

Mod 2.5: mesh and perforated plate

Gabriel Palacios

gpala001@odu.edu

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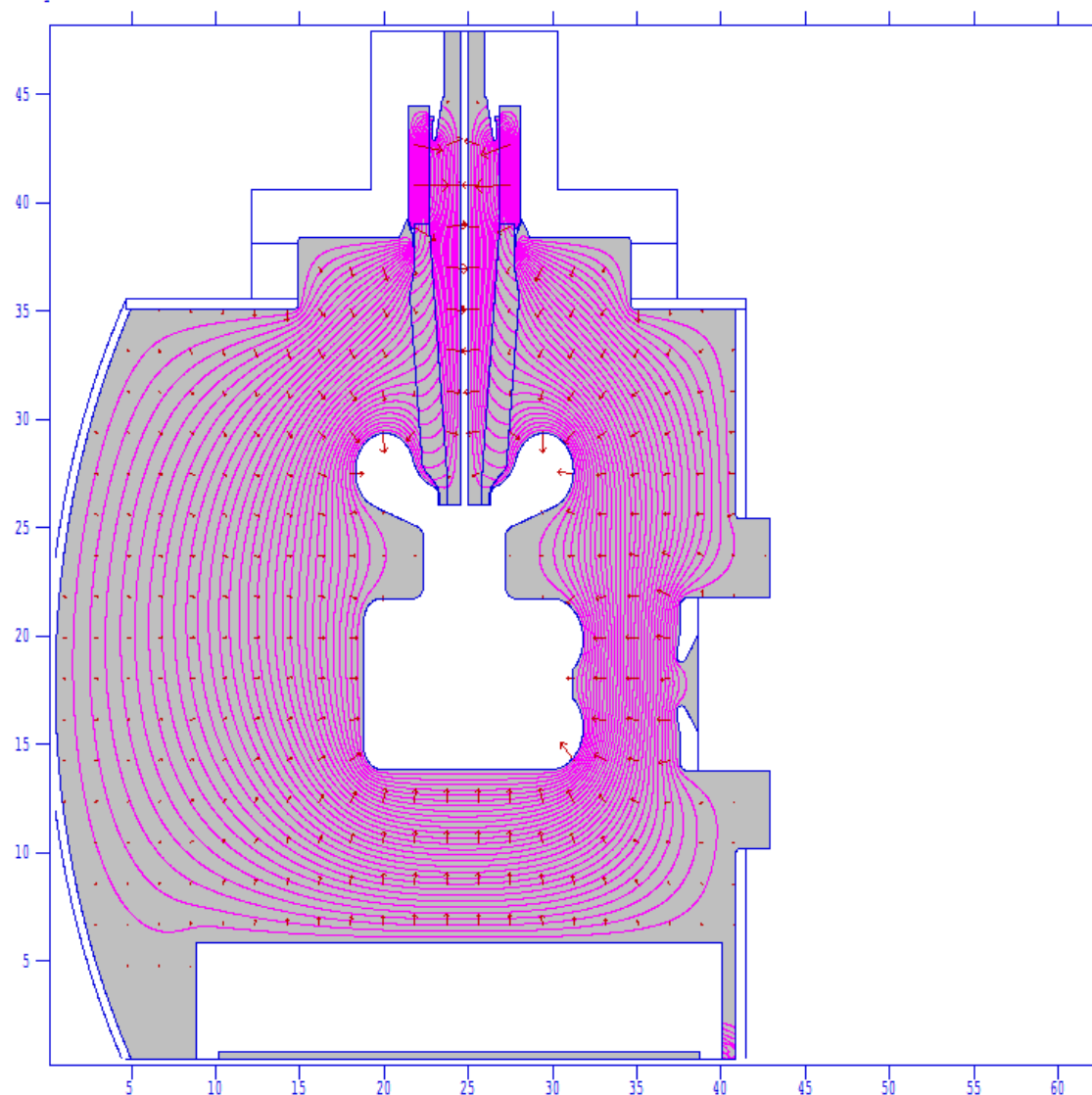
Comparing at -200kV

- Side view using the final design (mod 2.5).
- Fields near the NEG's where compared with a mesh , with a perforated plate and without any of those.
 - For the side view the wire mesh and perforated plate are 3mm above the NEG modules.
 - The wire mesh is simulated as circles with 2mm diameter (the wire itself is 1mm in diameter) to account for the undulated wire and 12mm separation.
 - The perforated plate is simulated as rectangular sections of 2mm high, 4mm wide and 8mm separation.
 - The comparison is for the case with mesh, the no-mesh and the perforated plate at -200kV
- A simulation of the new mesh that tapers to the chamber wall at 200kV included at the end.
- It follows from Danny's awesome CAD models.
 - The fields around the cathode appear to increase by $\sim 0.1\text{MV/m}$

