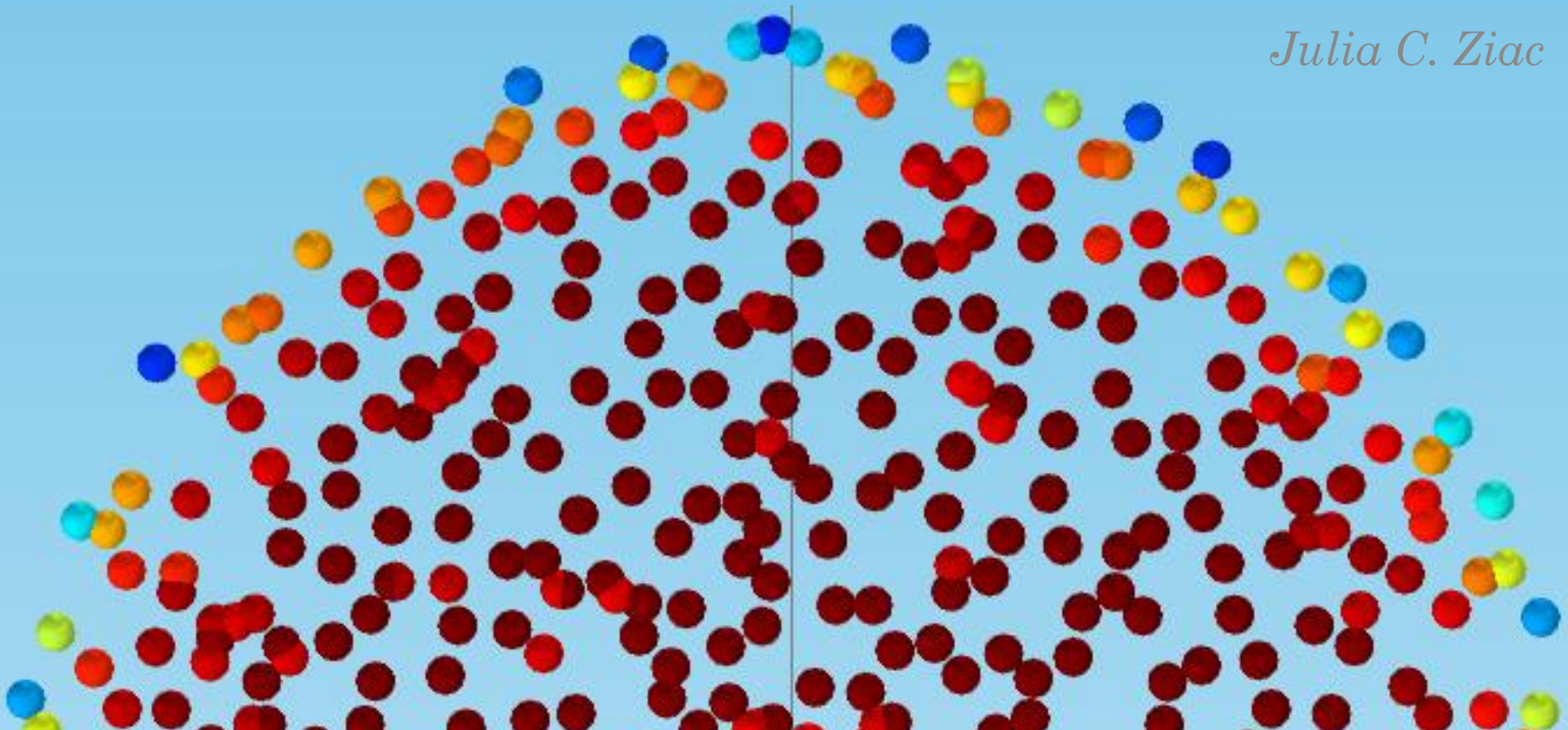
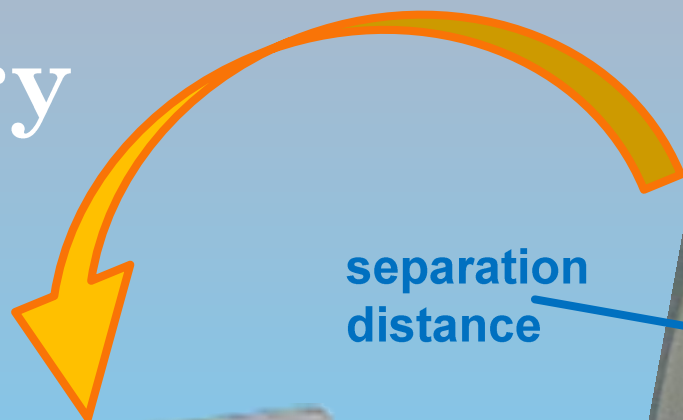


# Numerical Simulation of the Electric Field and the Study of Electron Collection Efficiency in a Xe TPC

*Julia C. Ziac*



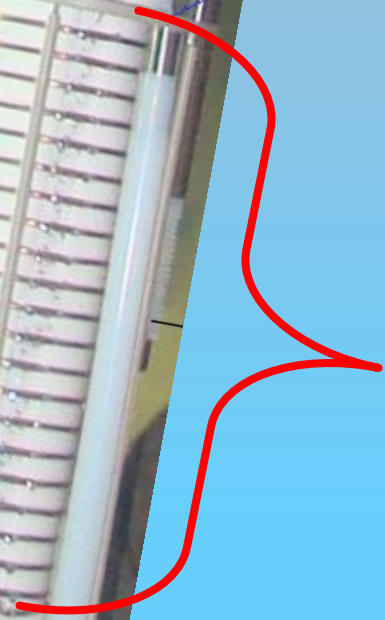
# Geometry



separation  
distance

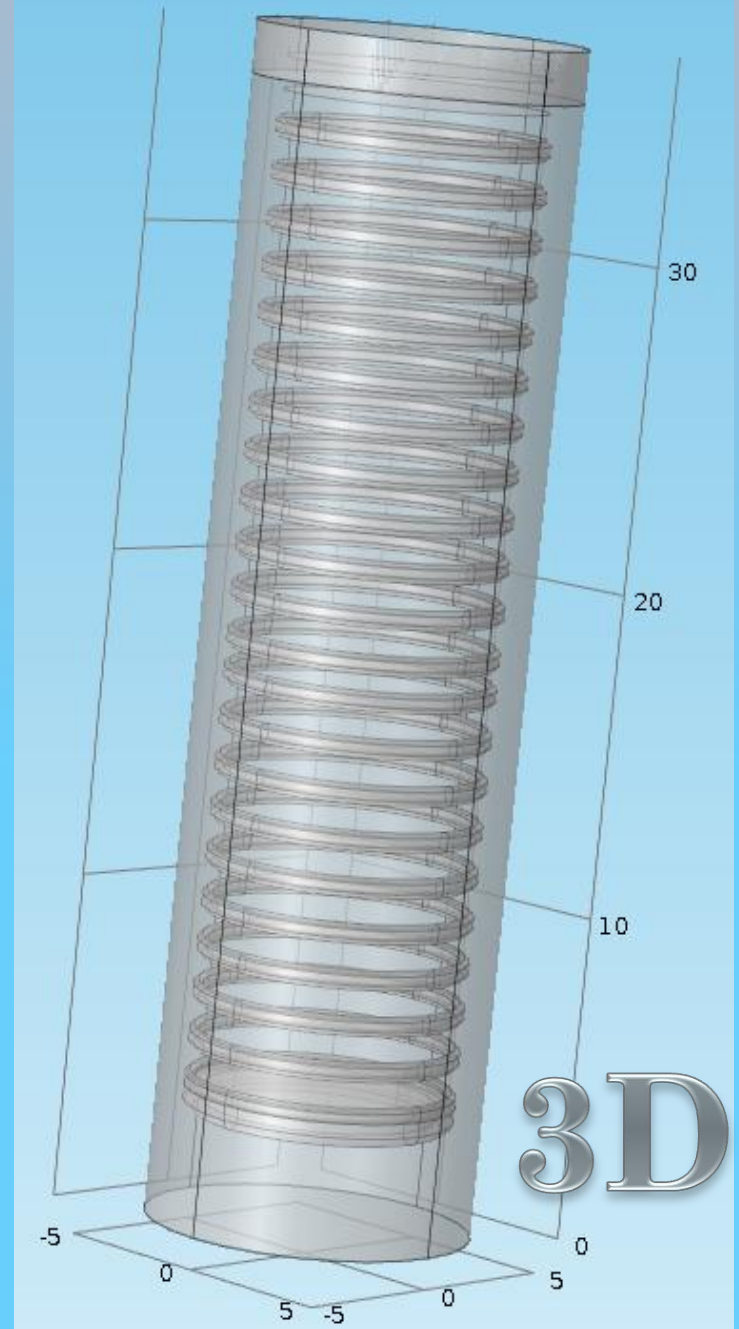
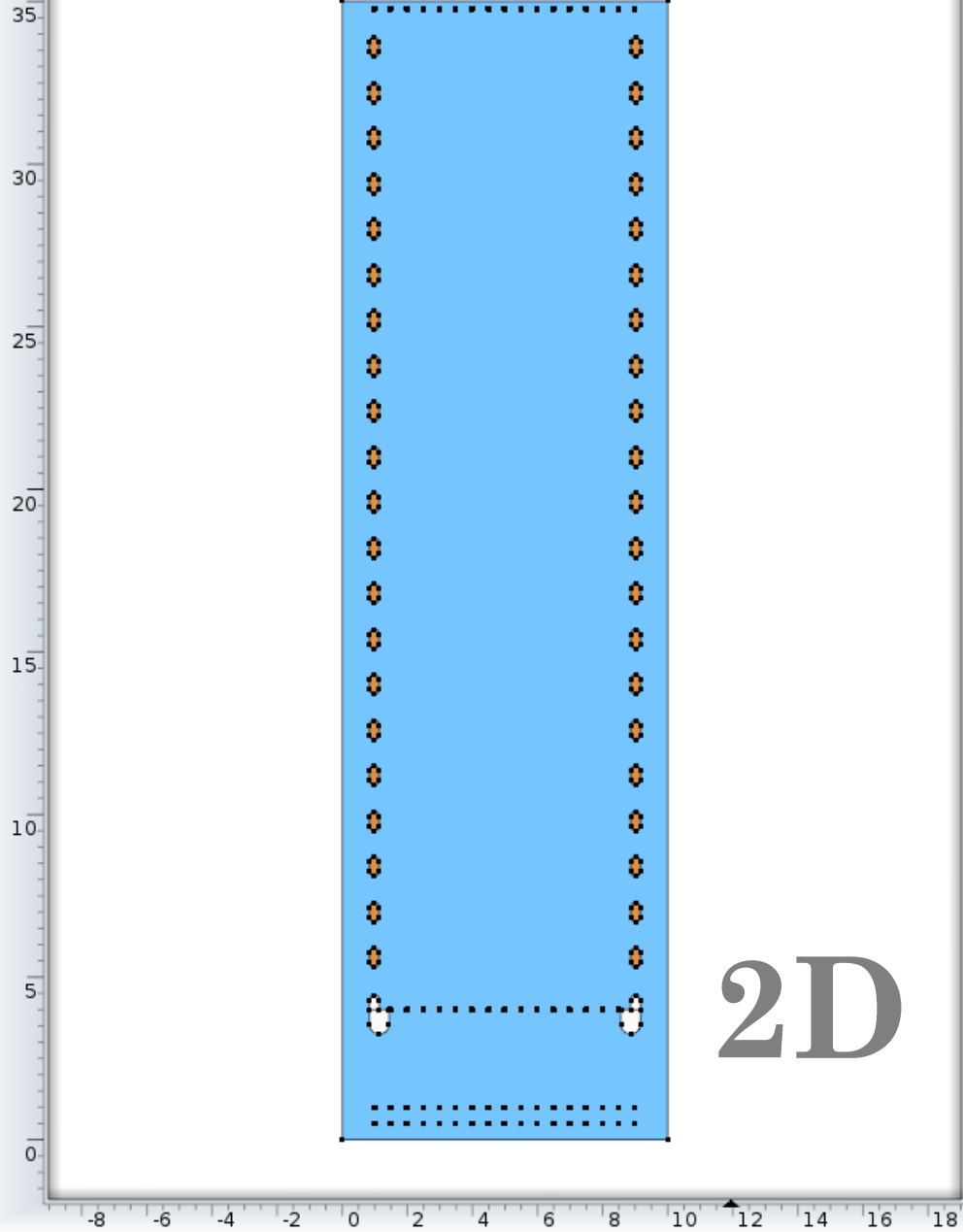


