Shed Mod 2.5

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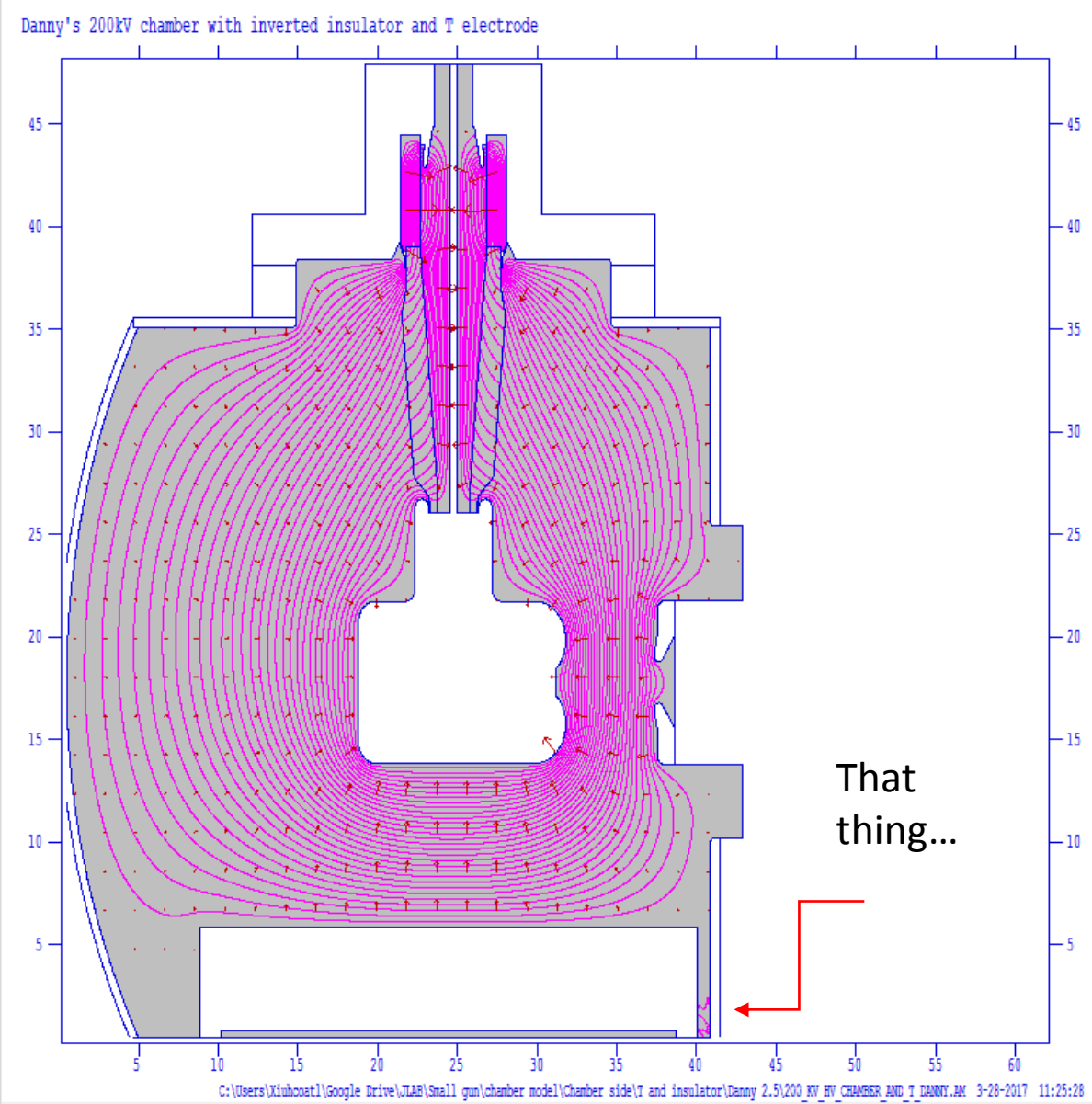
