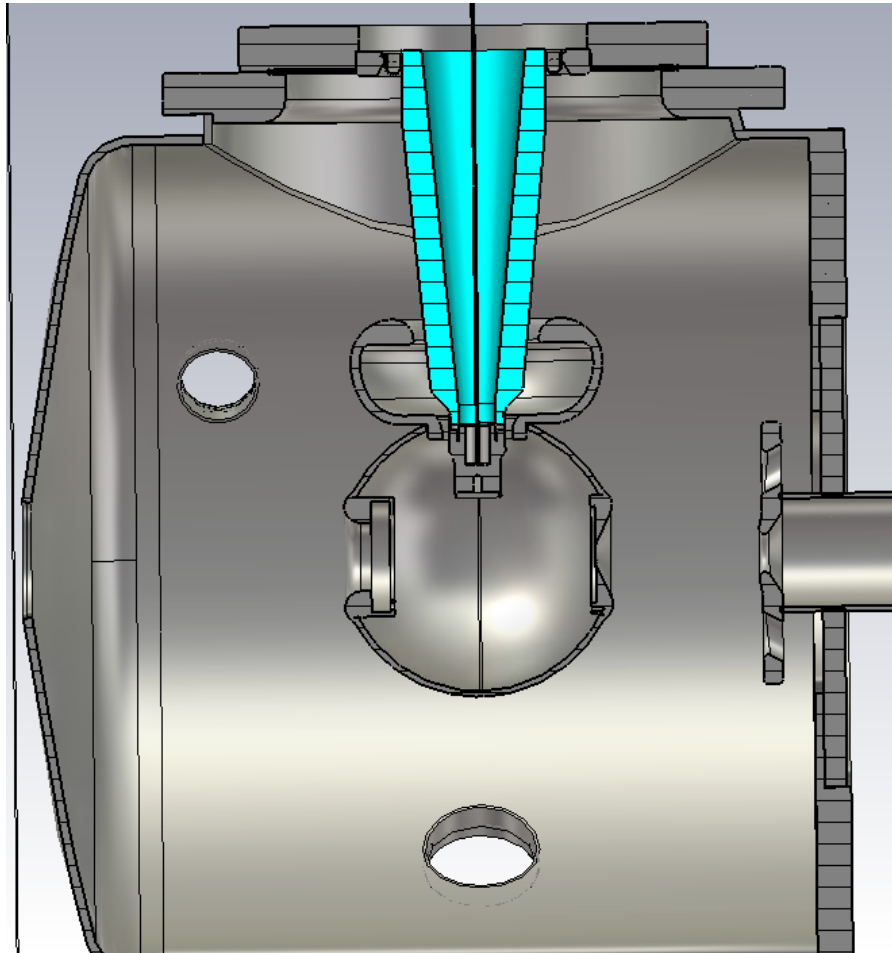


3D Modelling of GTS Gun

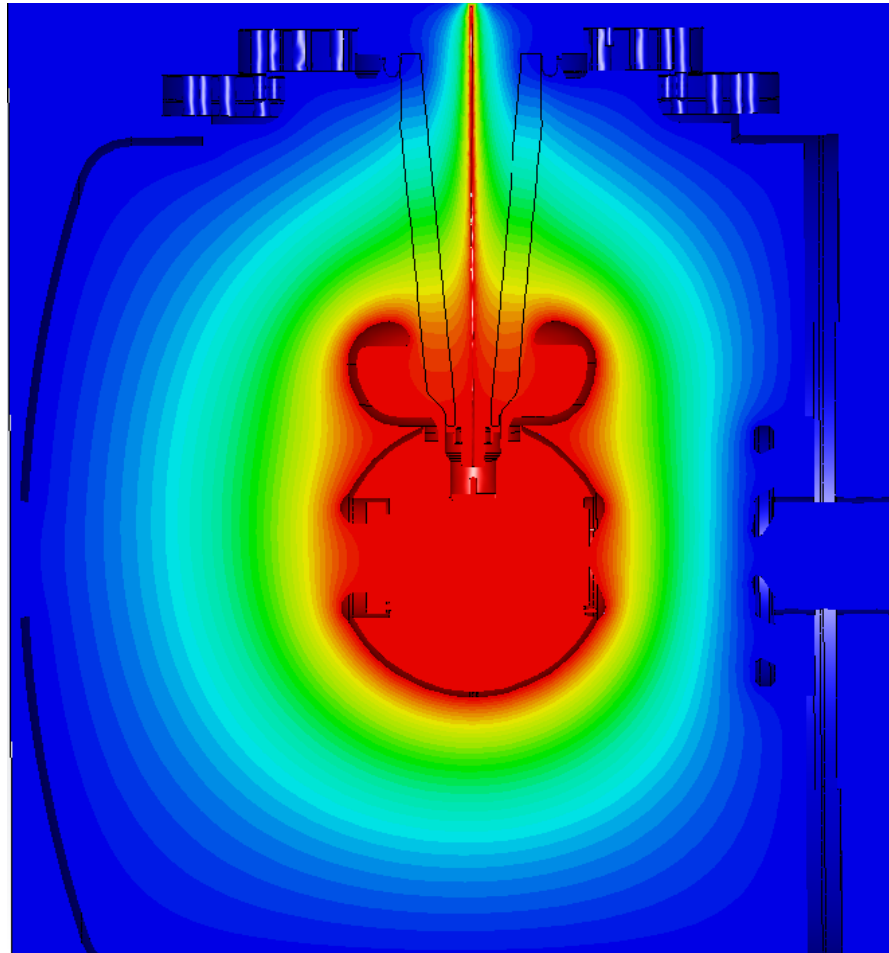
Fay Hannon

2-17-2016

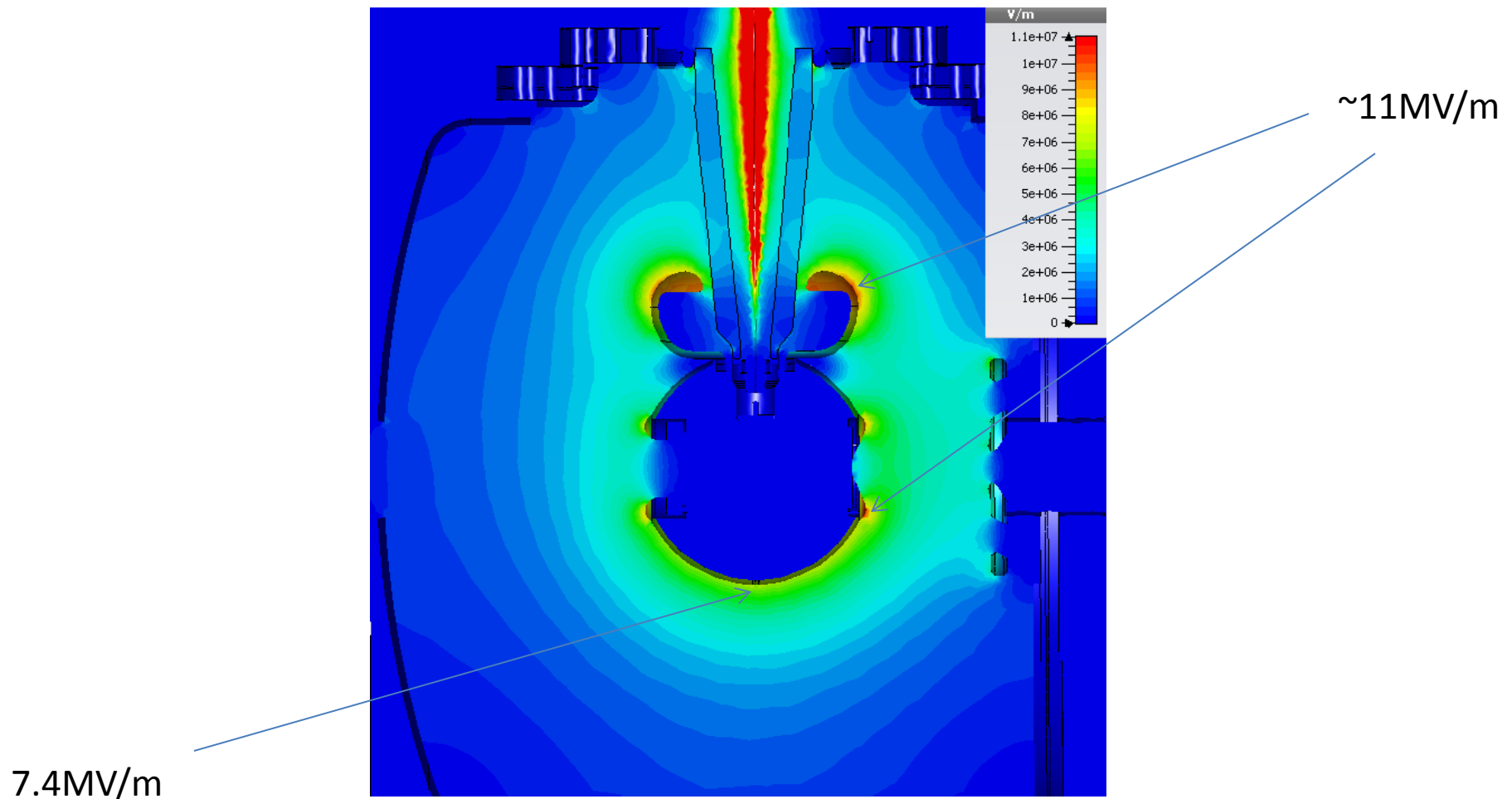