Side view

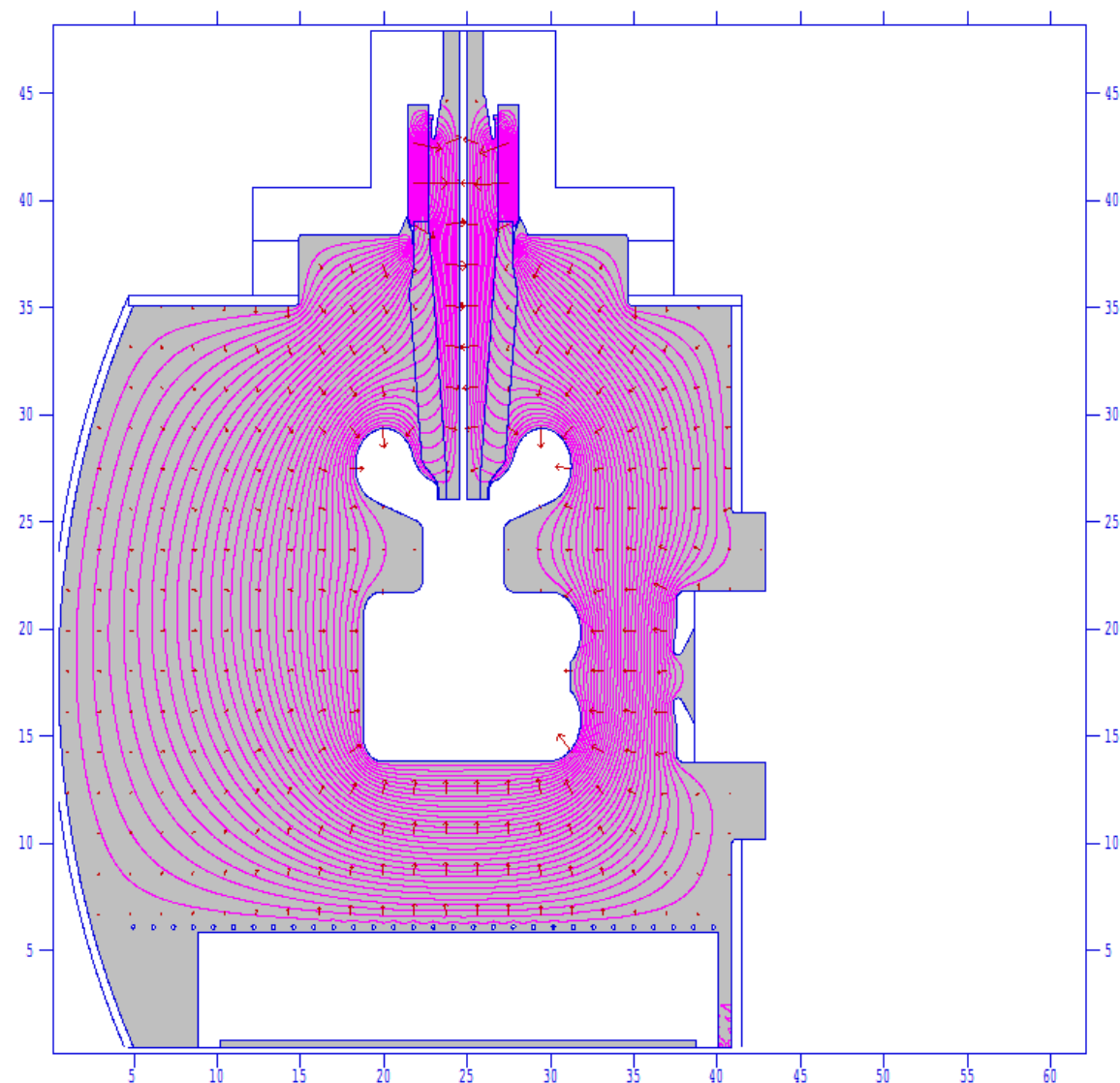
No-mesh(left) vs mesh(right) at -200kV

Danny's 200kV chamber with shed 2.5



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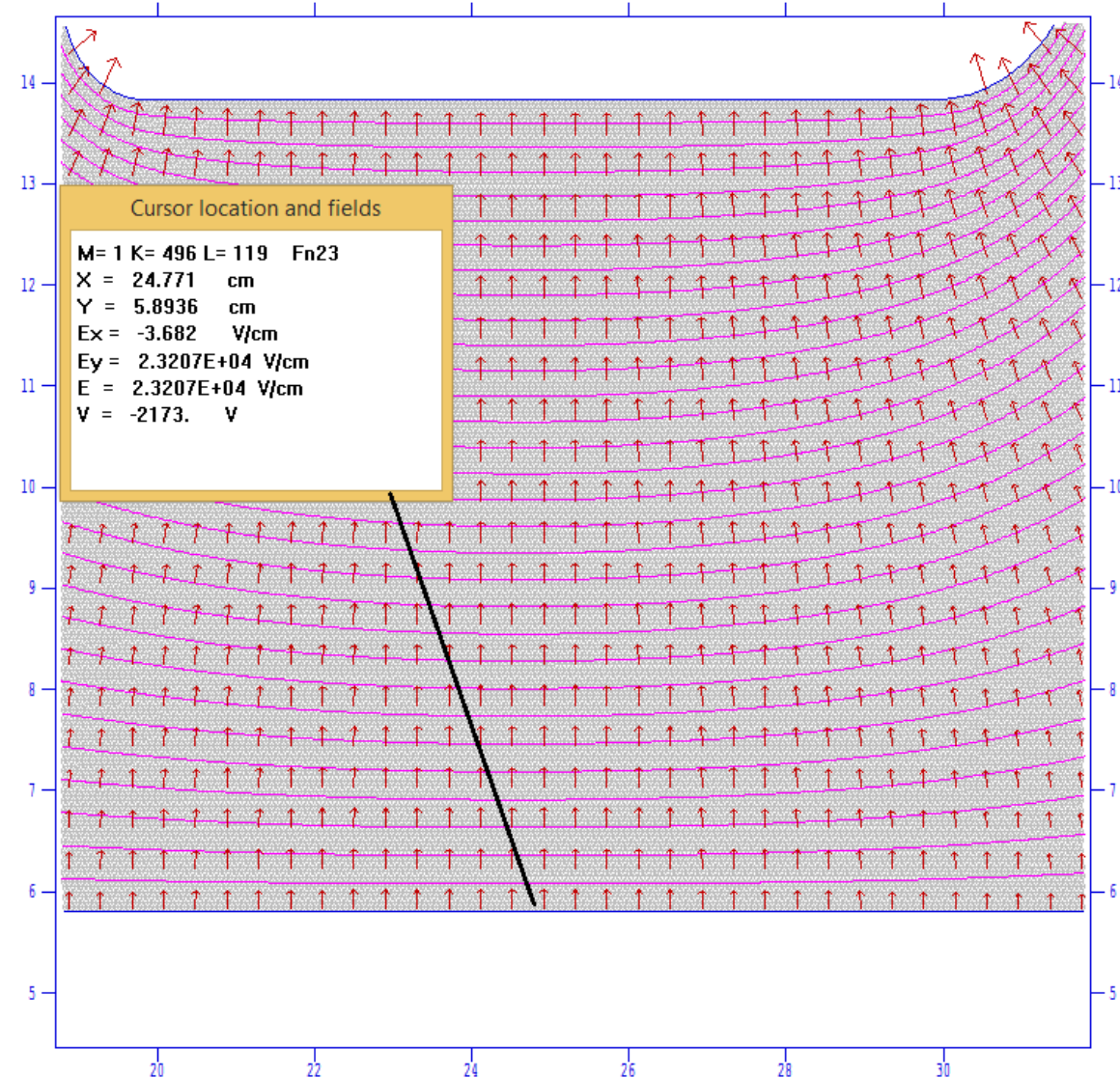
200kV chamber with mesh



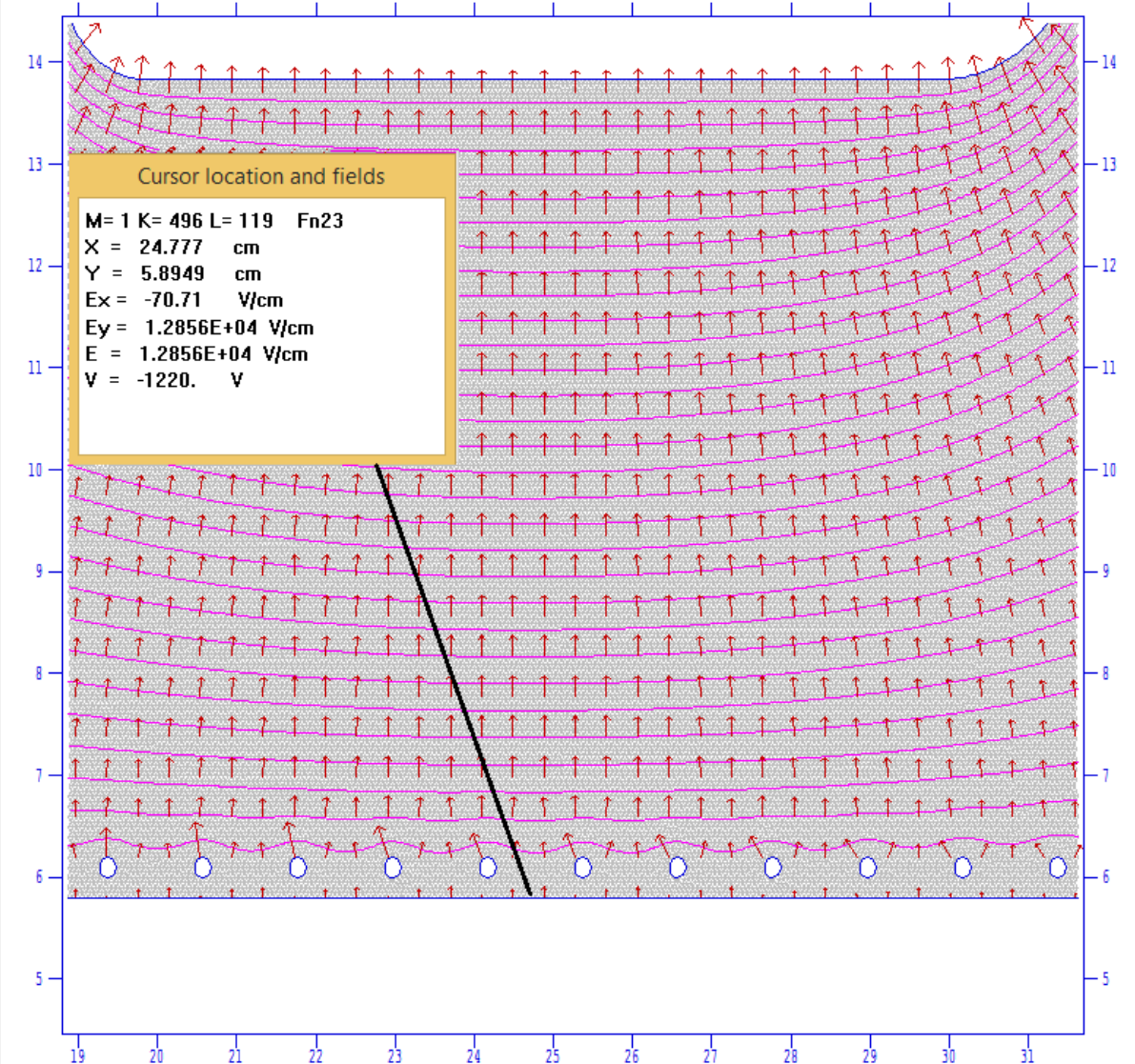
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No-mesh(left) vs mesh(right) at -200kV