height

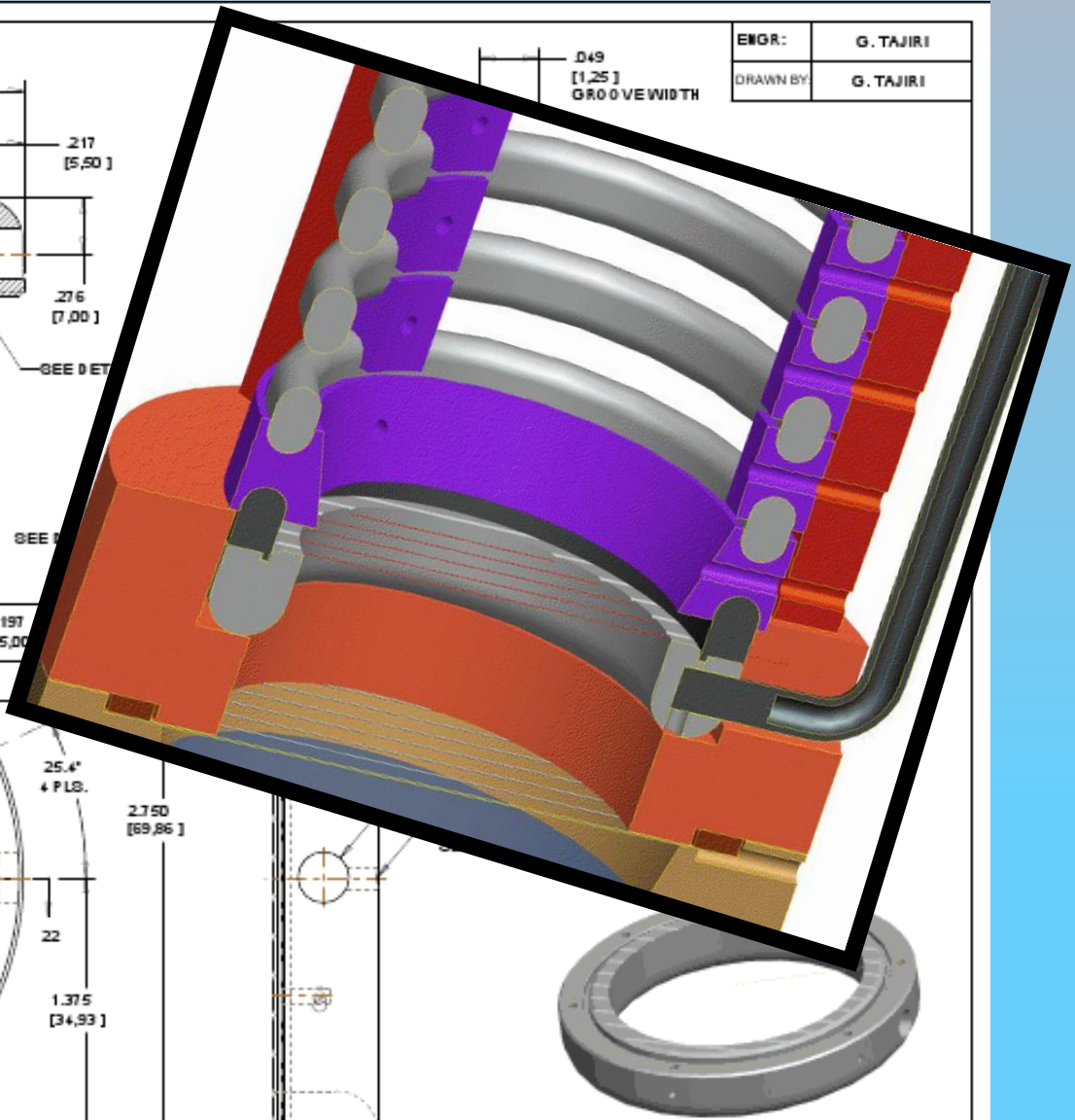
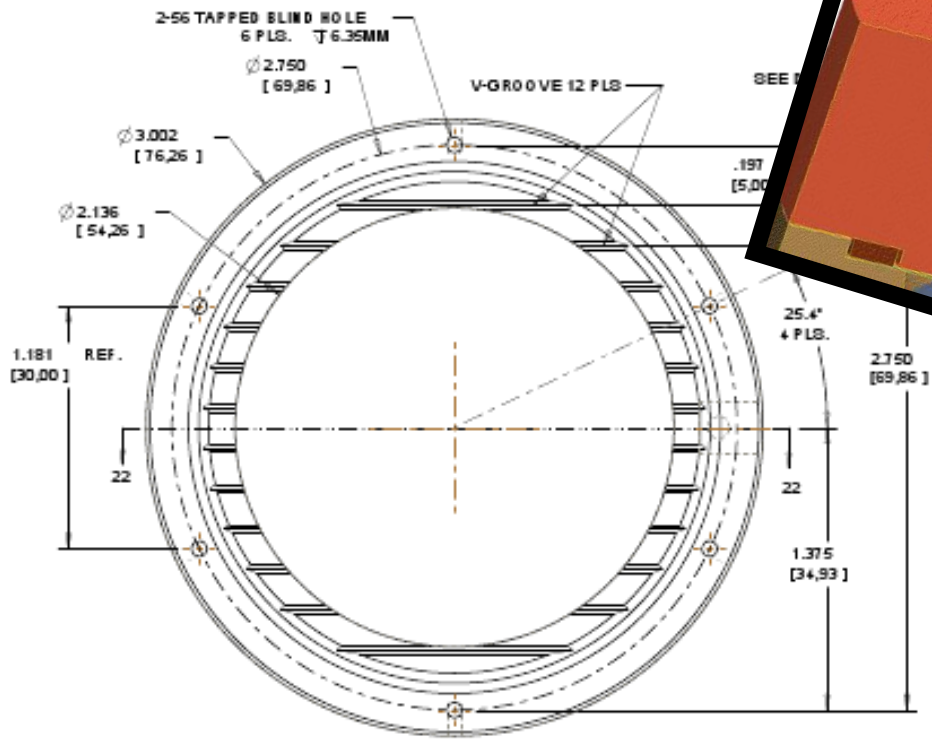
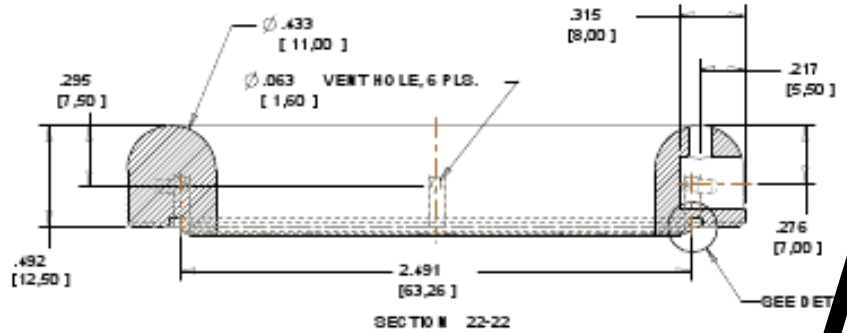