Geometry



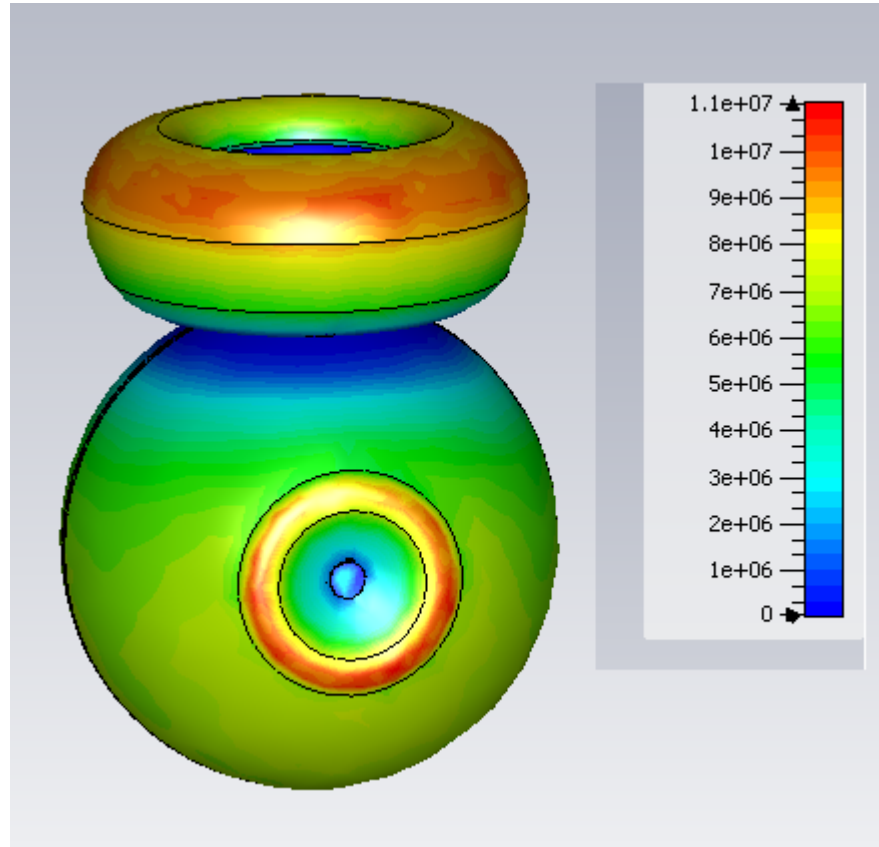
350kV Potential



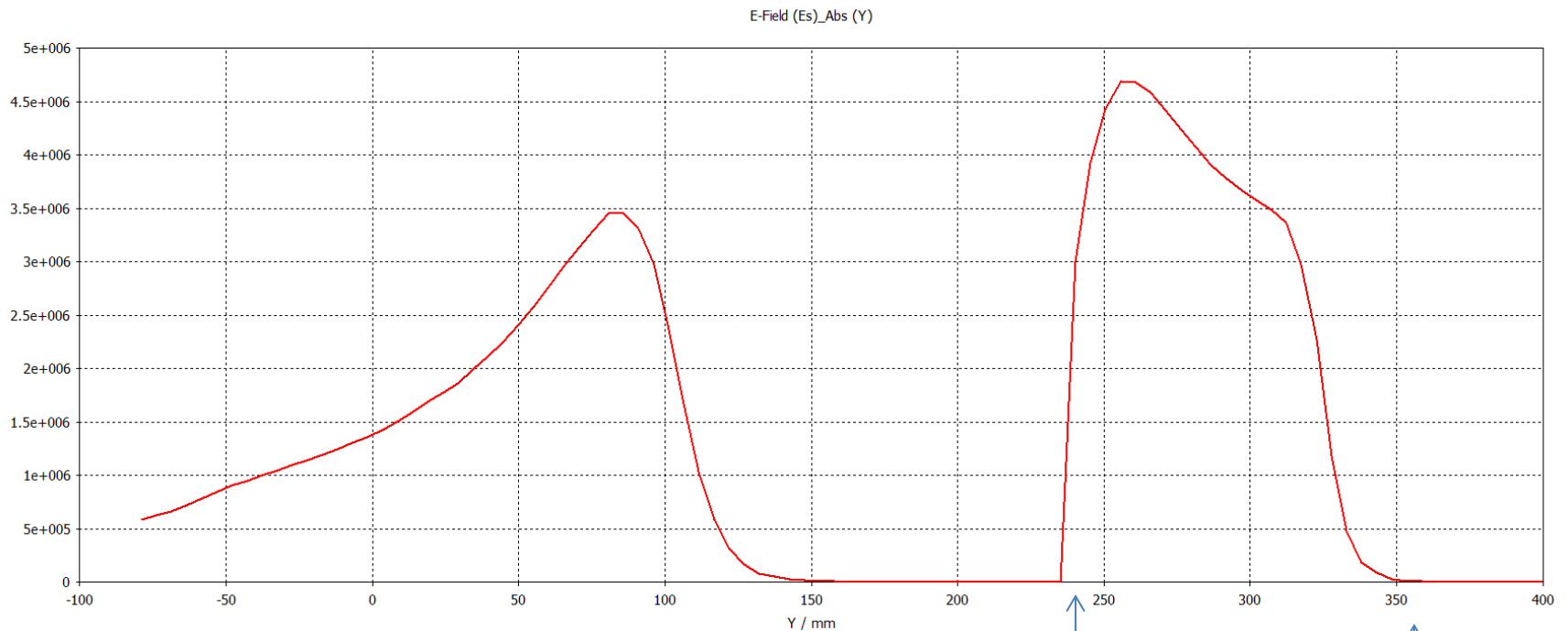
Gradient



Just the Ball and shed