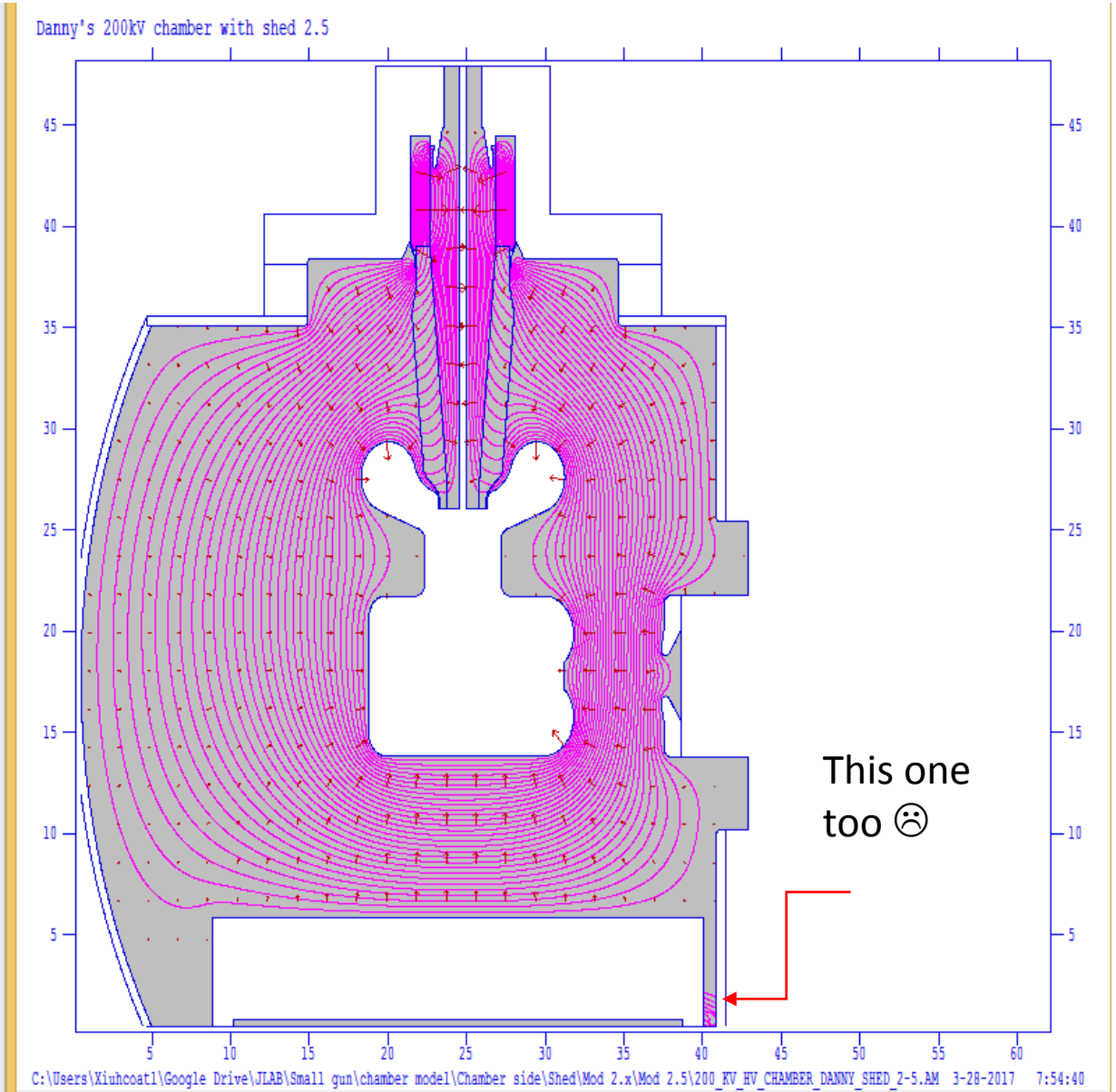
03/28/17

Comparing baseline vs shed mod 2.5 at -200kV: Danny's model.