radius







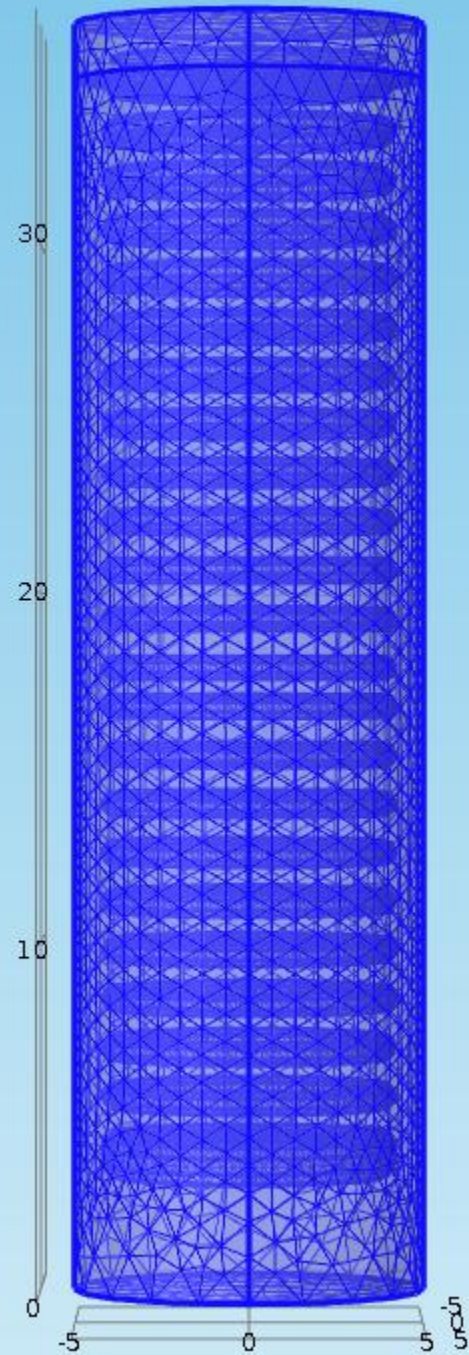


ENGR:	G. TAJIRI
DRAWN BY:	G. TAJIRI

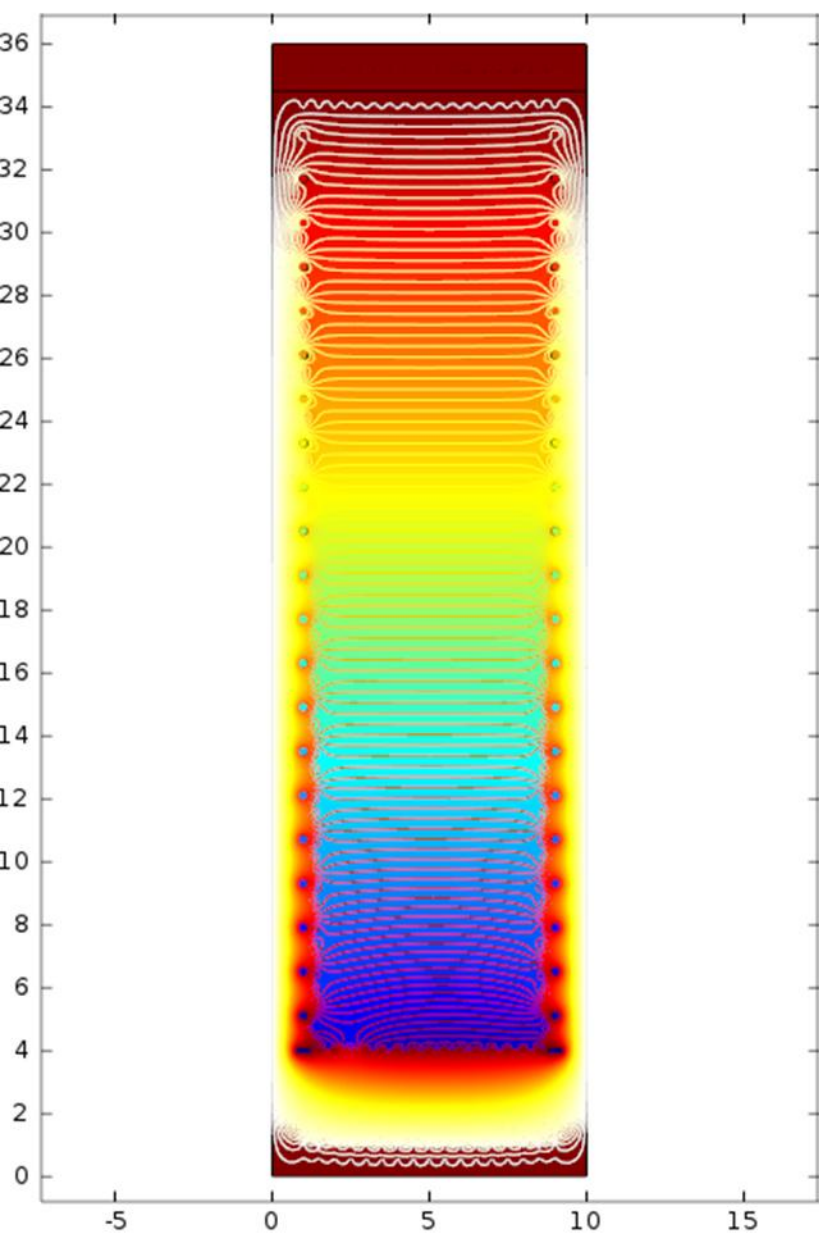
$\phi .039$  [1,00]  
 $\phi .020$  BEVEL [50]

<b>RING, CATHODE BOTTOM</b>		DATE:
TOLERANCE LINEAR: $\pm$ 0.13 ANGULAR: $\pm$ 1.0 DEG FLATNESS: 0.13 PARALLELISM: 0.26 CONCENTRICITY: 0.26 FINISH: $\sqrt{32}$ RMS MATERIAL: 304SS		REV:
COLUMBIA UNIVERSITY COLUMBIA ASTROPHYSICS LABORATORY		REV:
		

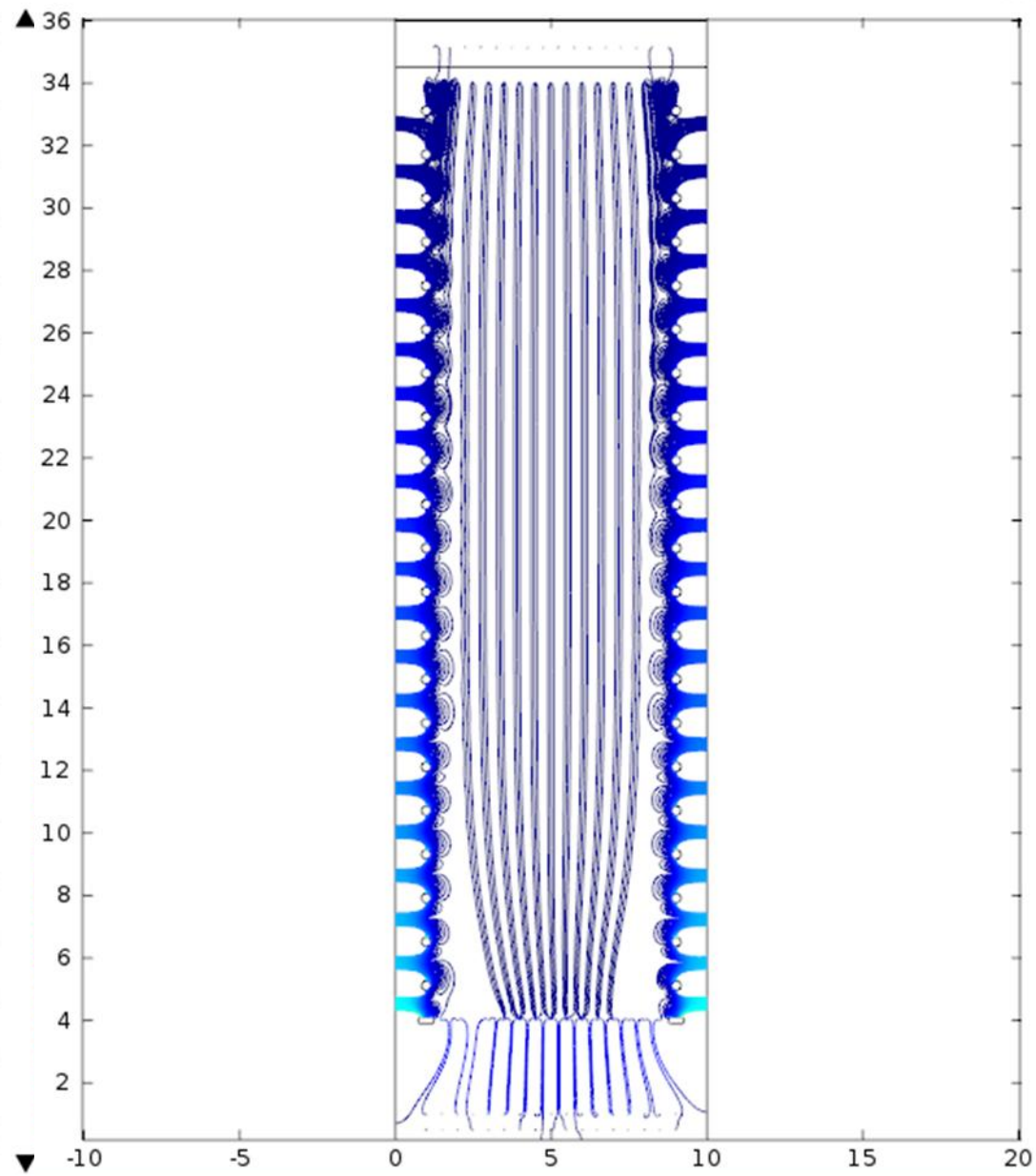
# Study 1: *Electrostatics*



Surface: Electric potential (V) Contour: Electric potential (V)