On axis field



Behind the ball towards
prep chamber



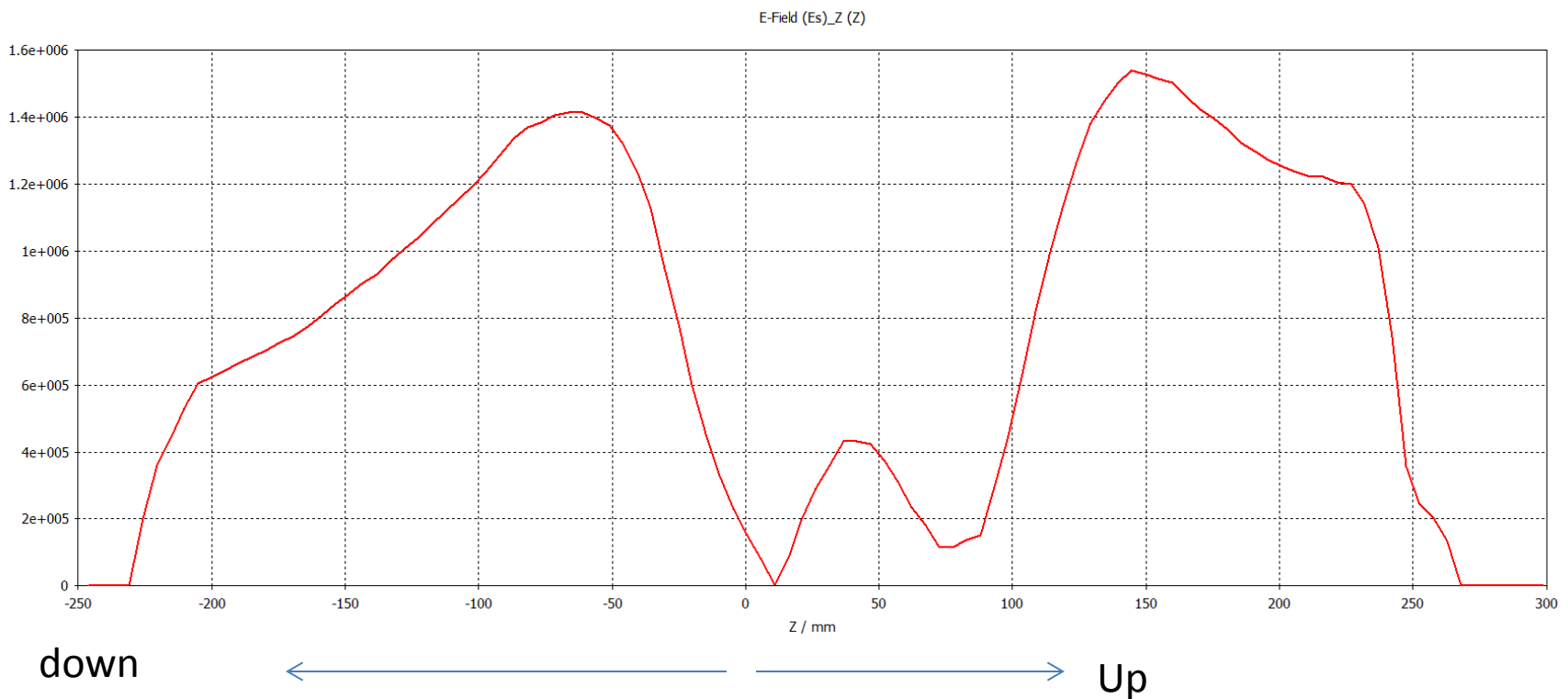
wafer



Gun exit

3.5cm in front of wafer