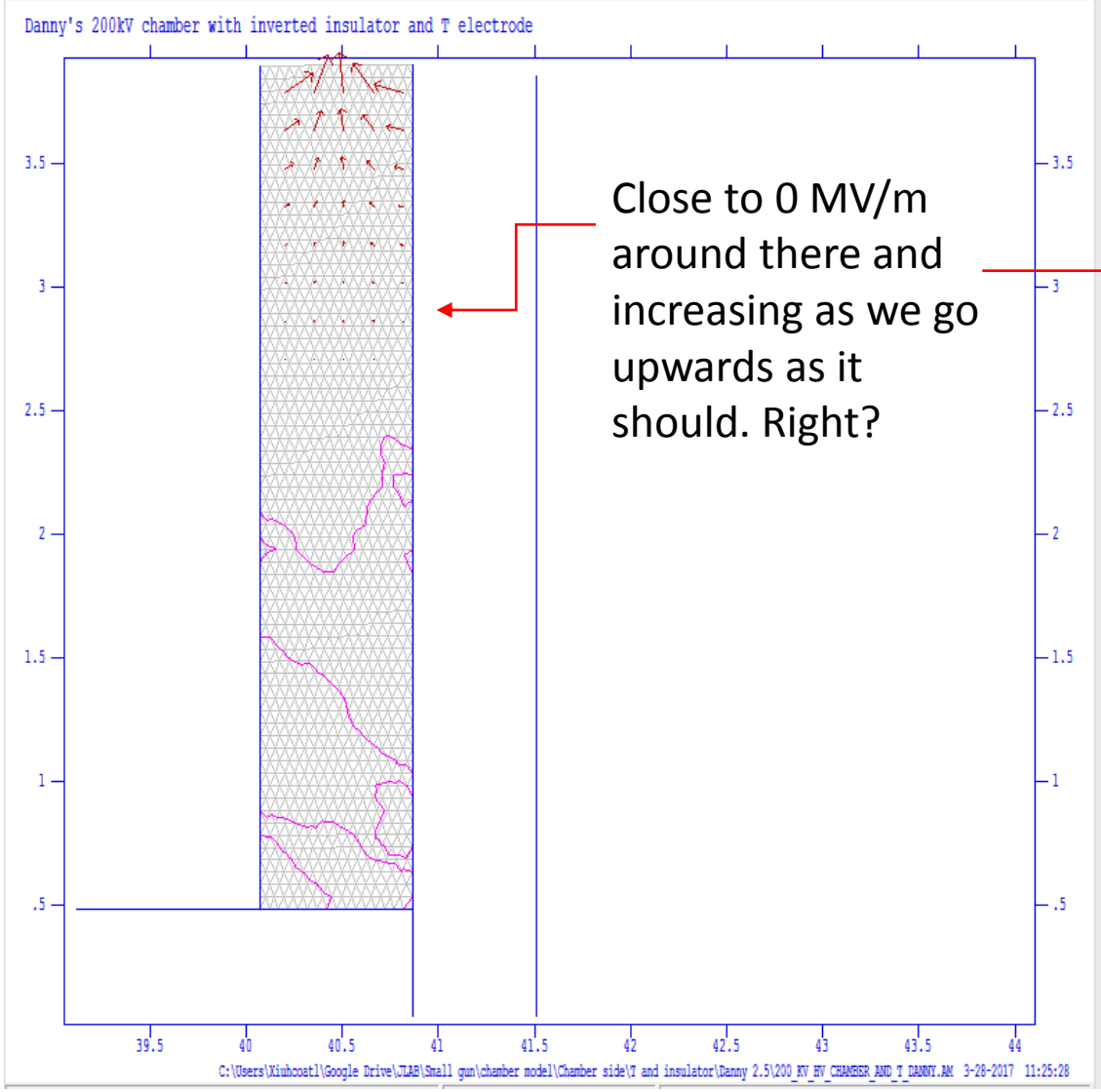
- Side and front view cross-section are shown.
- Based entirely on Danny's chamber diagram.
  - Now includes proper chamber thickness