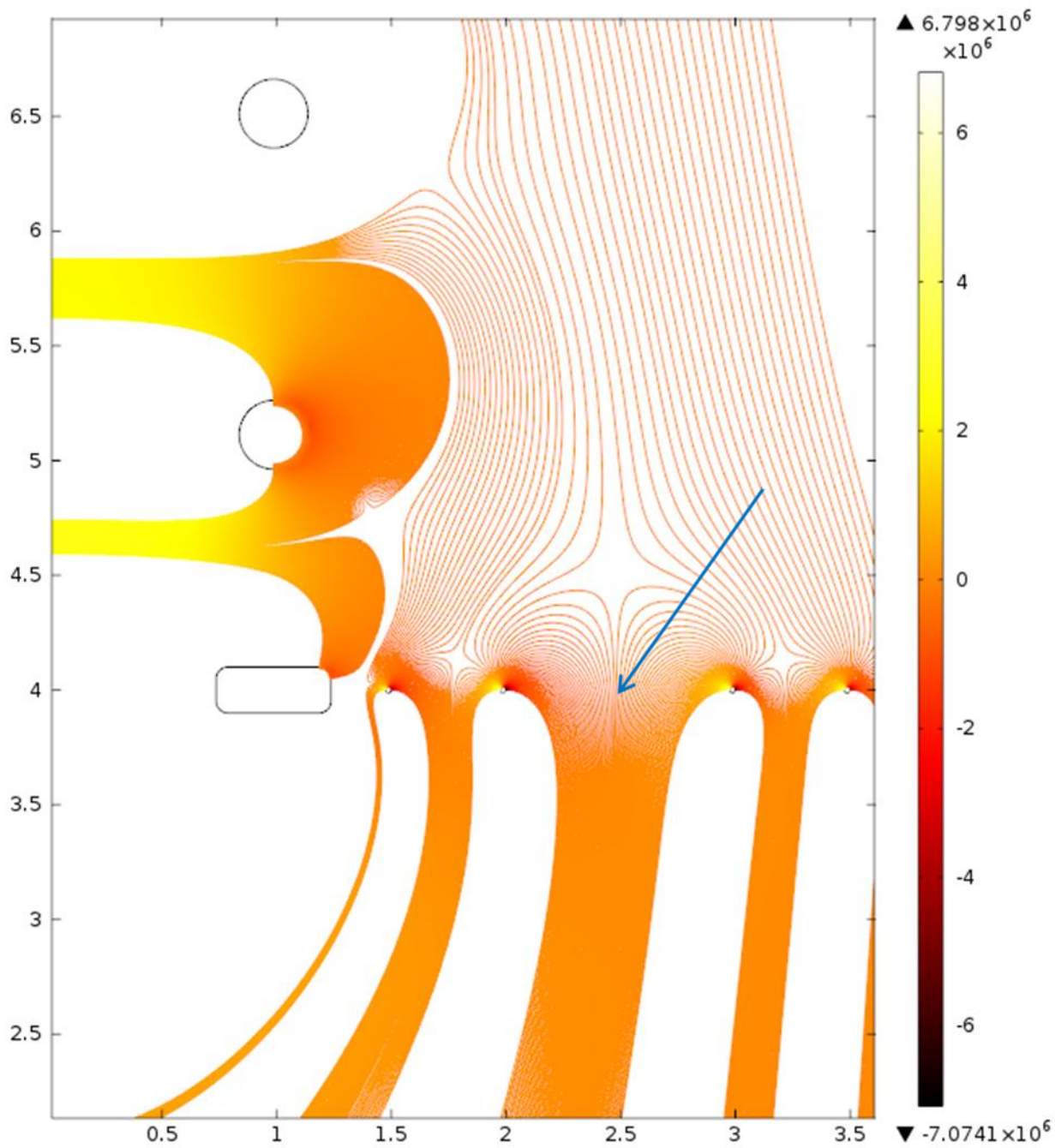
Streamline: Electric field

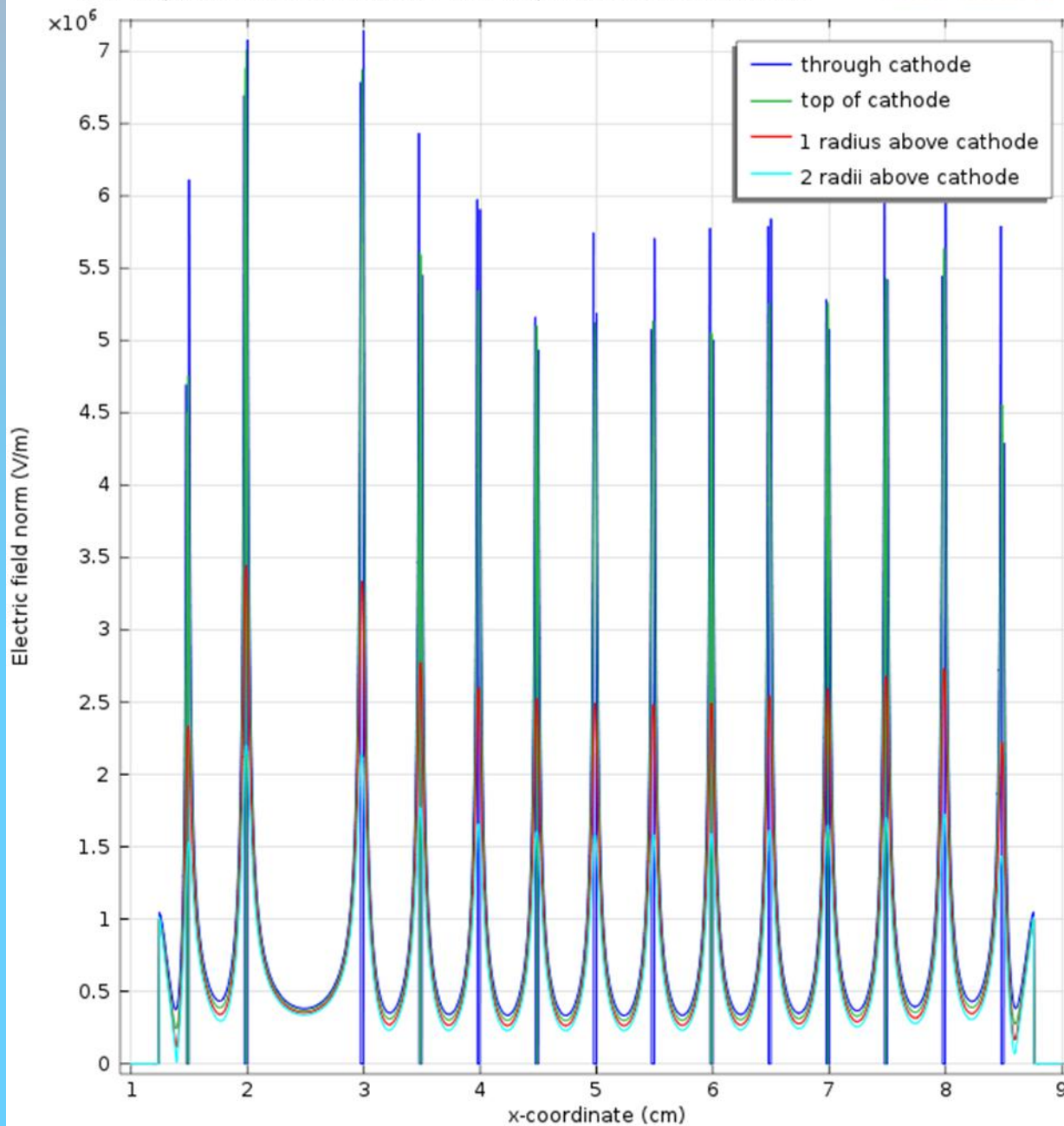




Streamline: Electric field

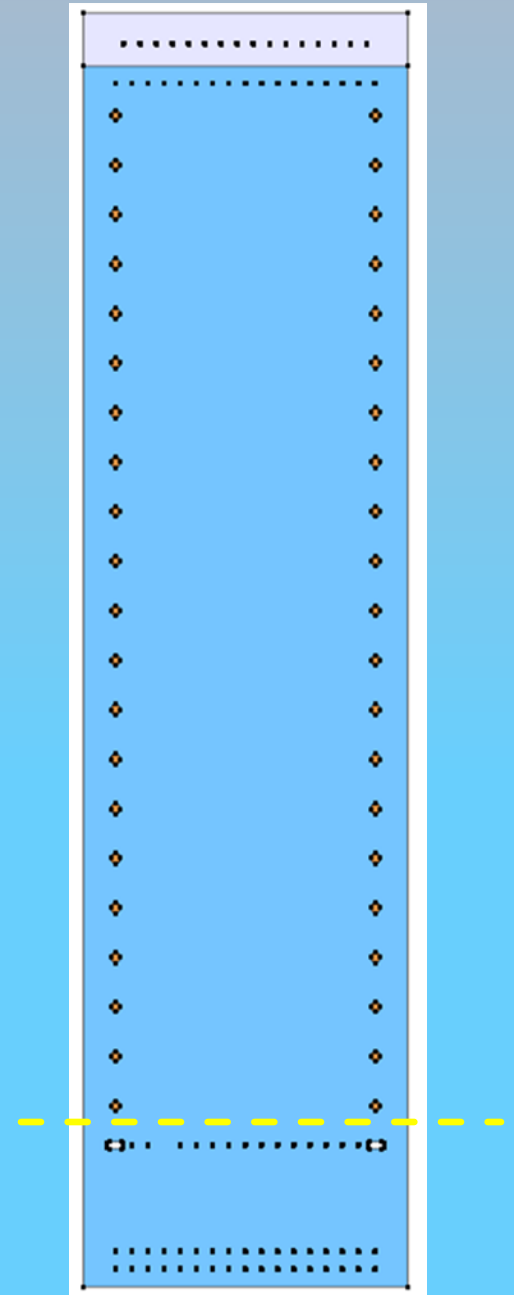
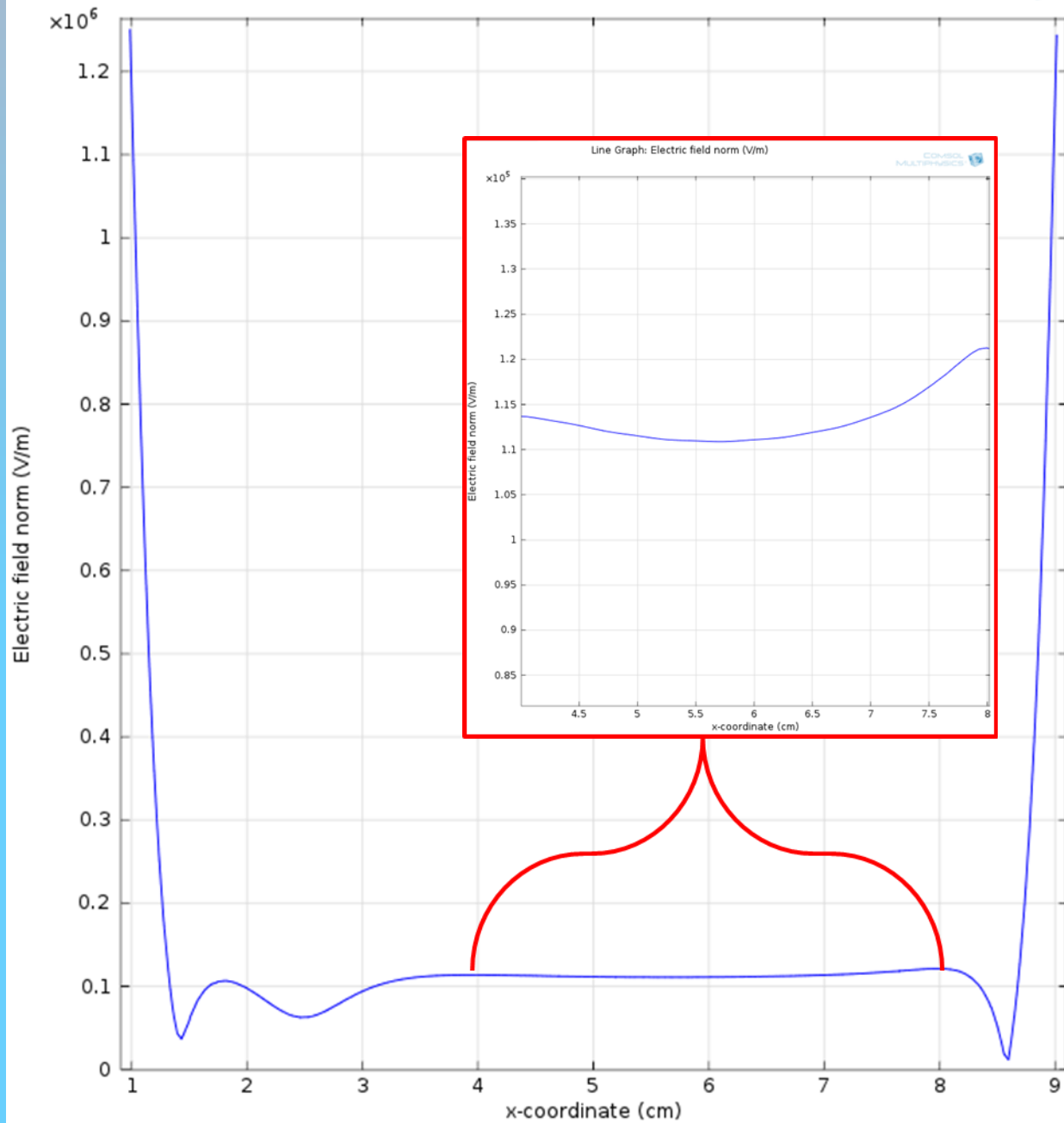
COMSOL  
MULTIPHYSICS