Danny's 200kV chamber with shed 2.5

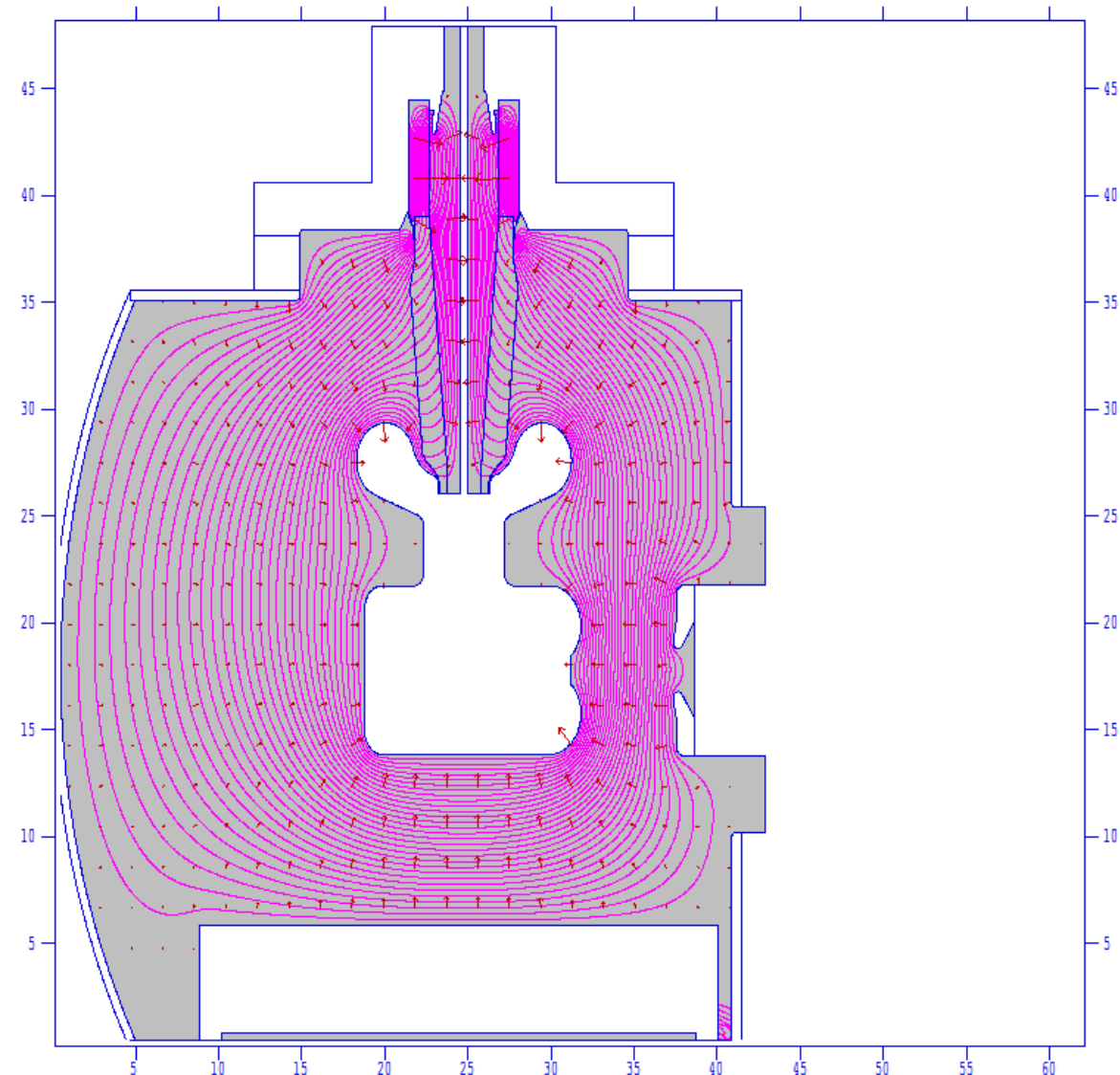


200kV chamber with mesh



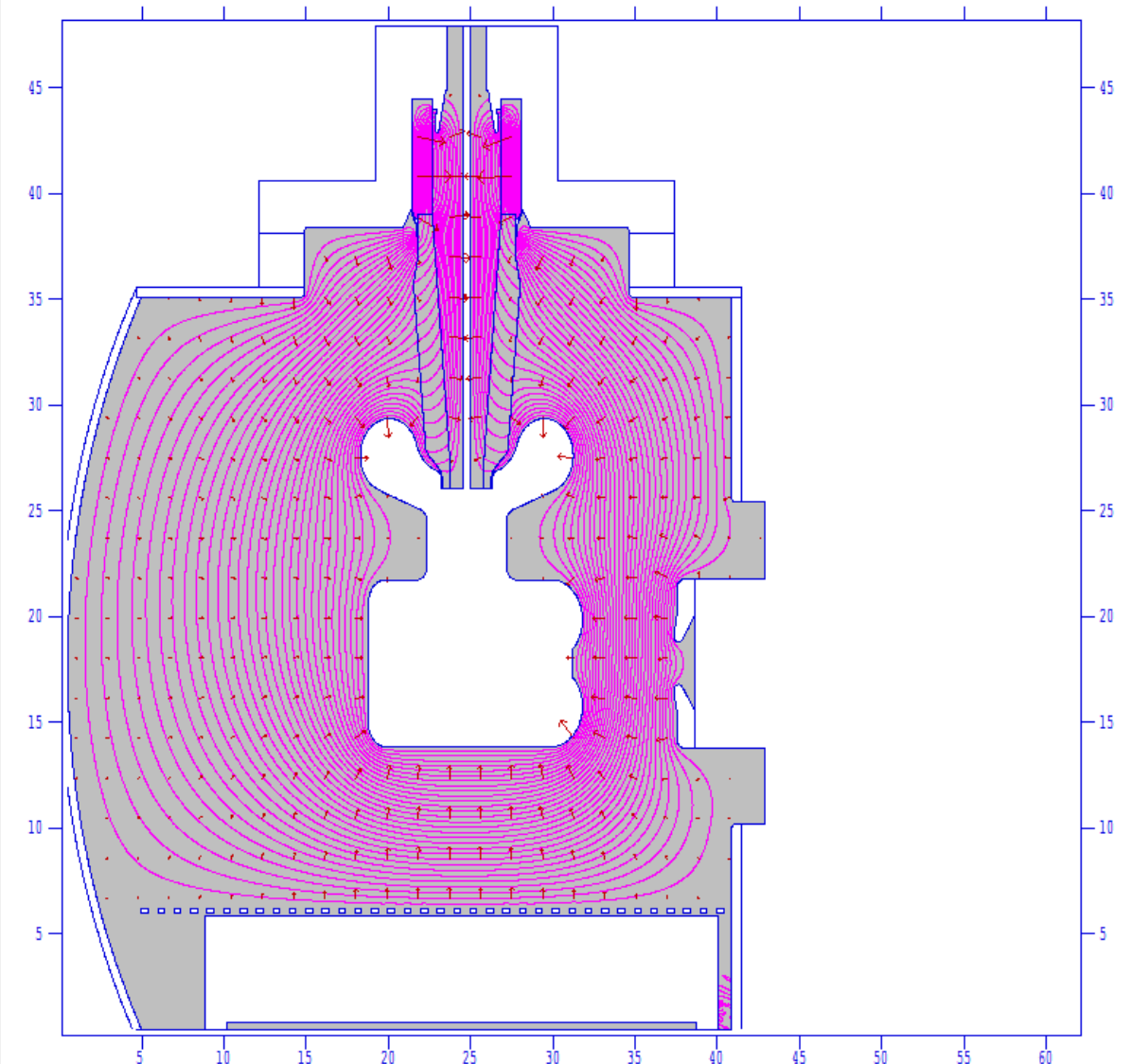
No-mesh(left) vs Perforated plate(right) at -200kV

Danny's 200kV chamber with shed 2.5



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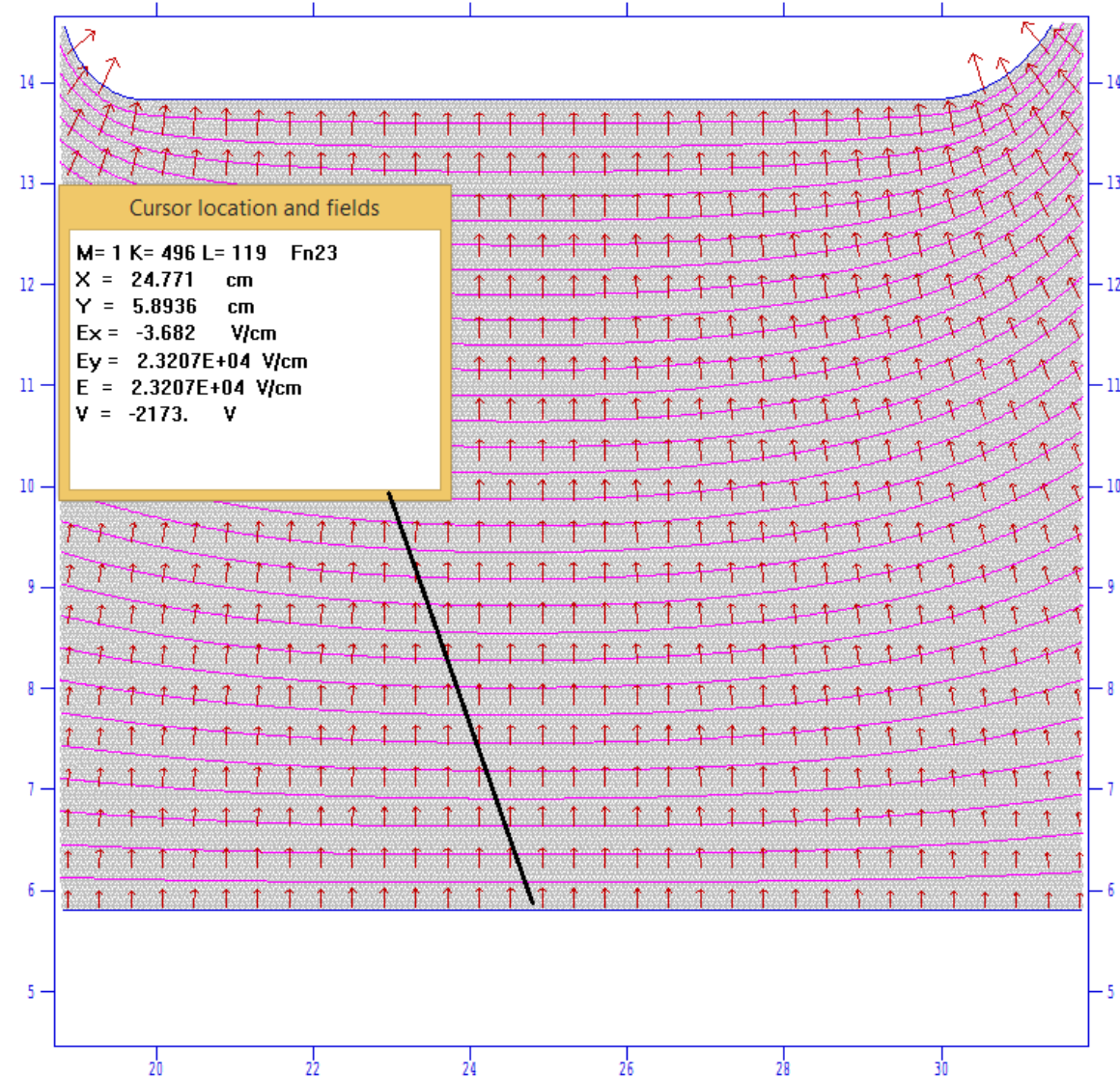
200kV chamber with perforated plate