Transverse field vertically (magnitude) – looking for symmetry about 0



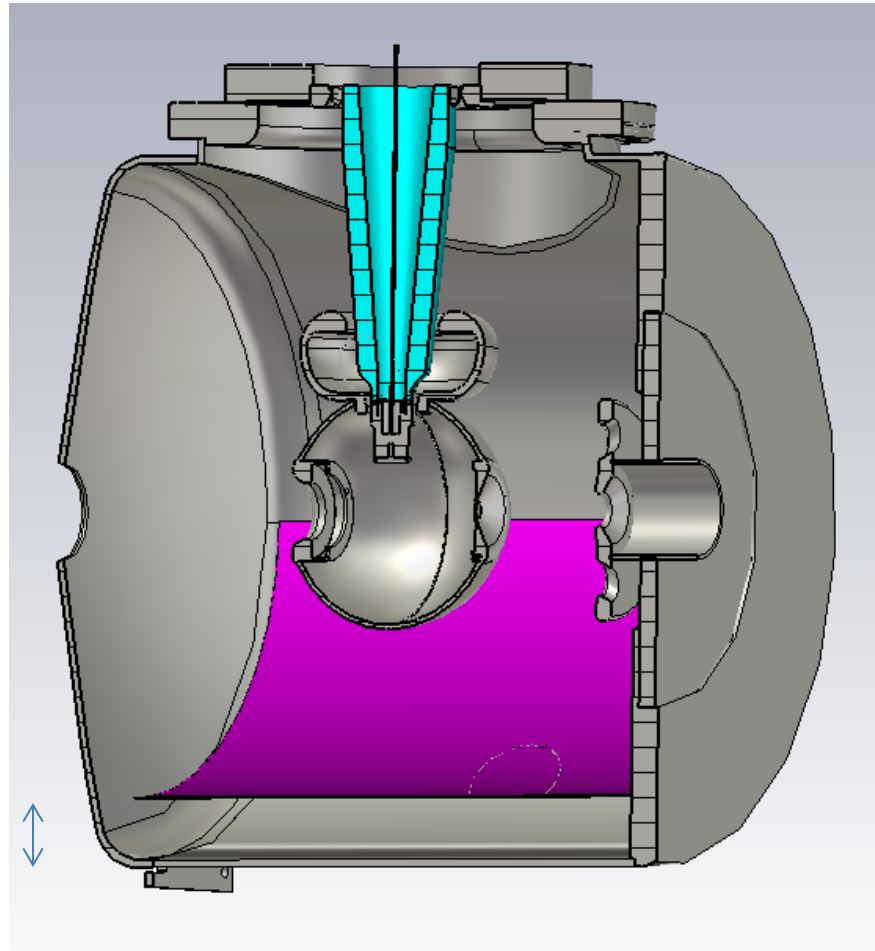
OK! Remember beam at cathode is small ~6mm diameter