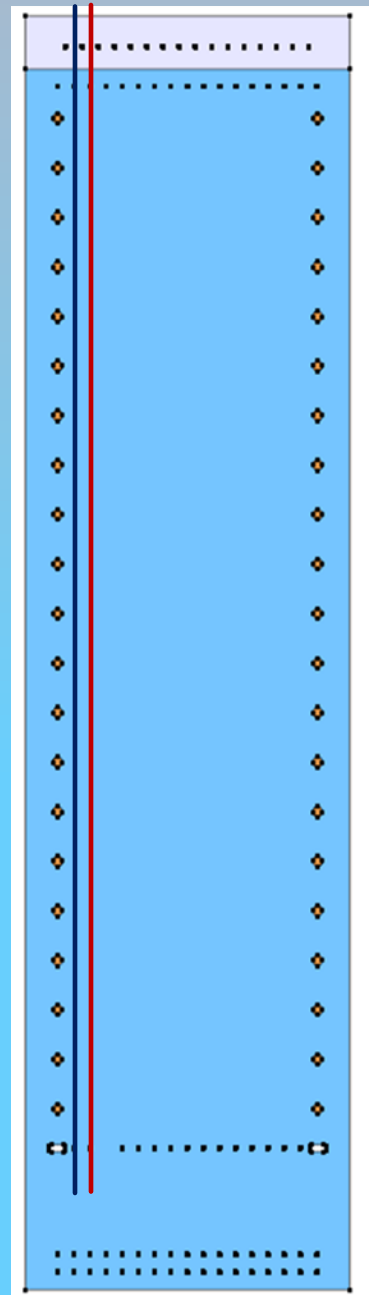
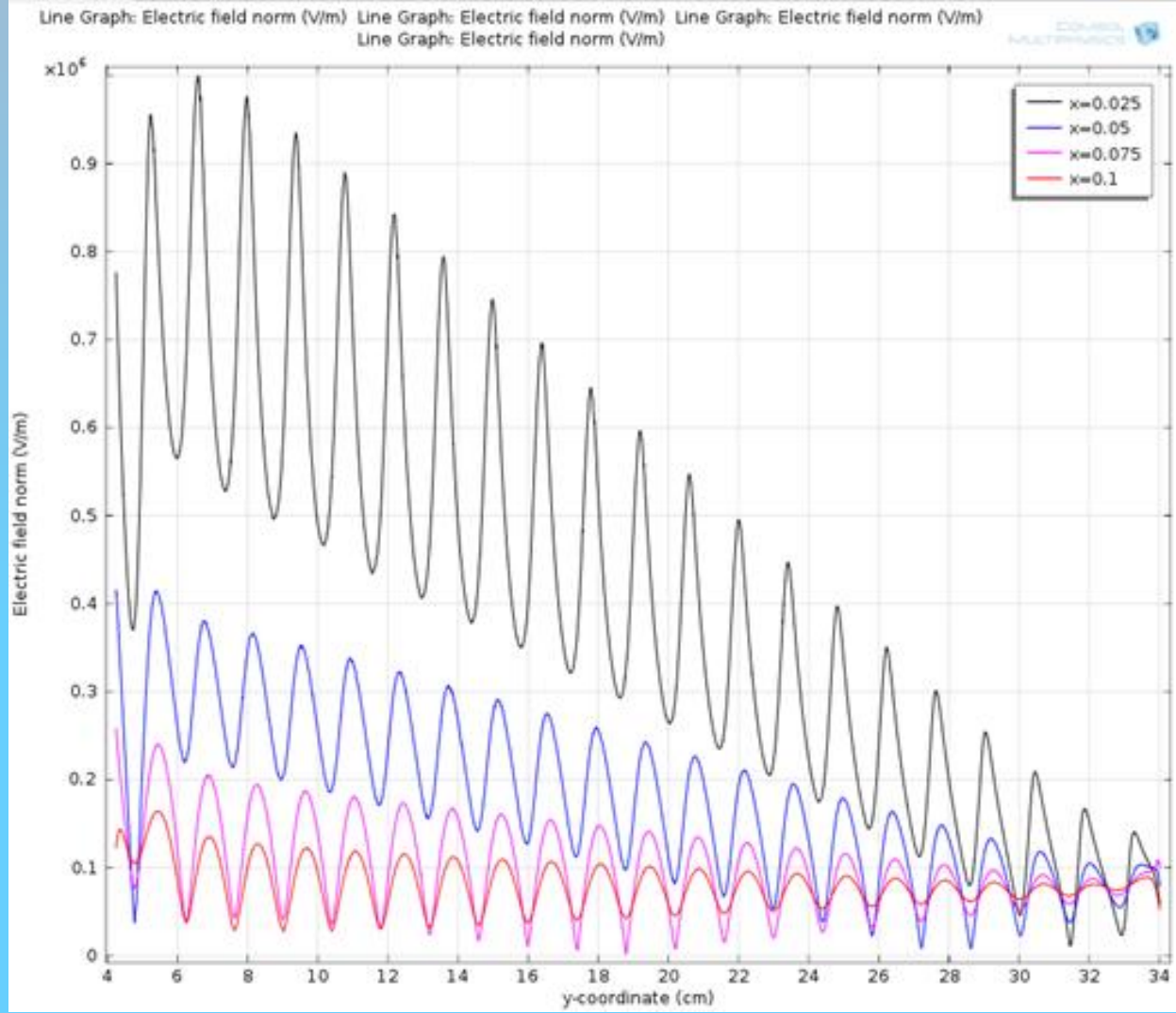