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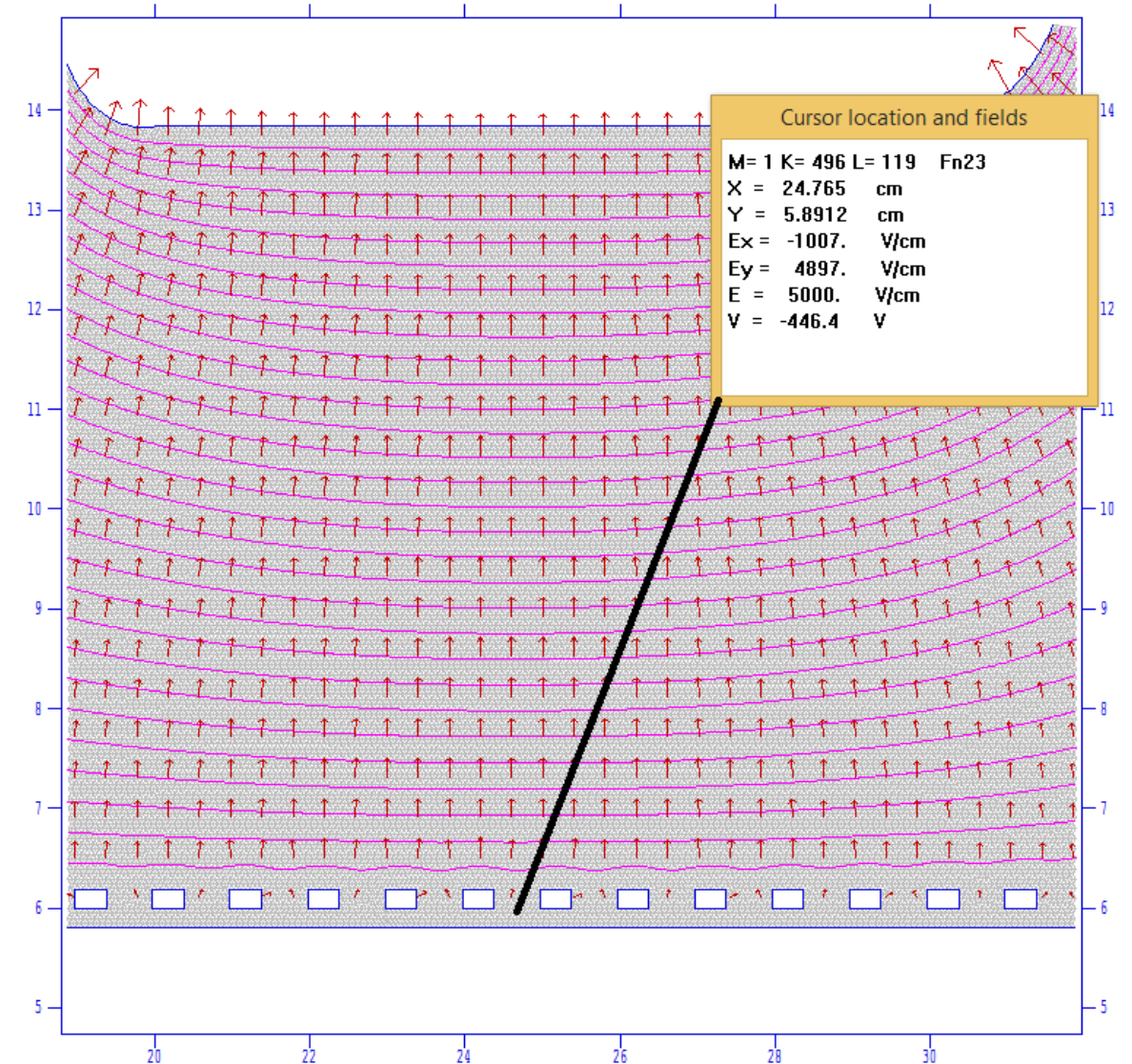
No-mesh(left) vs Perforated plate(right) at -200kV

Danny's 200kV chamber with shed 2.5



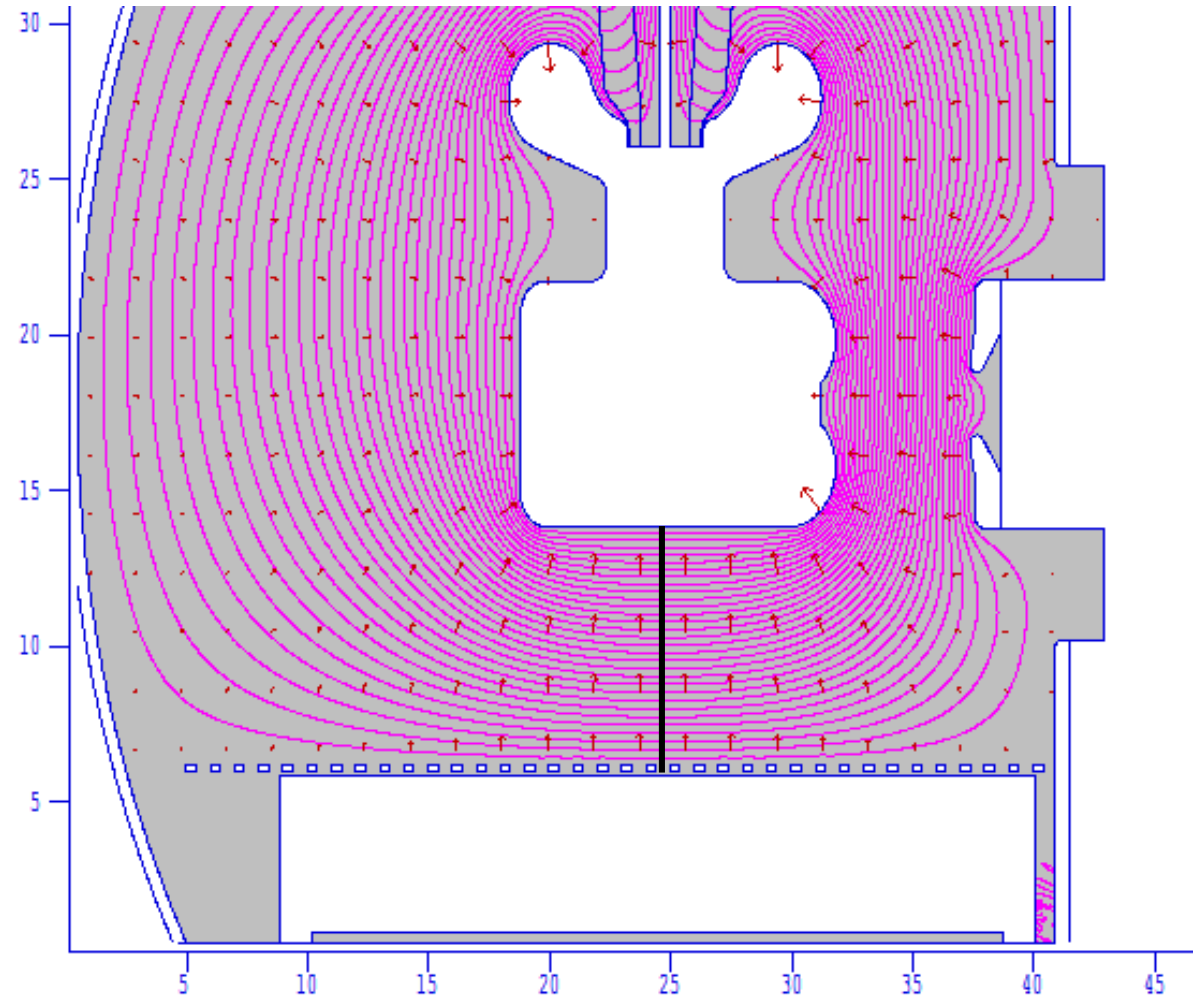
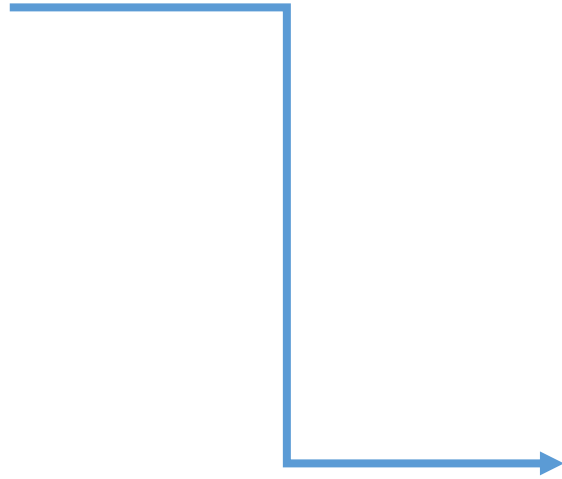
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200kV chamber with perforated plate