Can operate off center – can look for ion bombardment here too

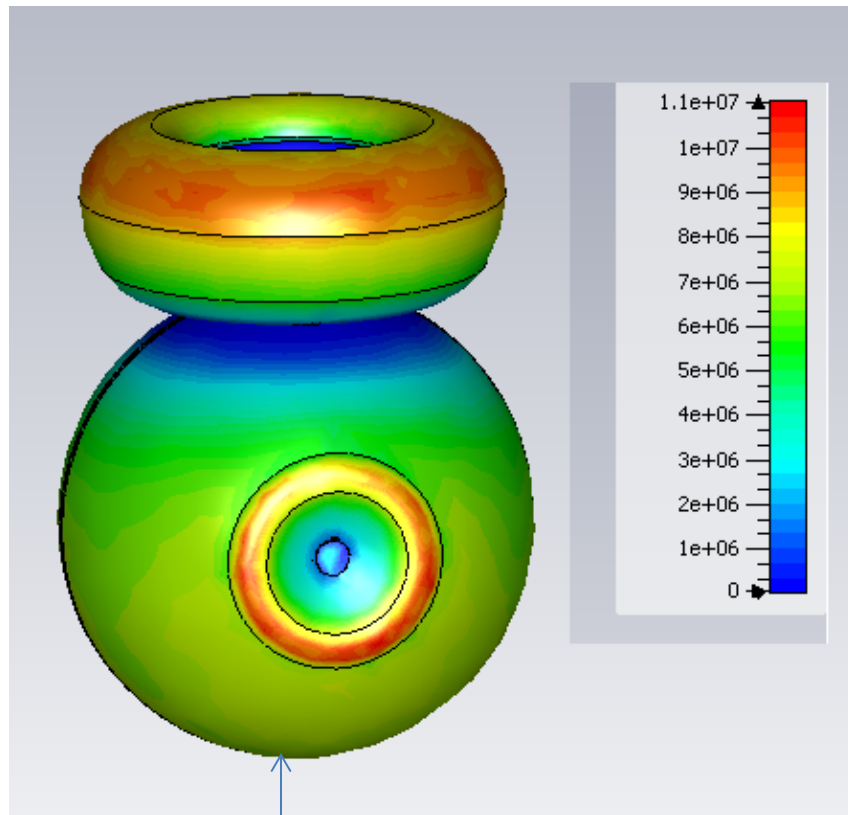
Make a grid

Represents
horizontal NEG
configuration (9
NEGS)