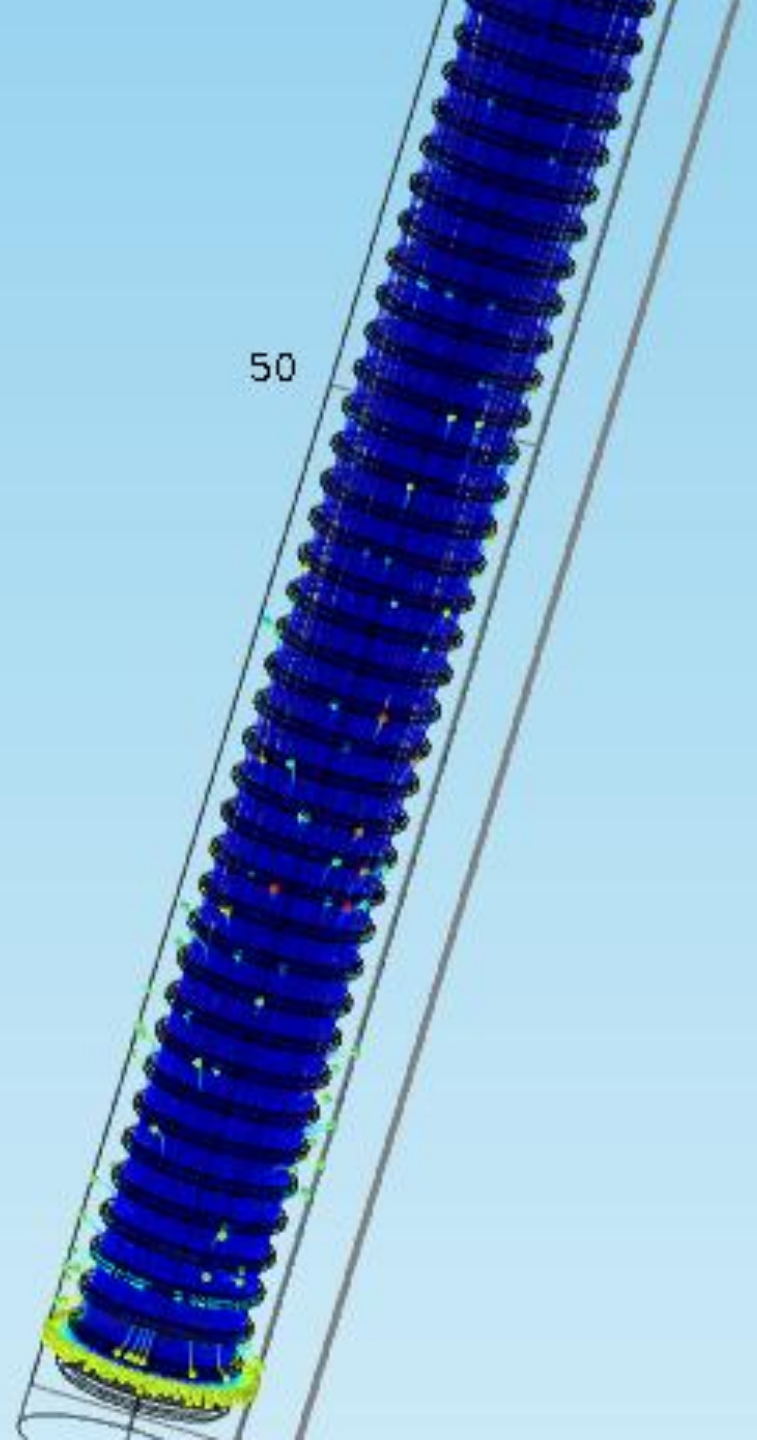


Line Graph: Electric field norm (V/m)





# Study 2: *Particle Tracing*

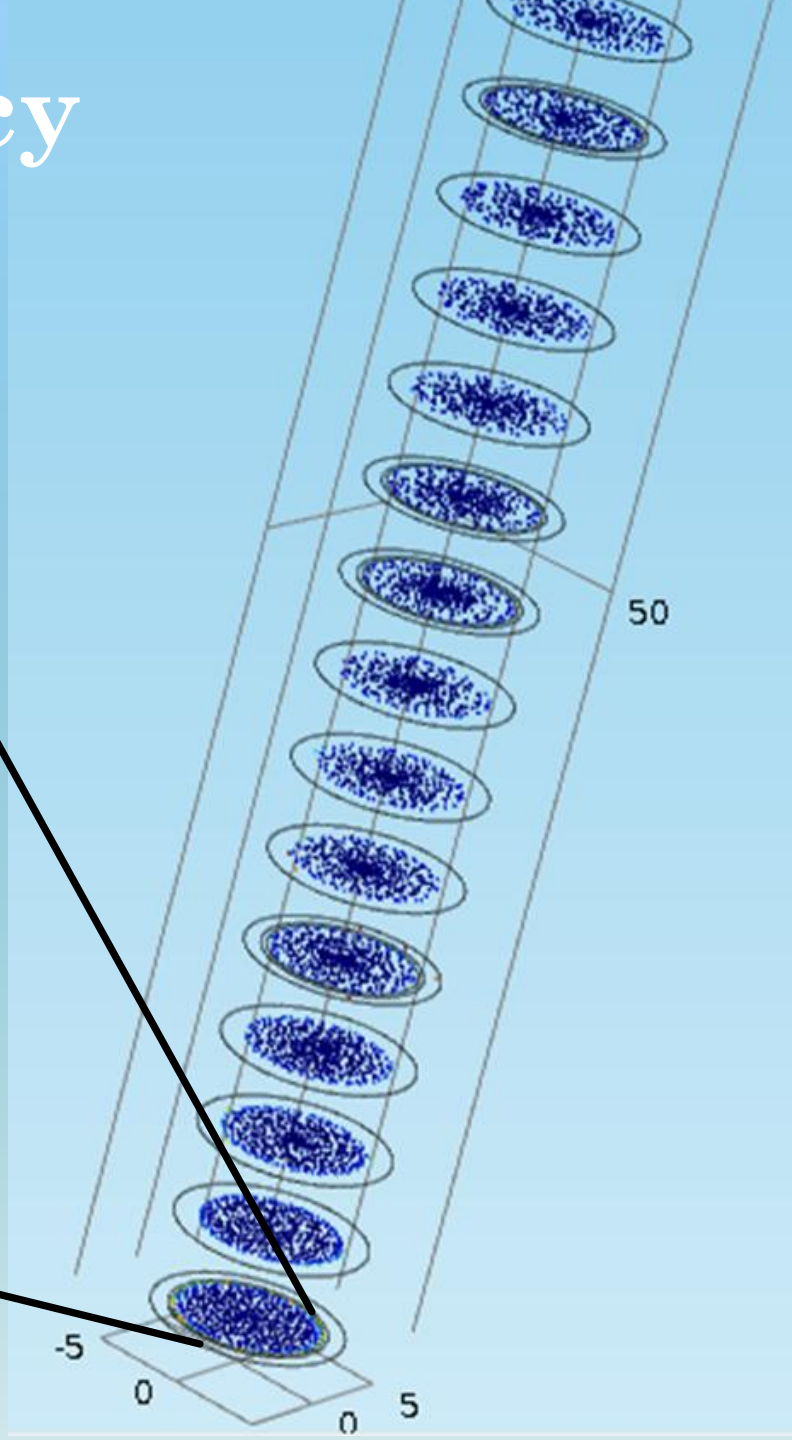
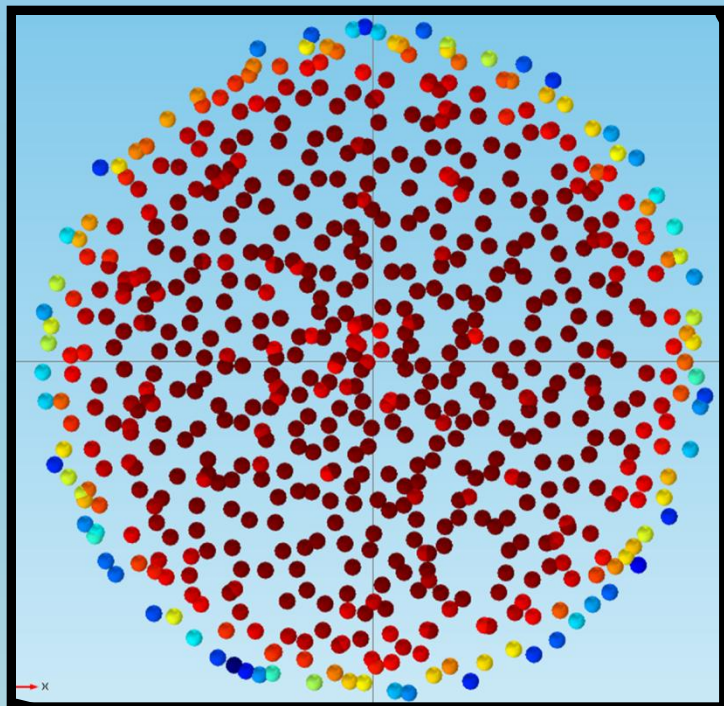