  - NEG's have been grounded to prevent the "crazy" fields appearing under them
    - **This does not mean the were not grounded before, they where at zero potential, but they did not have contact with the base of the chamber. Now they are "bolted" to the chamber.**
- Shed model by Danny (better cusp)
- Included plots of potential, E-fields on rubber-insulator interface
- Included plots of E-fields on cathode-anode gap

Baseline (left) vs Shed mod 2.5 (right) -200 kV

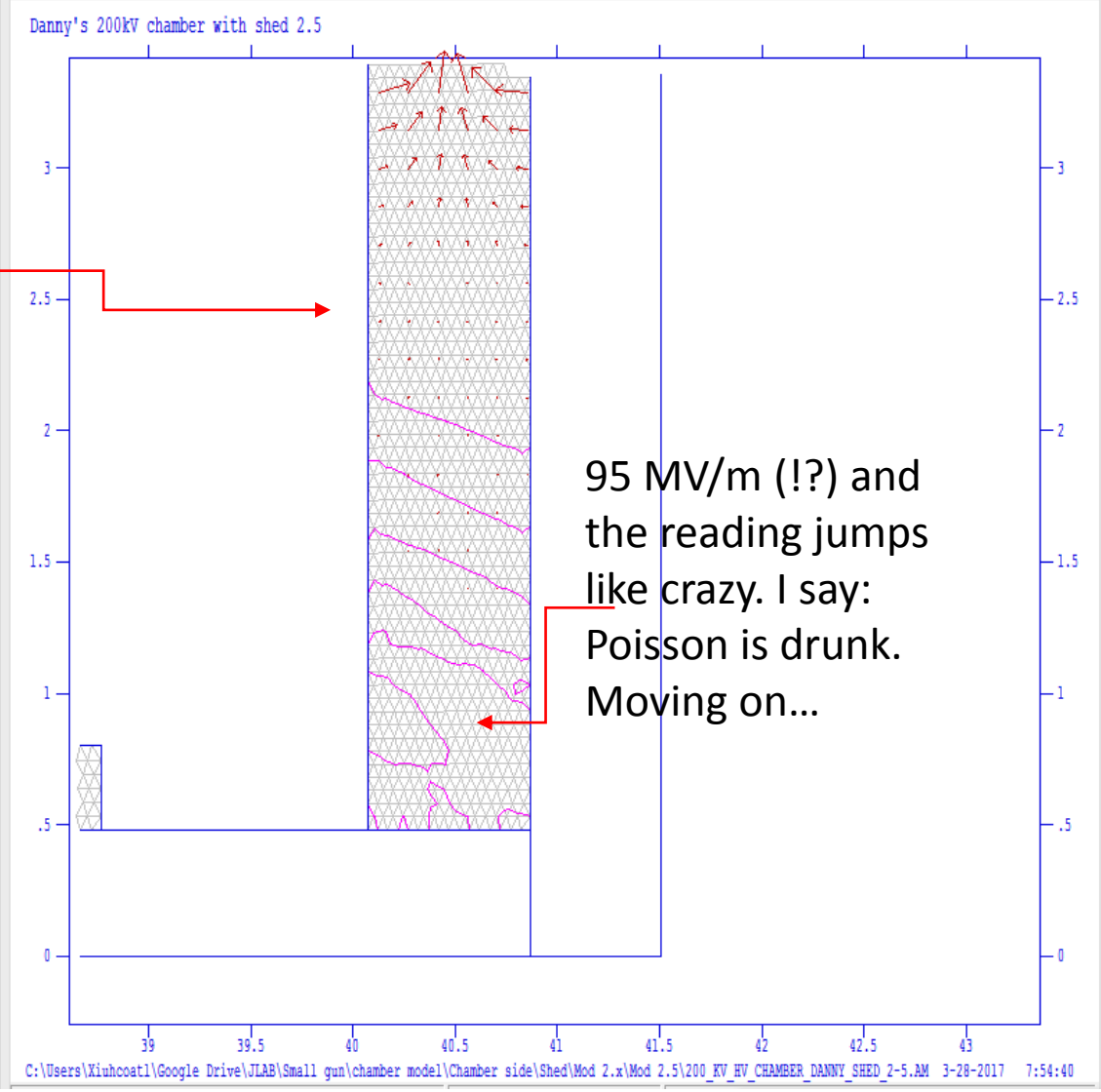




Baseline (left) vs Shed mod 2.5 (right) -200 kV
Close up of crazy stuff near bottom right

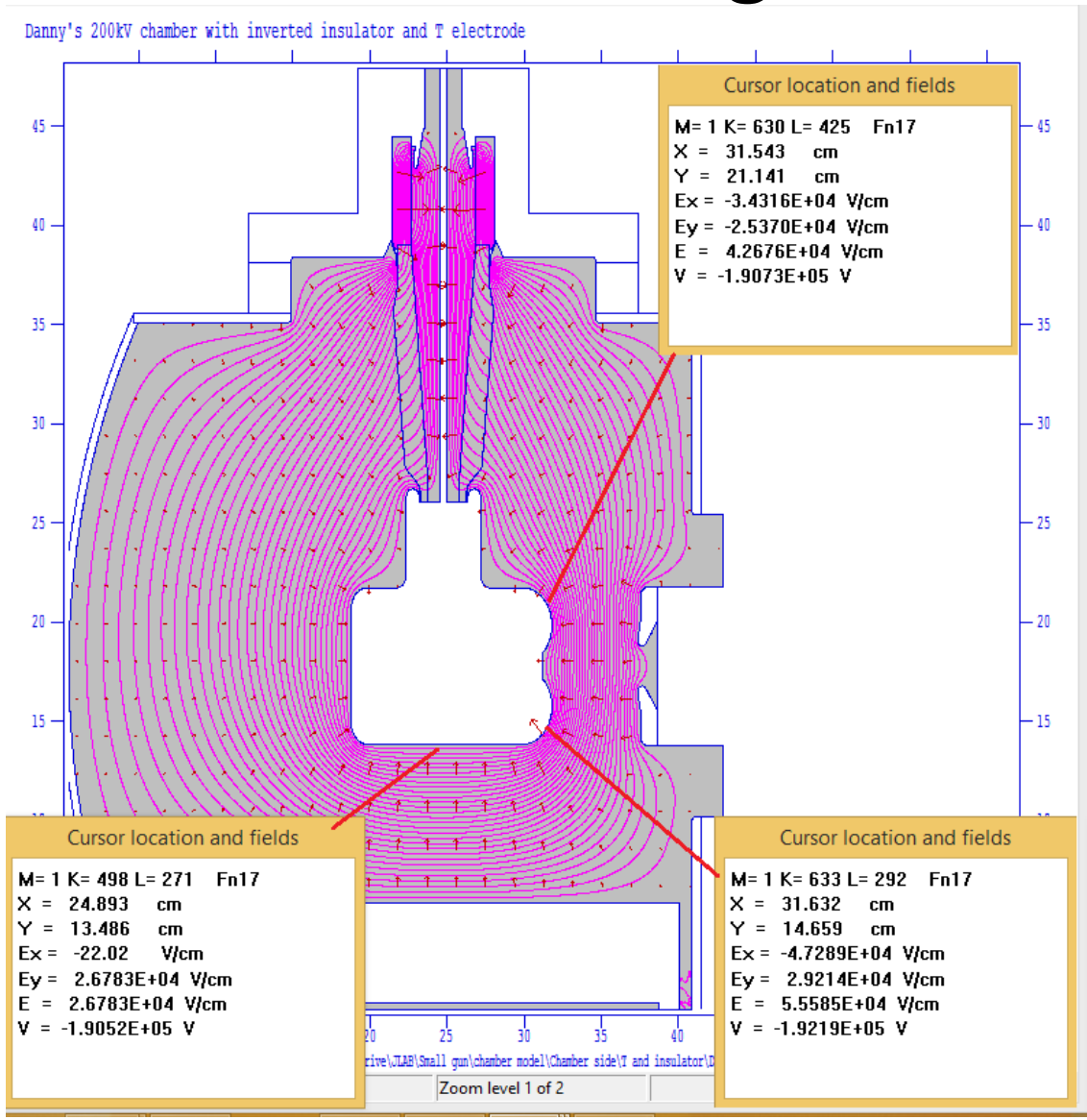