40mm

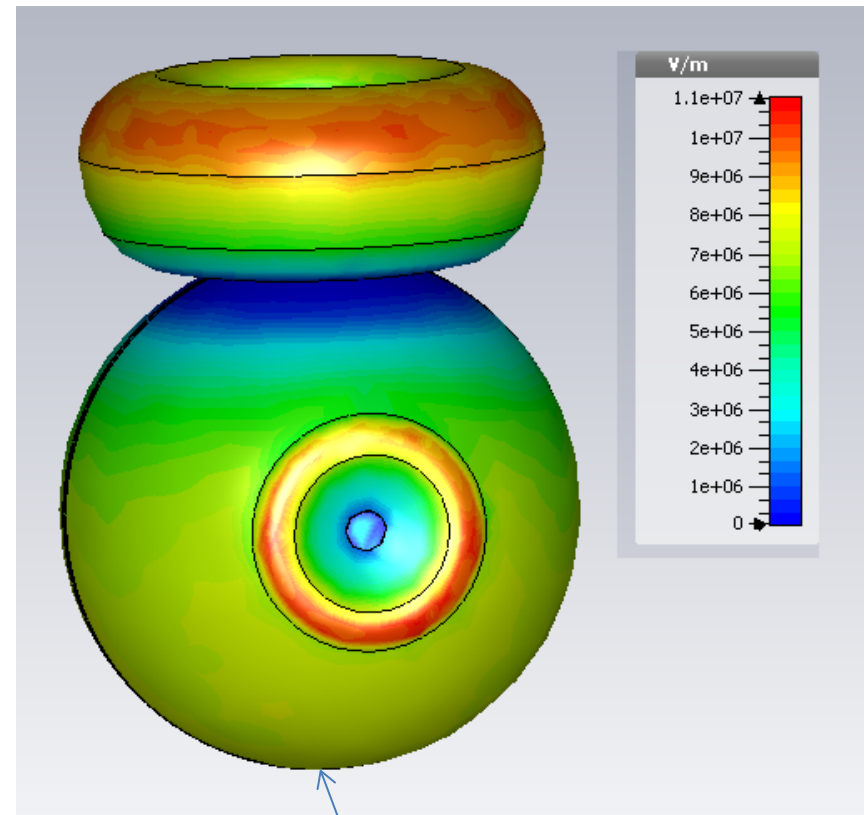


No Grid



7.4MV/m

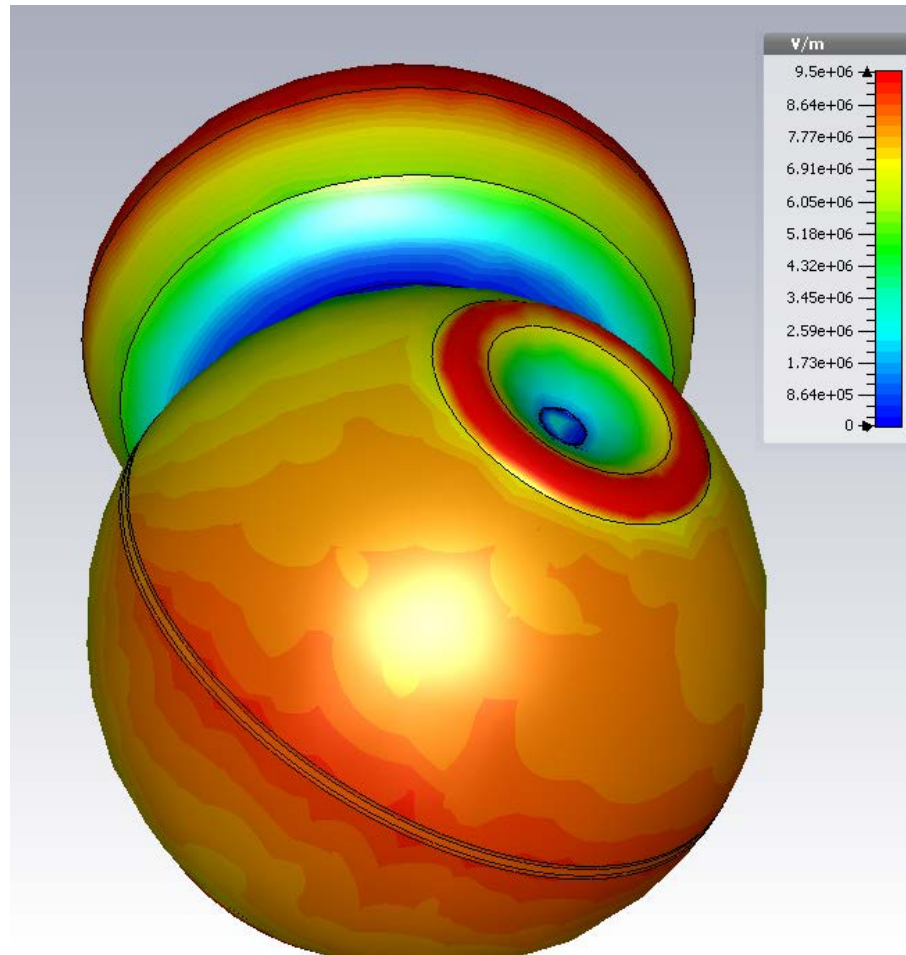
