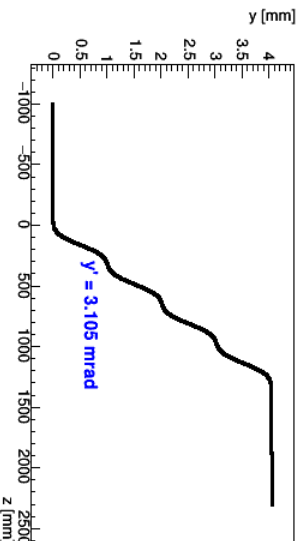
$$j = 0.908 \text{ kA/cm}^2$$

$$B_0 = 0.15 \text{ Tesla}$$

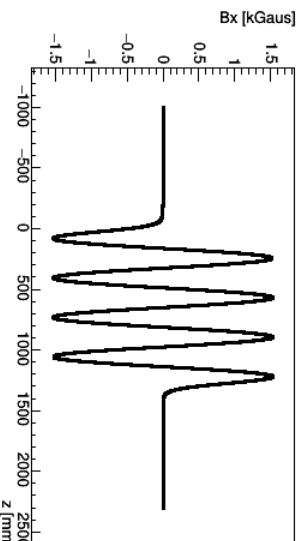
x vs z (rotation angle is 0.00 rad)



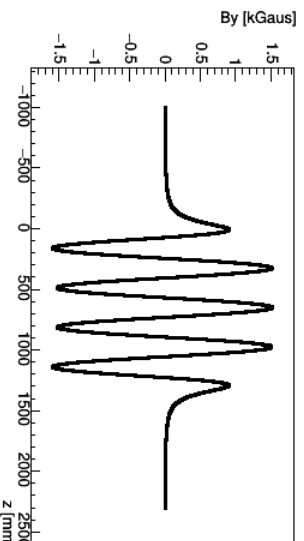
y vs z (rotation angle is 0.00 rad)



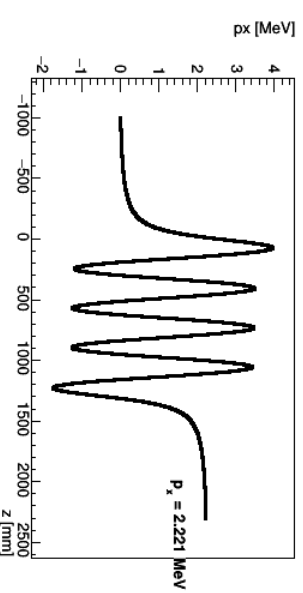
Bx vs z (rotation angle is 0.00 rad)



By vs z (rotation angle is 0.00 rad)



px vs z (rotation angle is 0.00 rad)



py vs z (rotation angle is 0.00 rad)