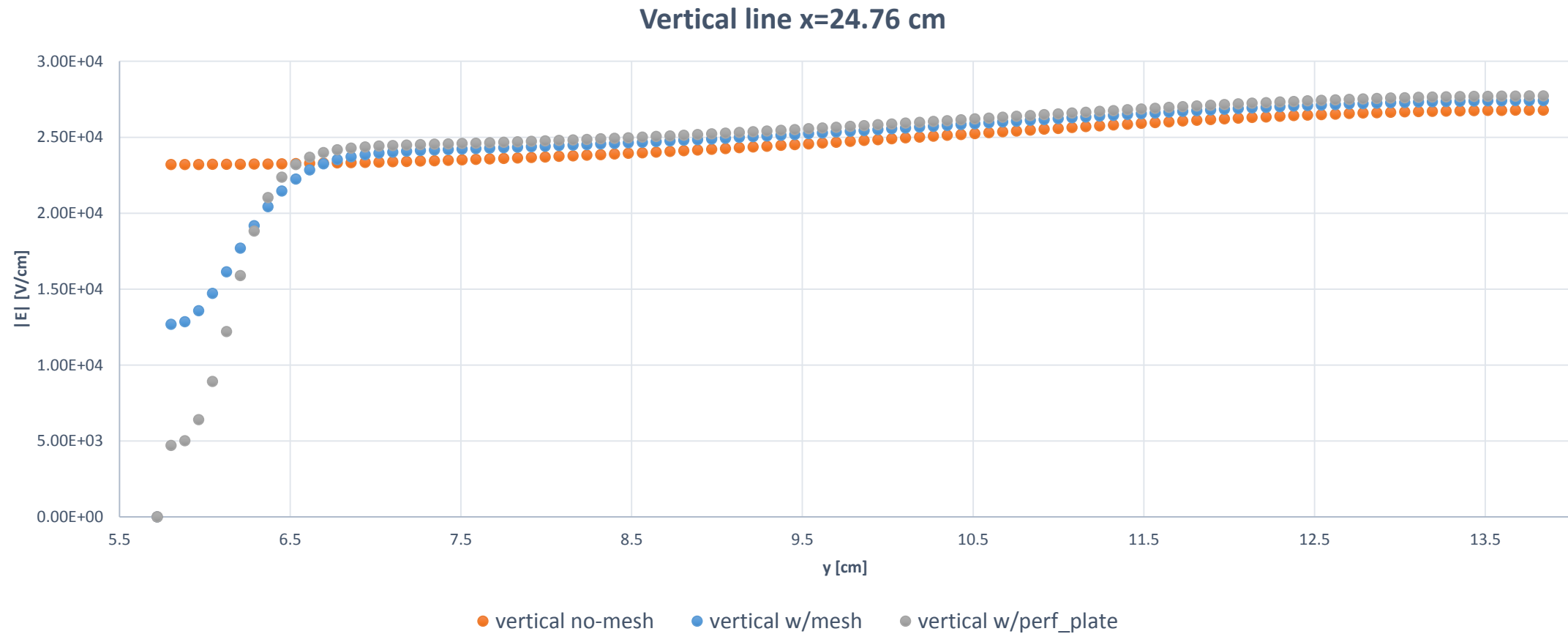


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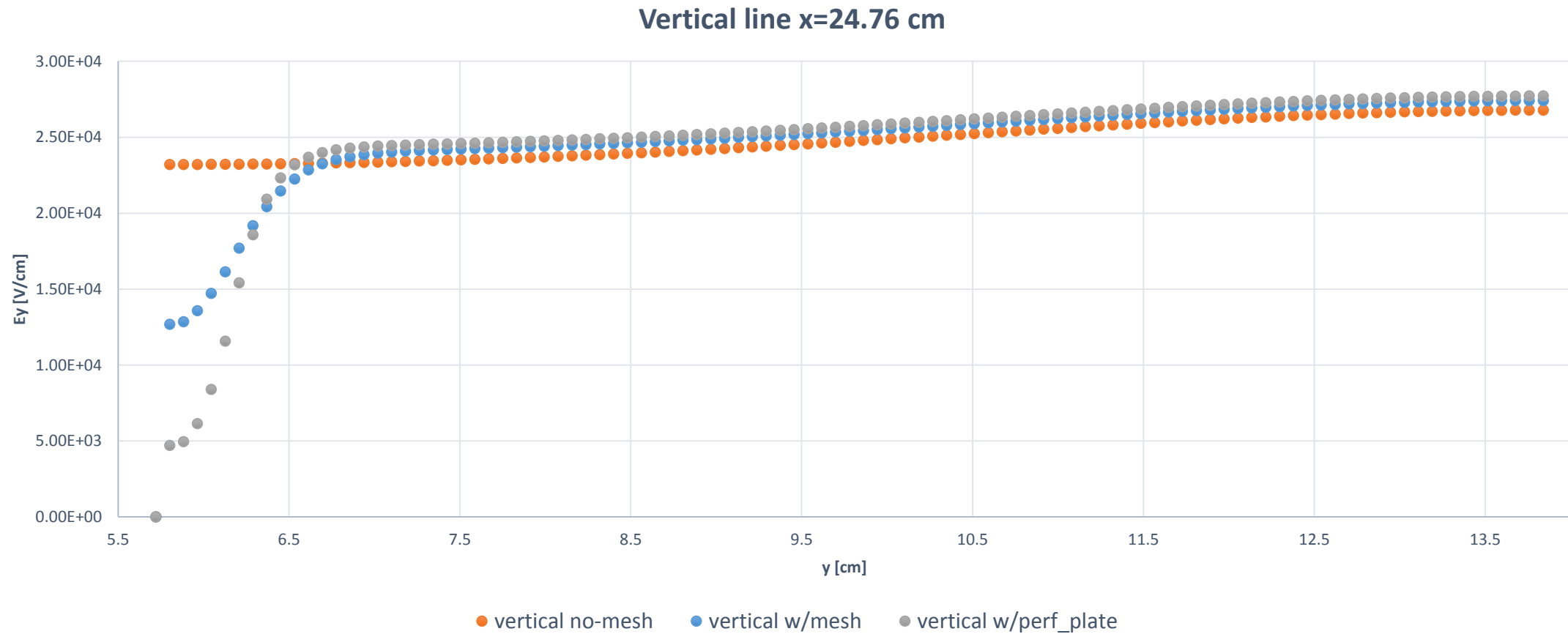
I interpolated the fields
along that black line
along y