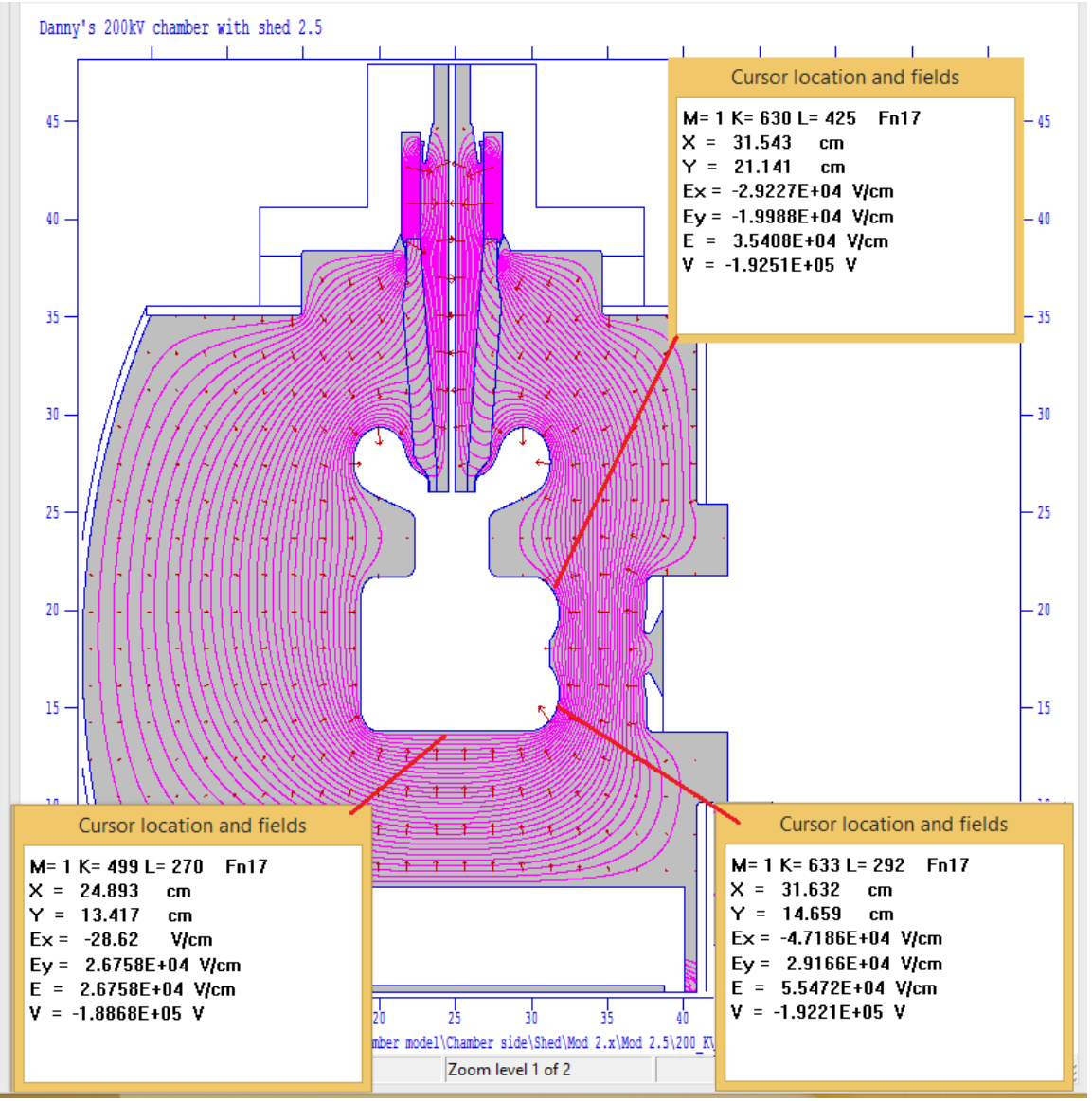
Close to 0 MV/m around there and increasing as we go upwards as it should. Right?



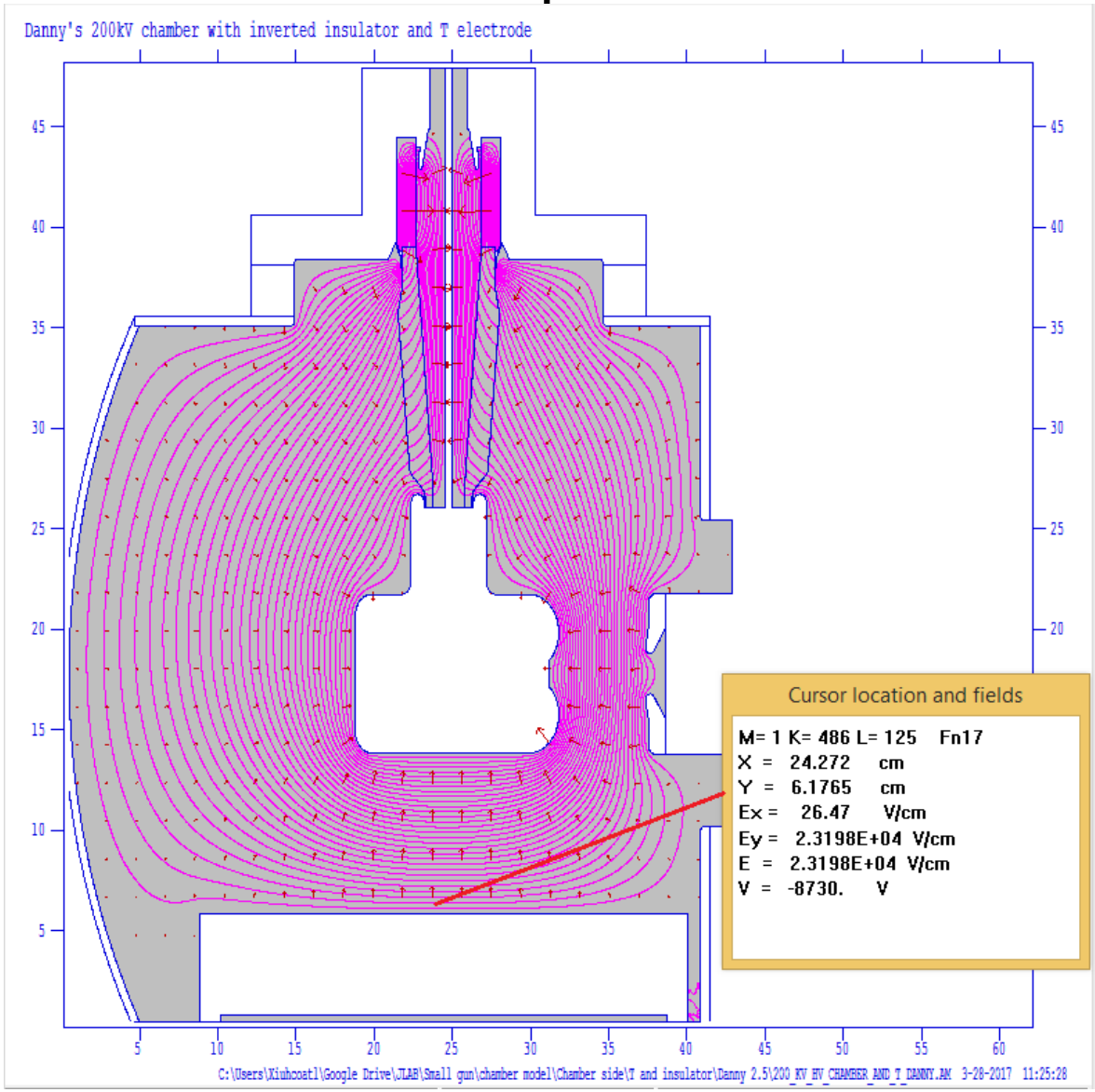
95 MV/m (!?) and the reading jumps