Grid



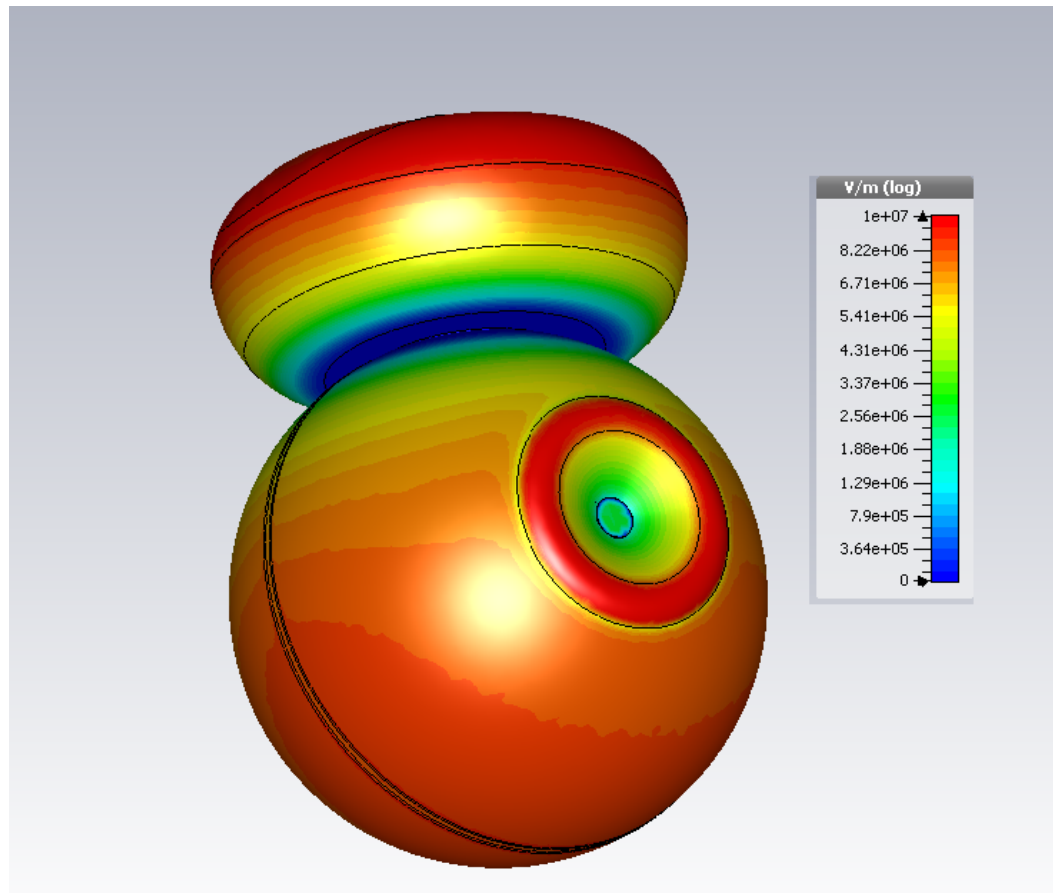
8MV/m

Closer grid (70mm from tank)