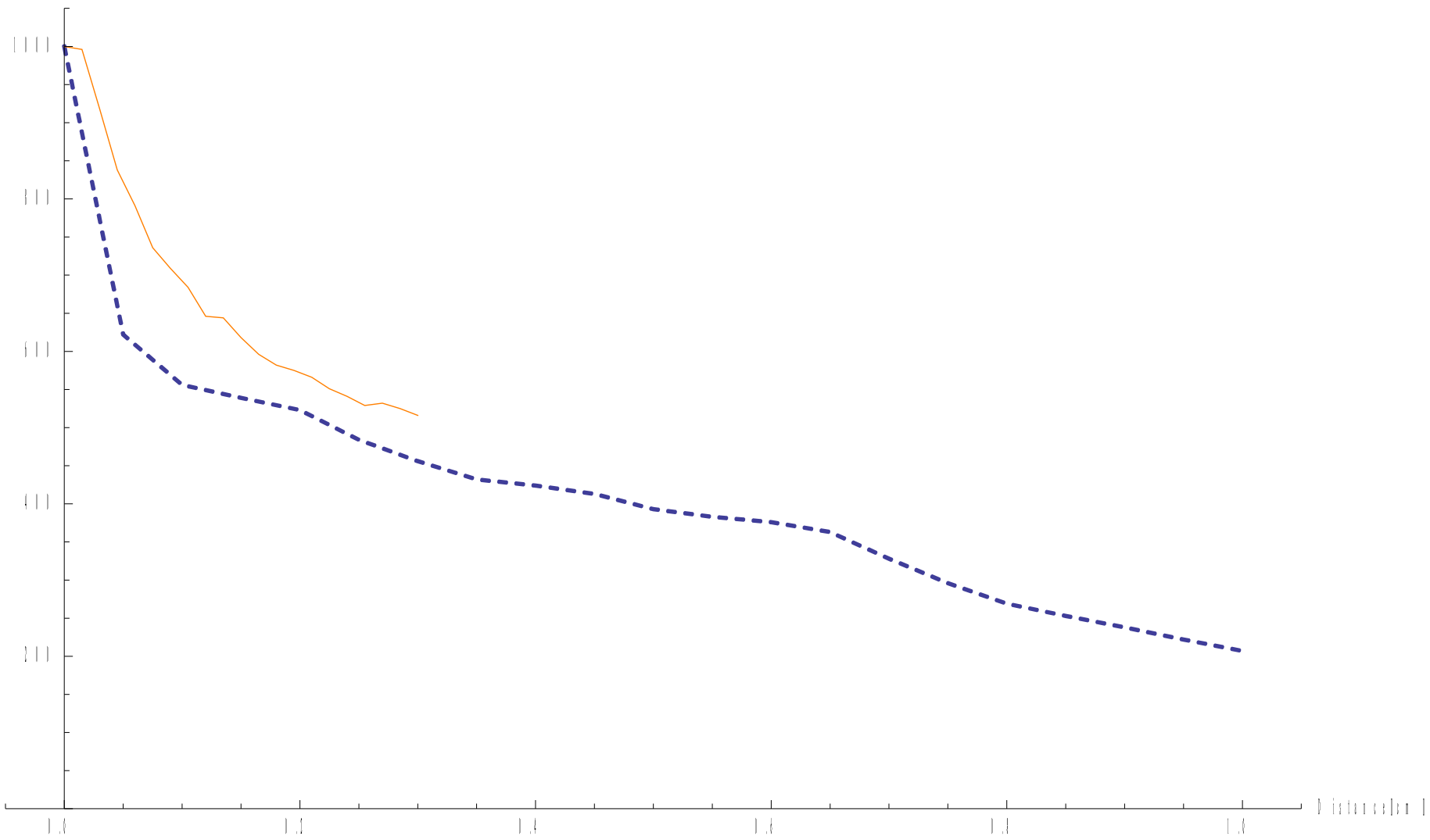
# Collection Efficiency

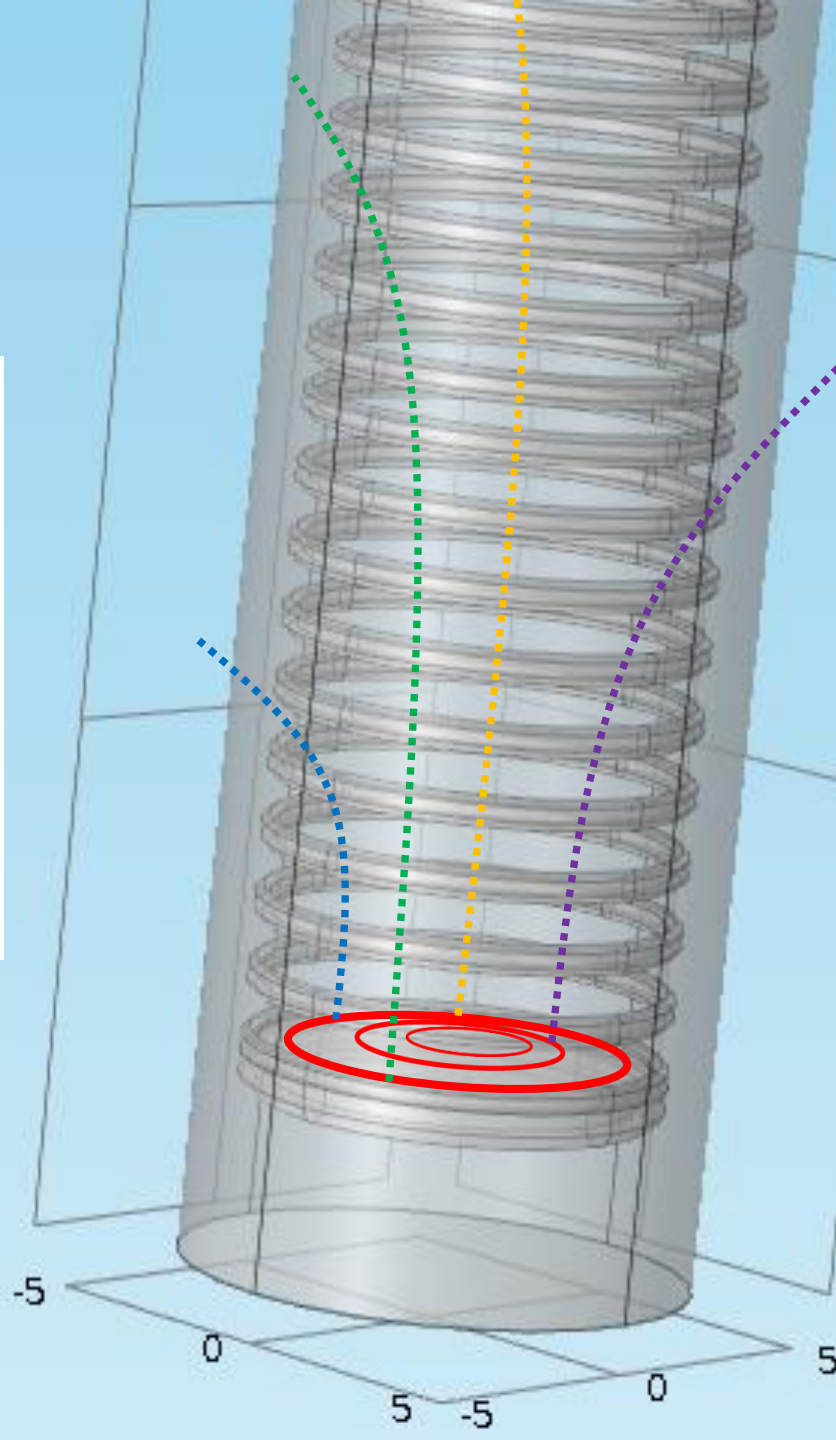
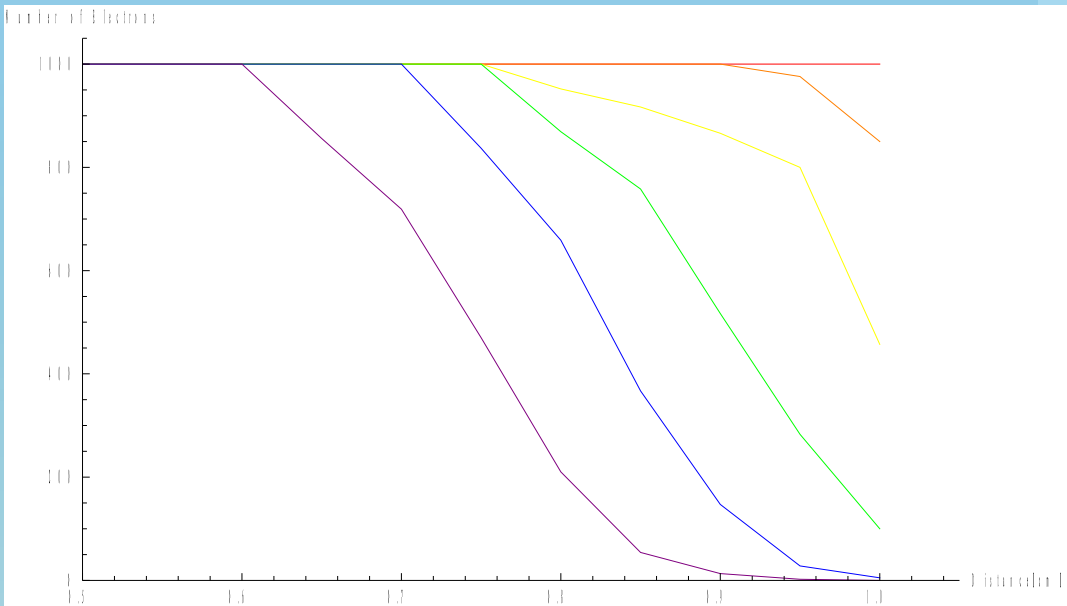