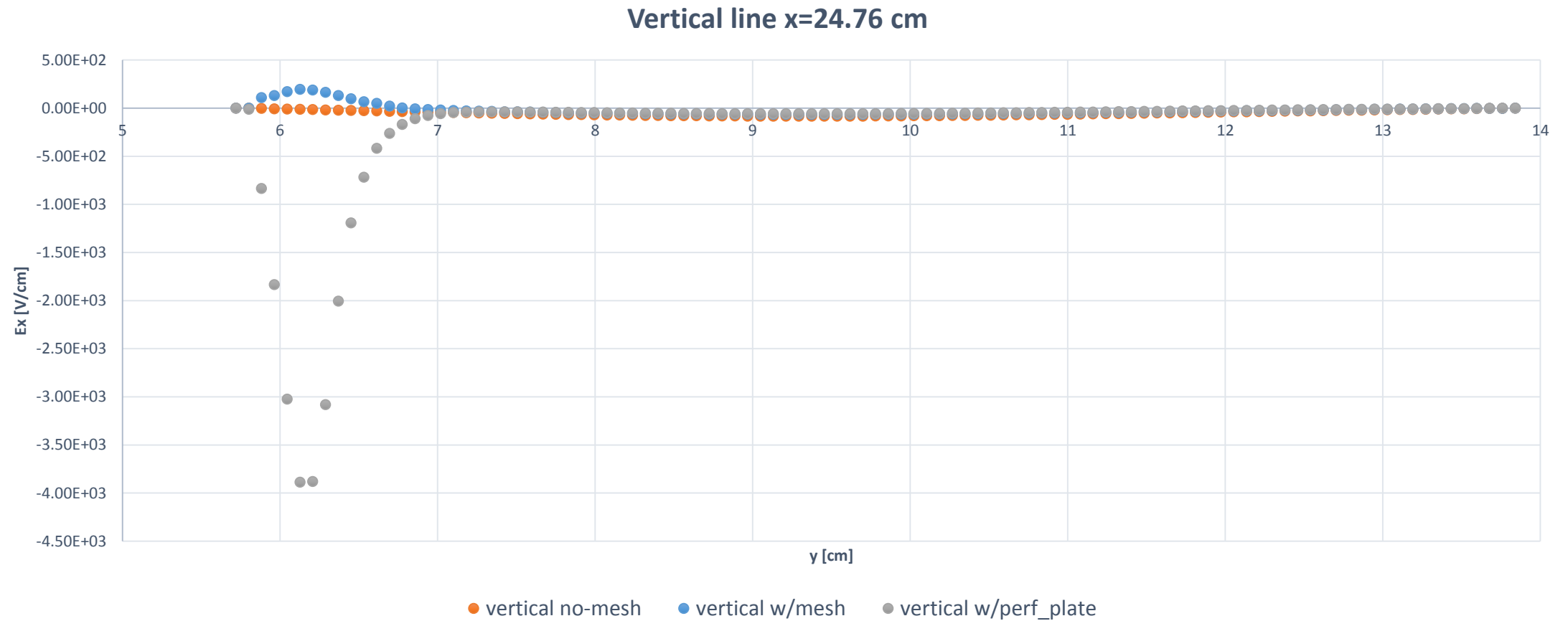
Comparing at -200kV: $|E|$ vs y



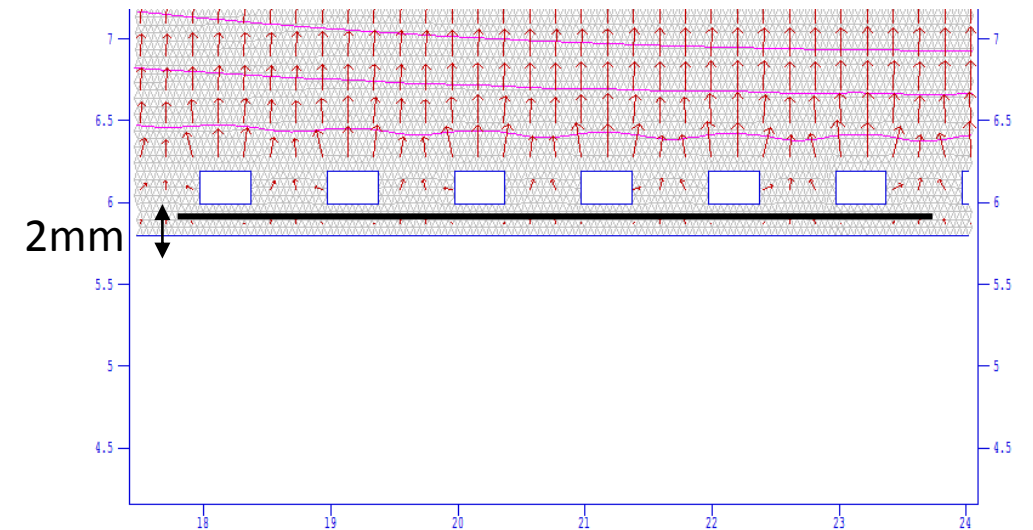
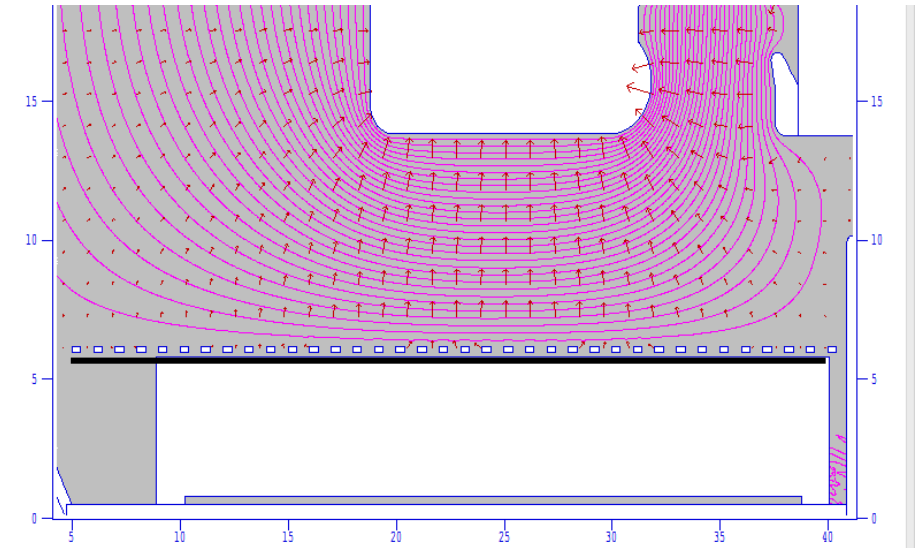
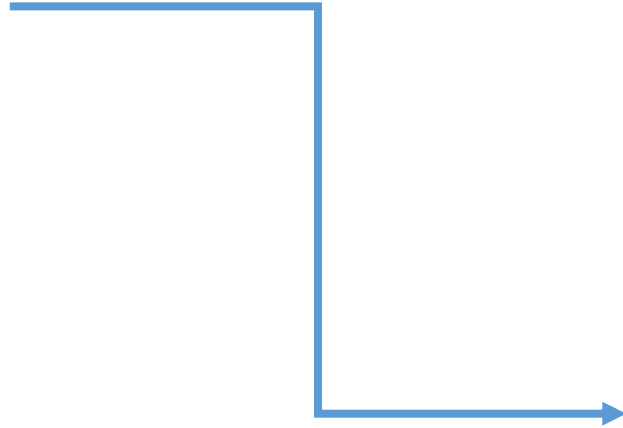
Comparing at -200kV: E_y vs y



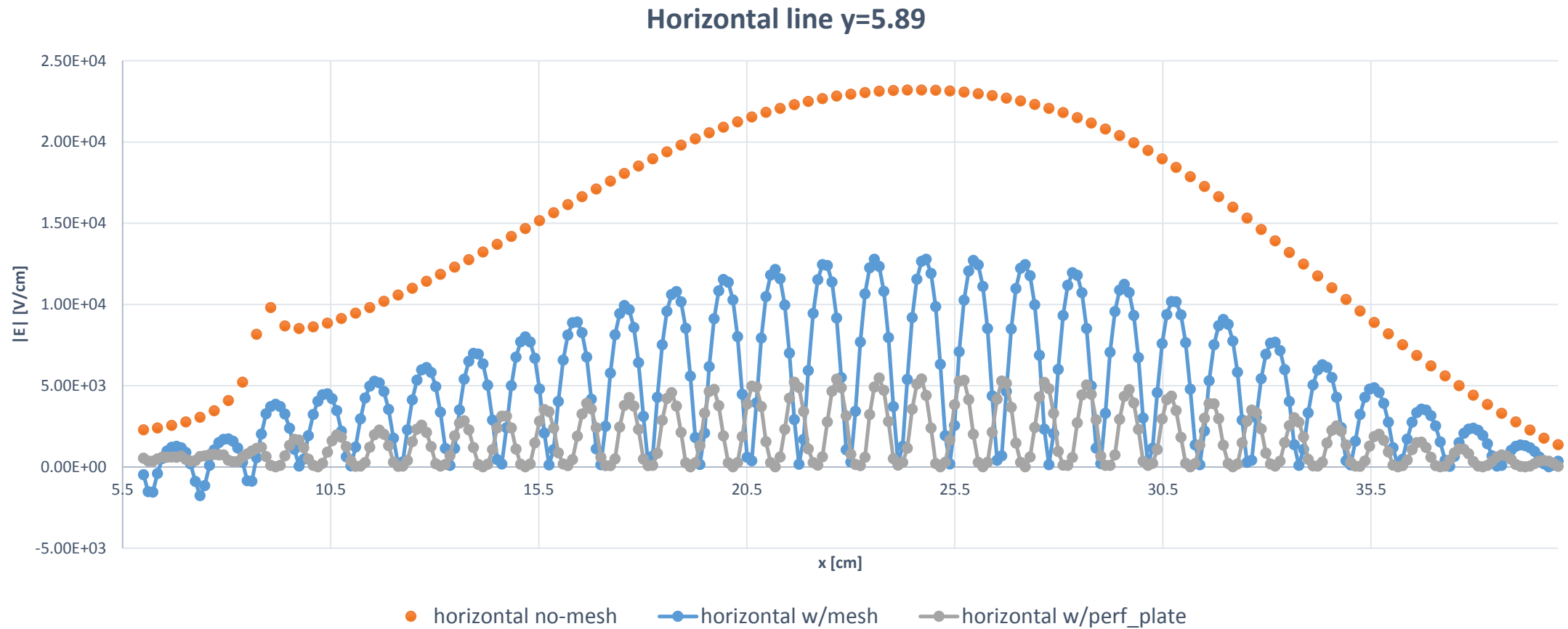
Comparing at -200kV: E_x vs y



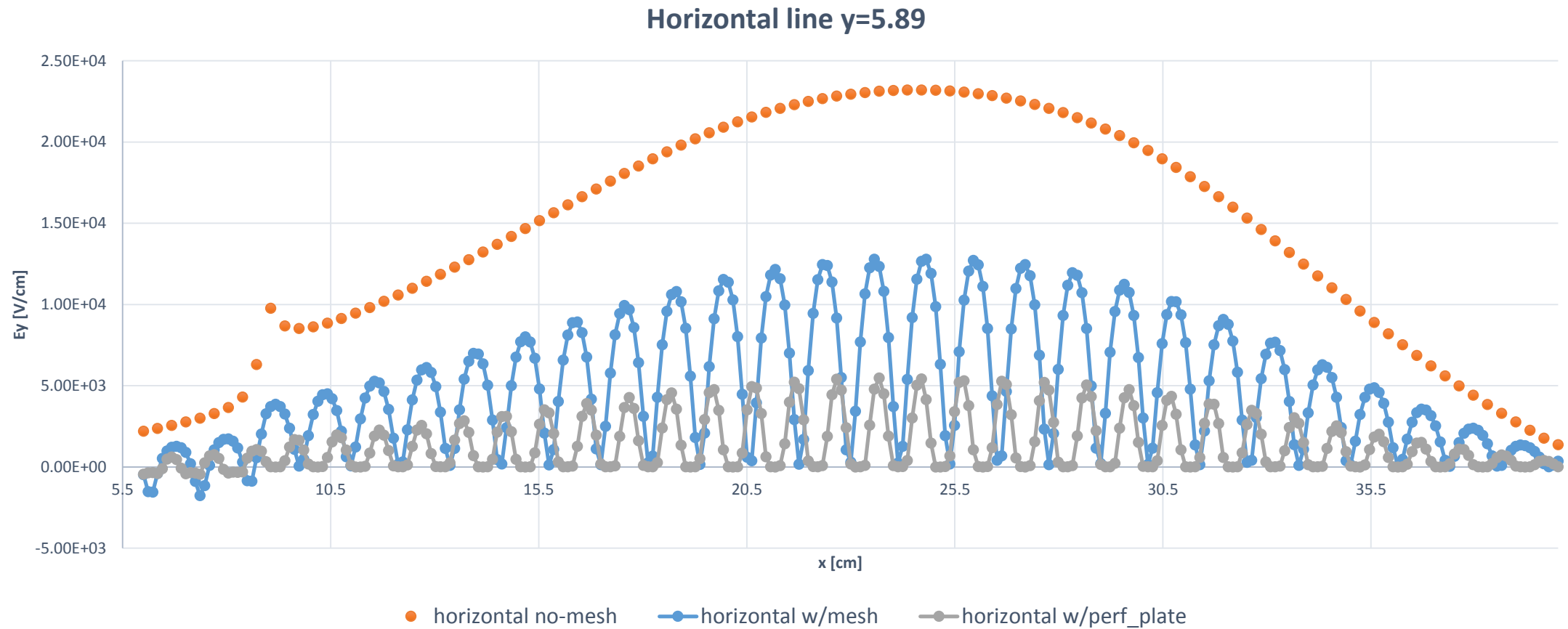
I interpolated the fields
along that black line
along x