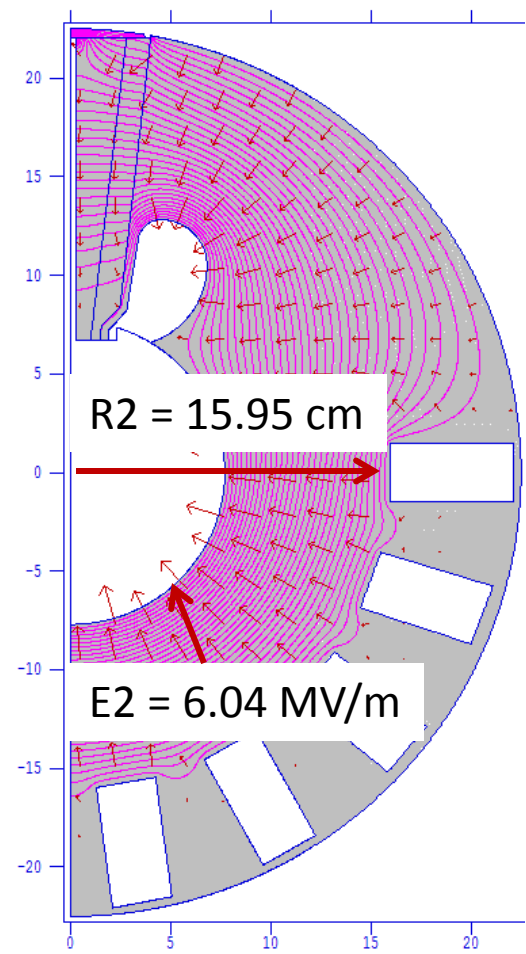
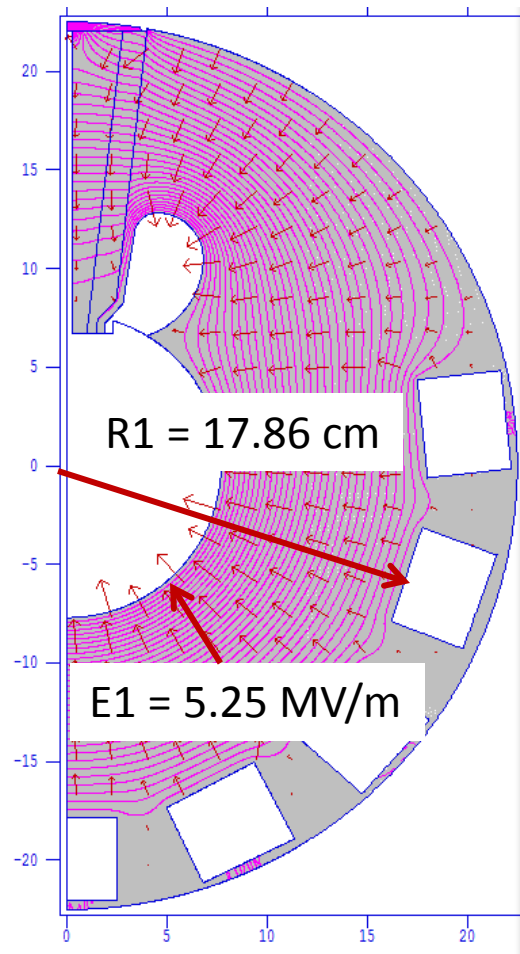
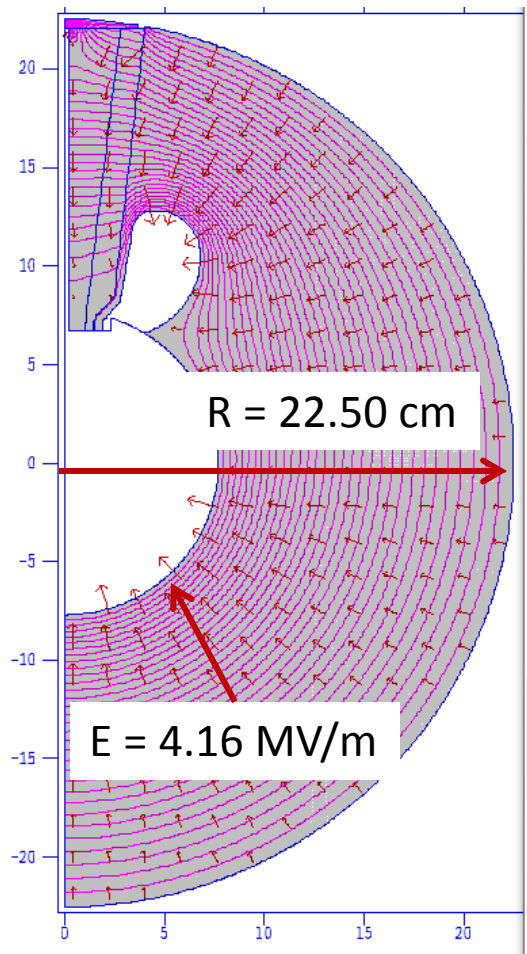
Represents vertical
NEG configuration
(10 NEG's)



Finer mesh – to double check



E Field Changes with NEG pumps



$$E1 / E = R / R1 = 1.26, \quad E2 / E = R / R2 = 1.45$$

Note to self

- Made using 2016_CEBAF_GUN.cst
- And 2016_CEBAF_GUN_NEGS.cst