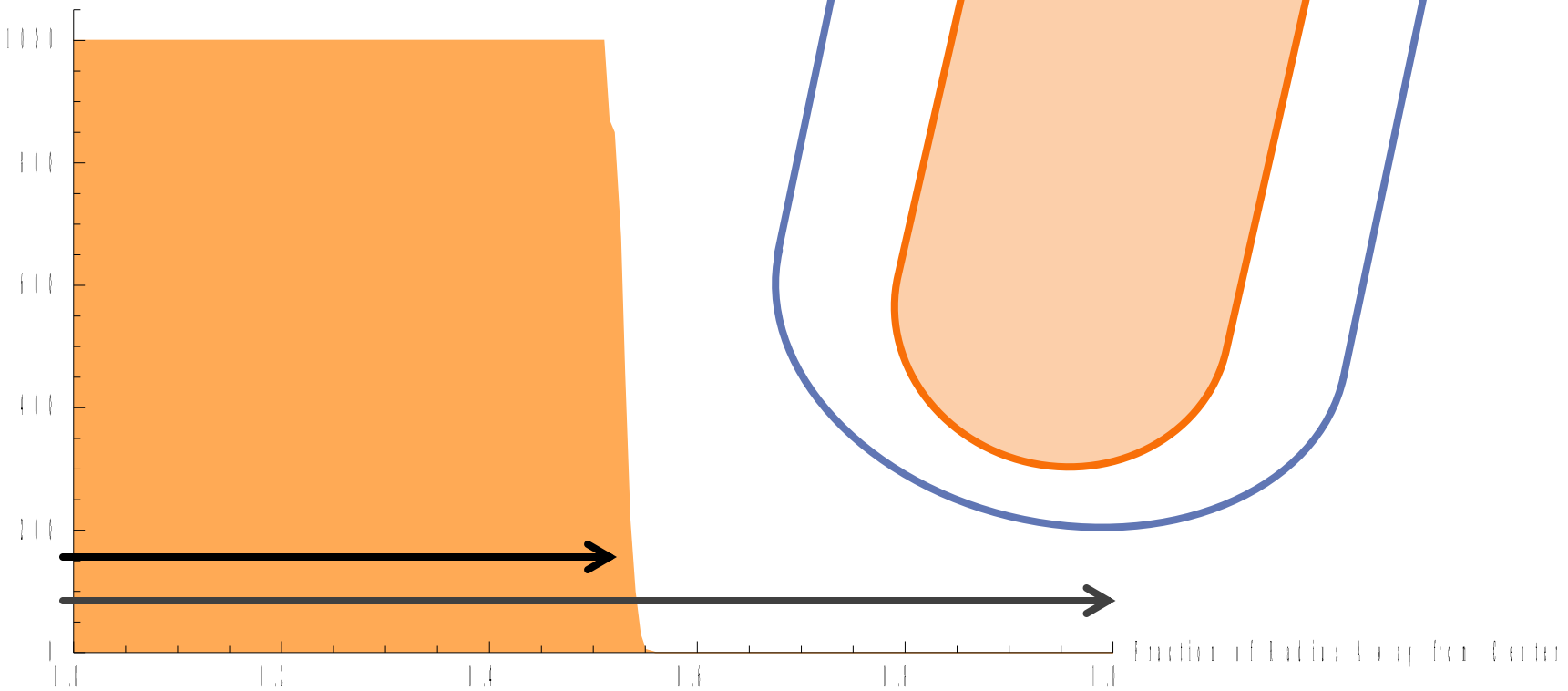
Number of Features



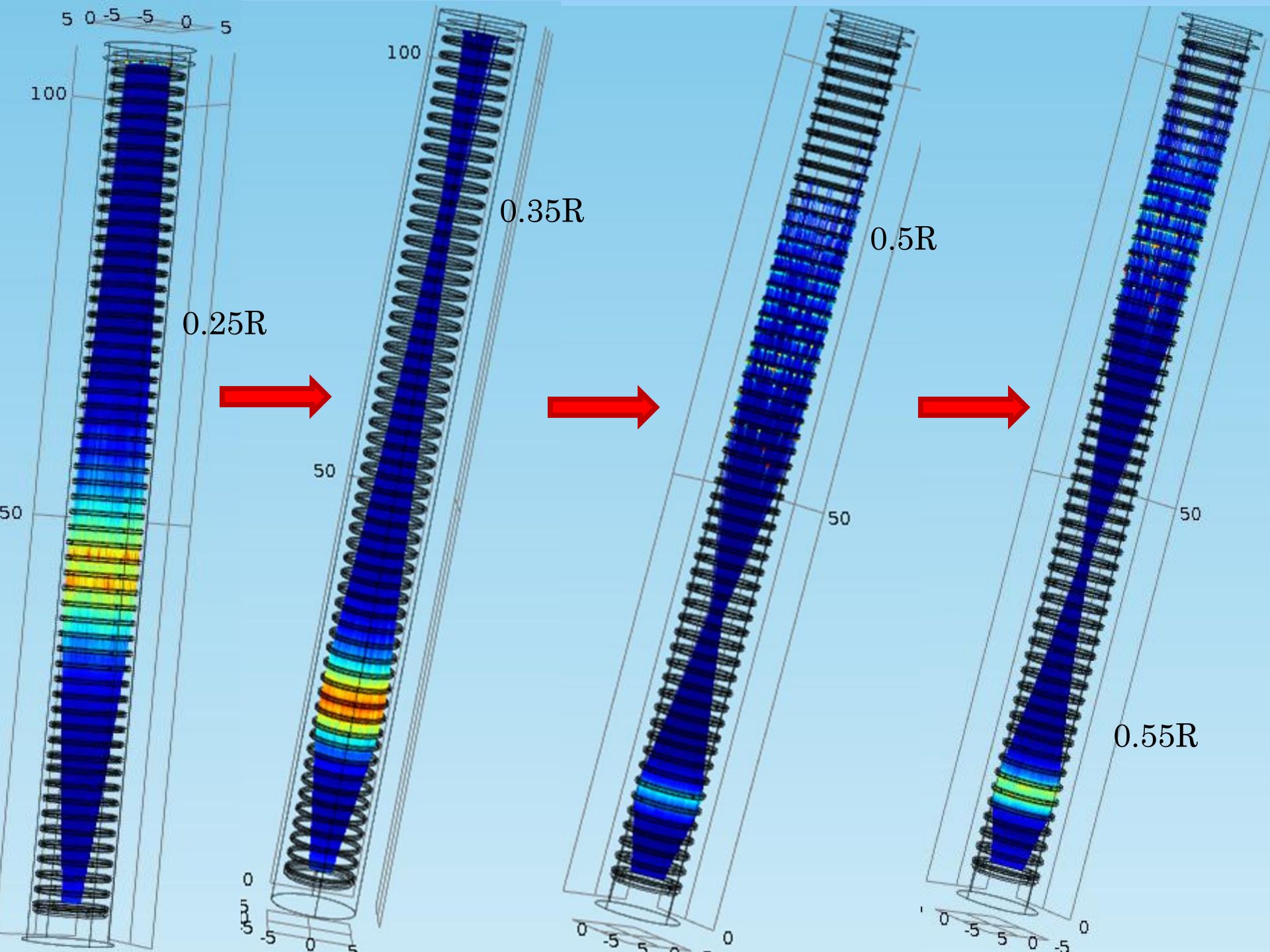


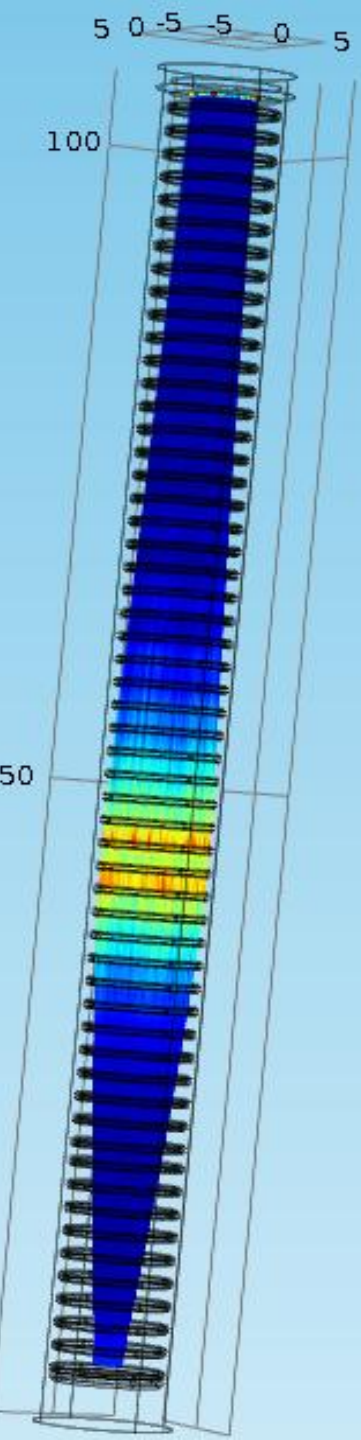


Number of Electrons at Top of TPC

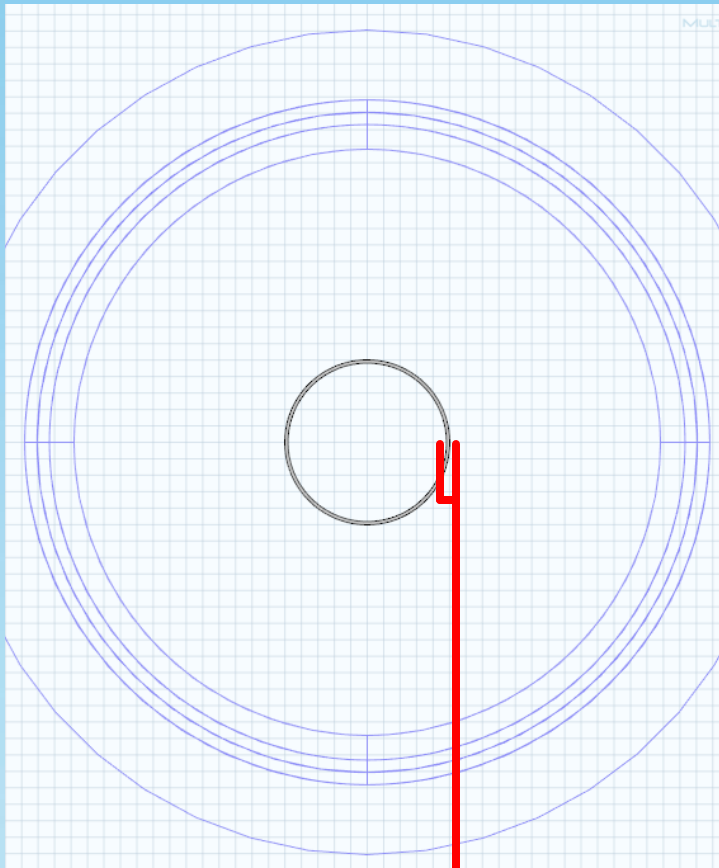


Fraction of Distance Away from Center

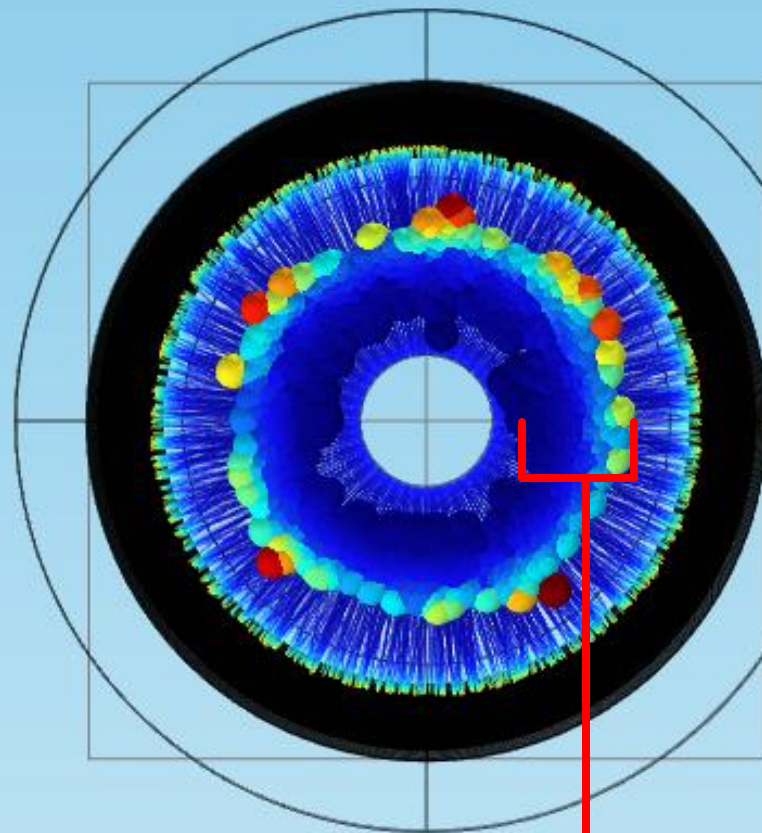




0.25R



release width =  $1/100 * R$



width =  $3/100 * R$



# Future