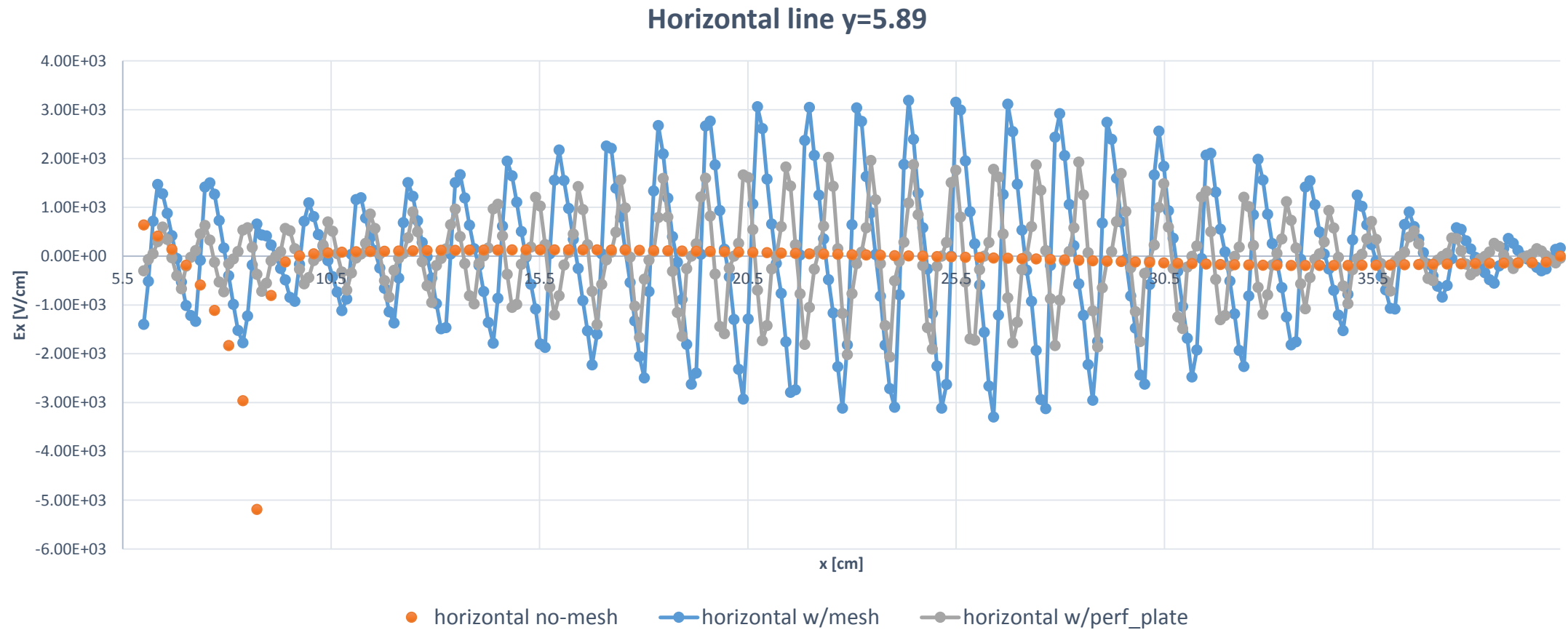
Comparing at -200kV: $|E|$ vs x



Comparing at -200kV : E_y vs x

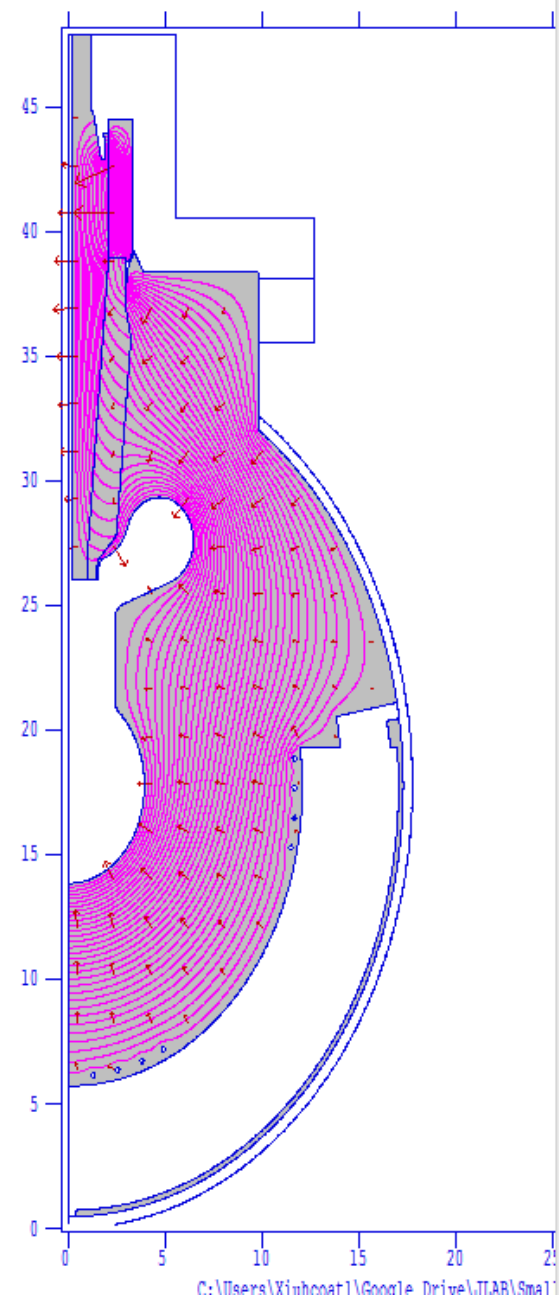


Comparing at -200kV: Ex vs x

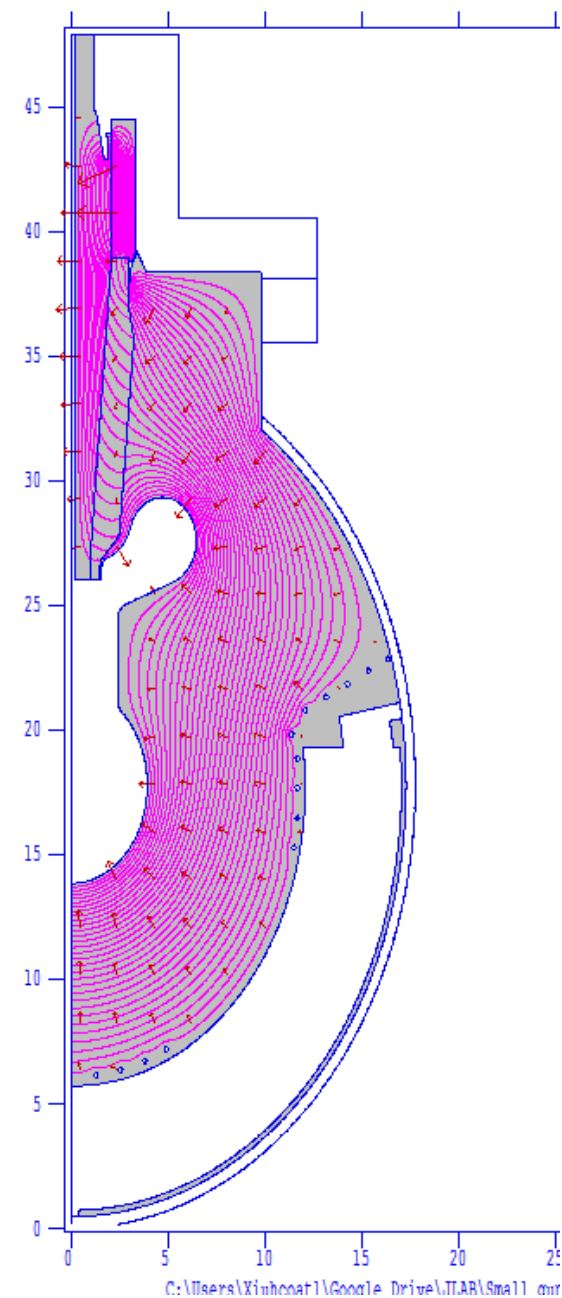


Front view of new mesh design

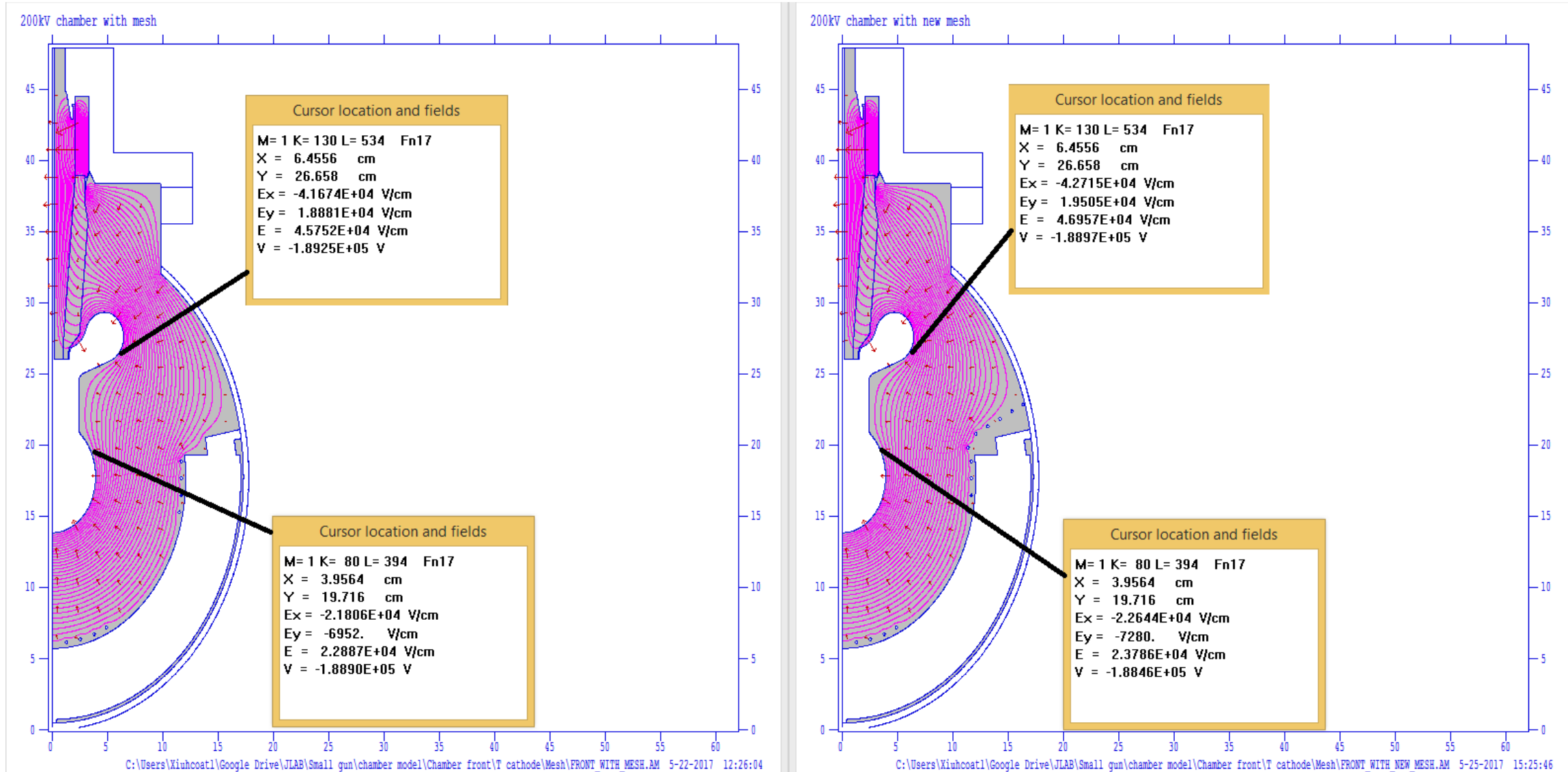
200kV chamber with mesh



200kV chamber with new mesh

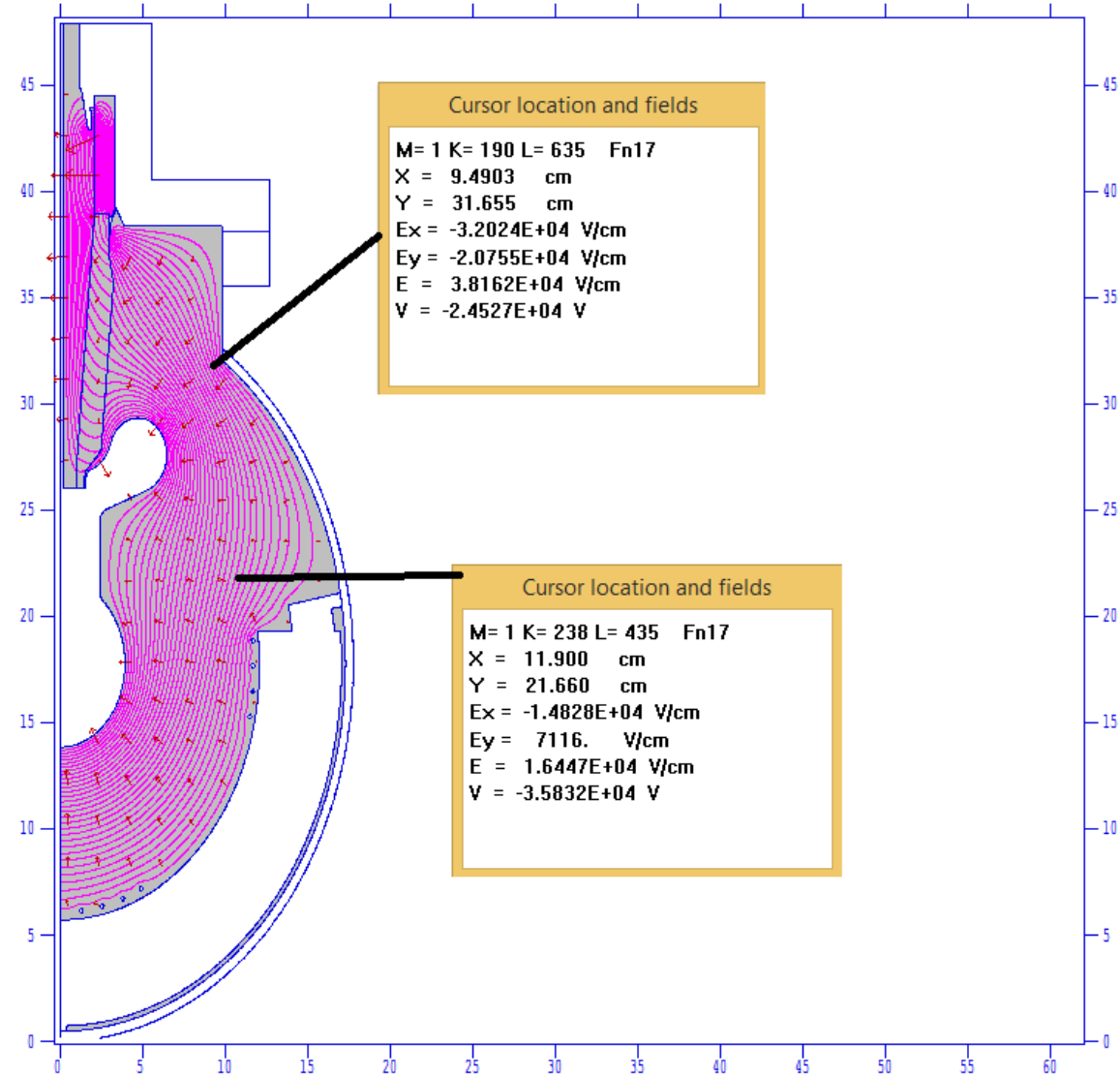


Front view: new mesh



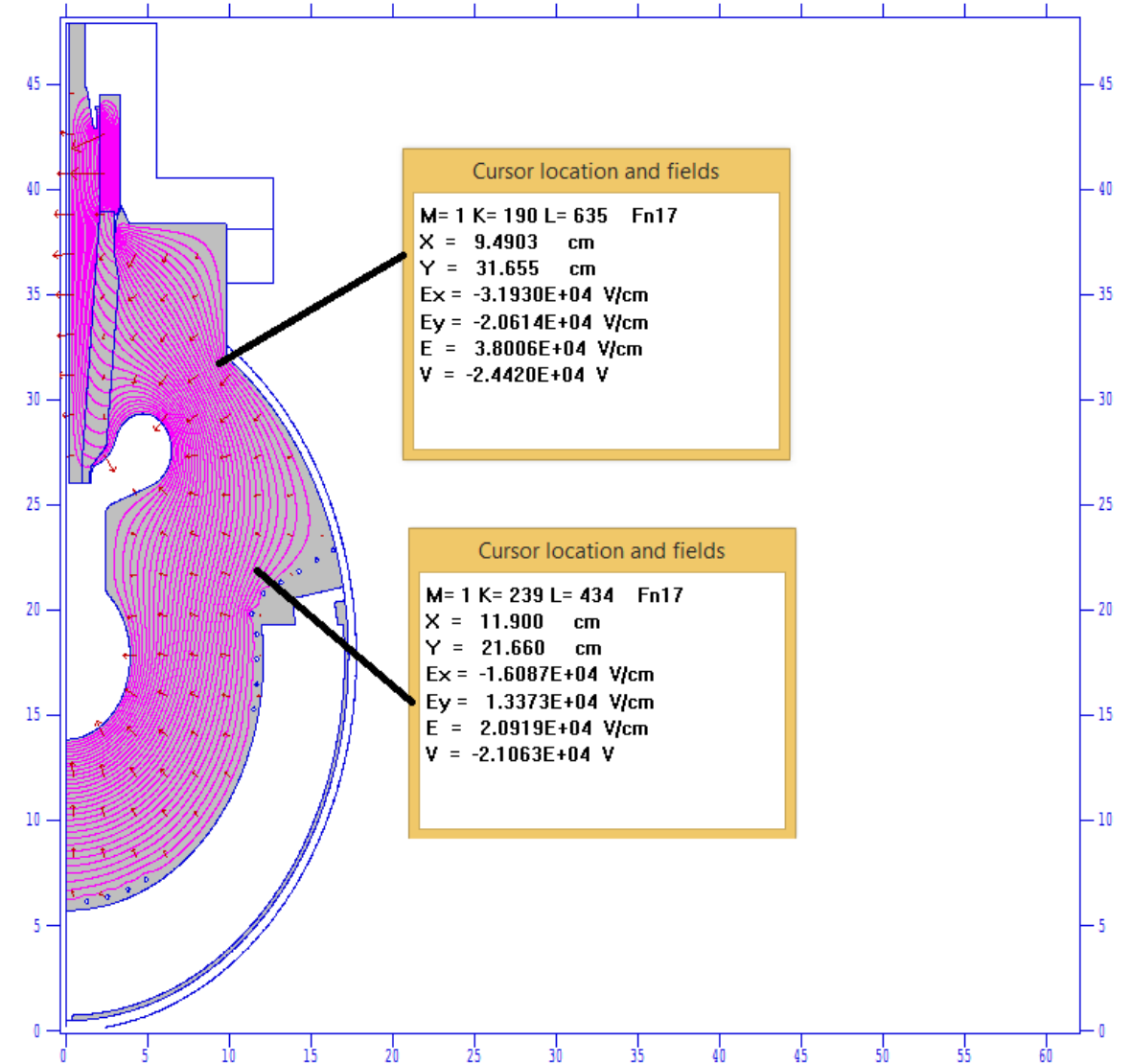
Front view: new mesh

200kV chamber with mesh



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200kV chamber with new mesh



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Fin.