like crazy. I say: Poisson is drunk. Moving on…

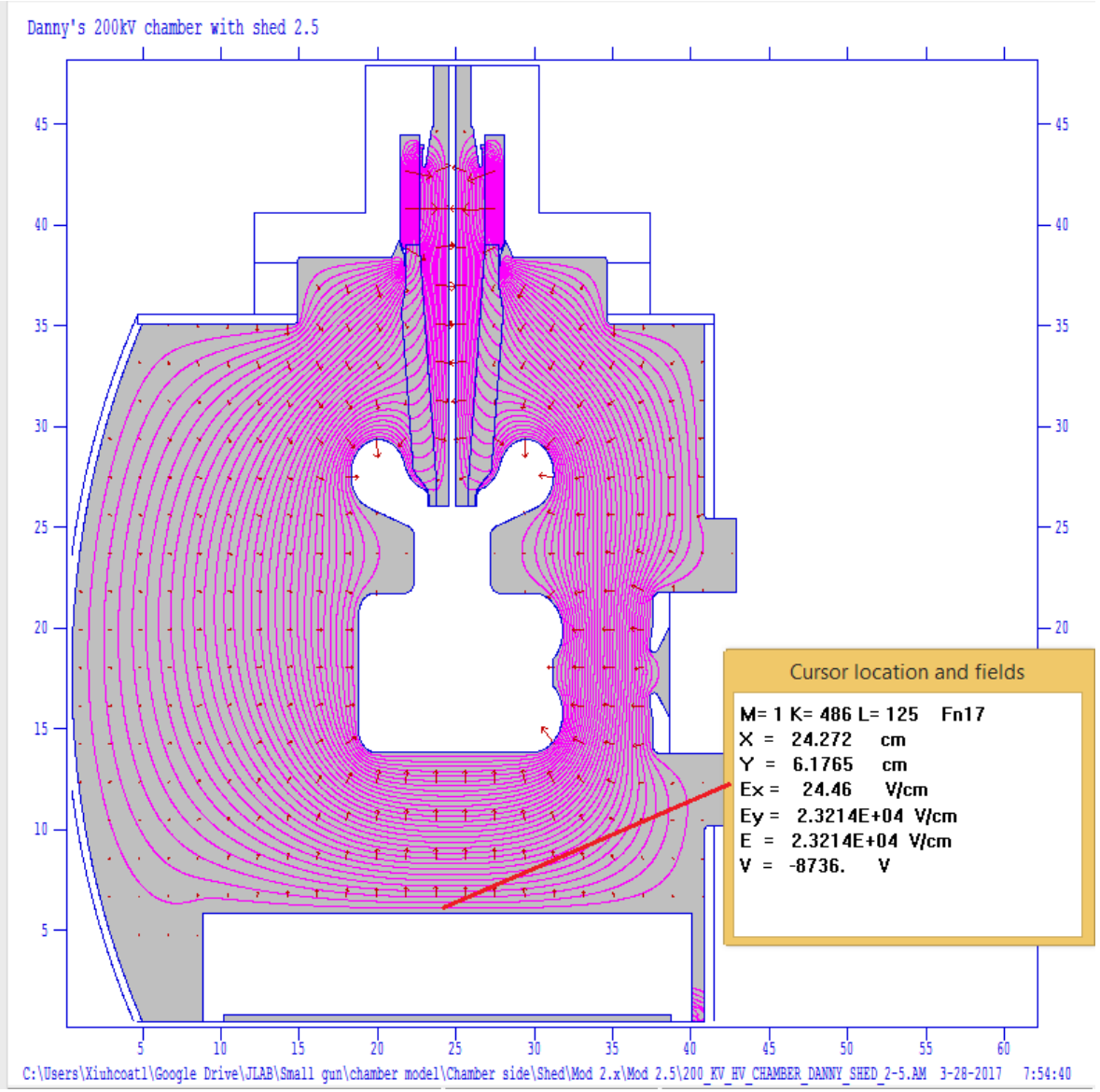
Baseline (left) vs Shed mod 2.5 (right) -200 kV fields around edges



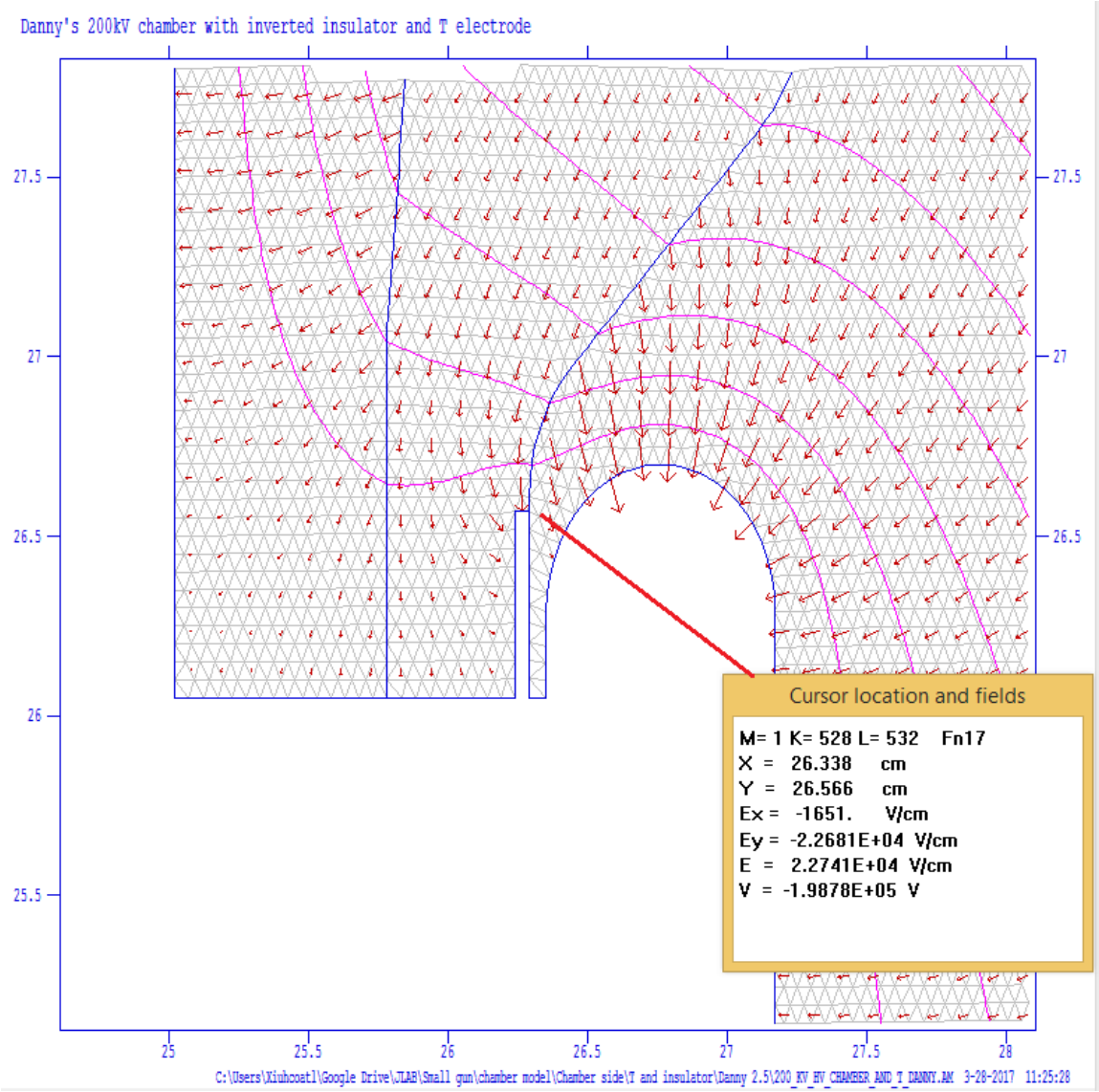


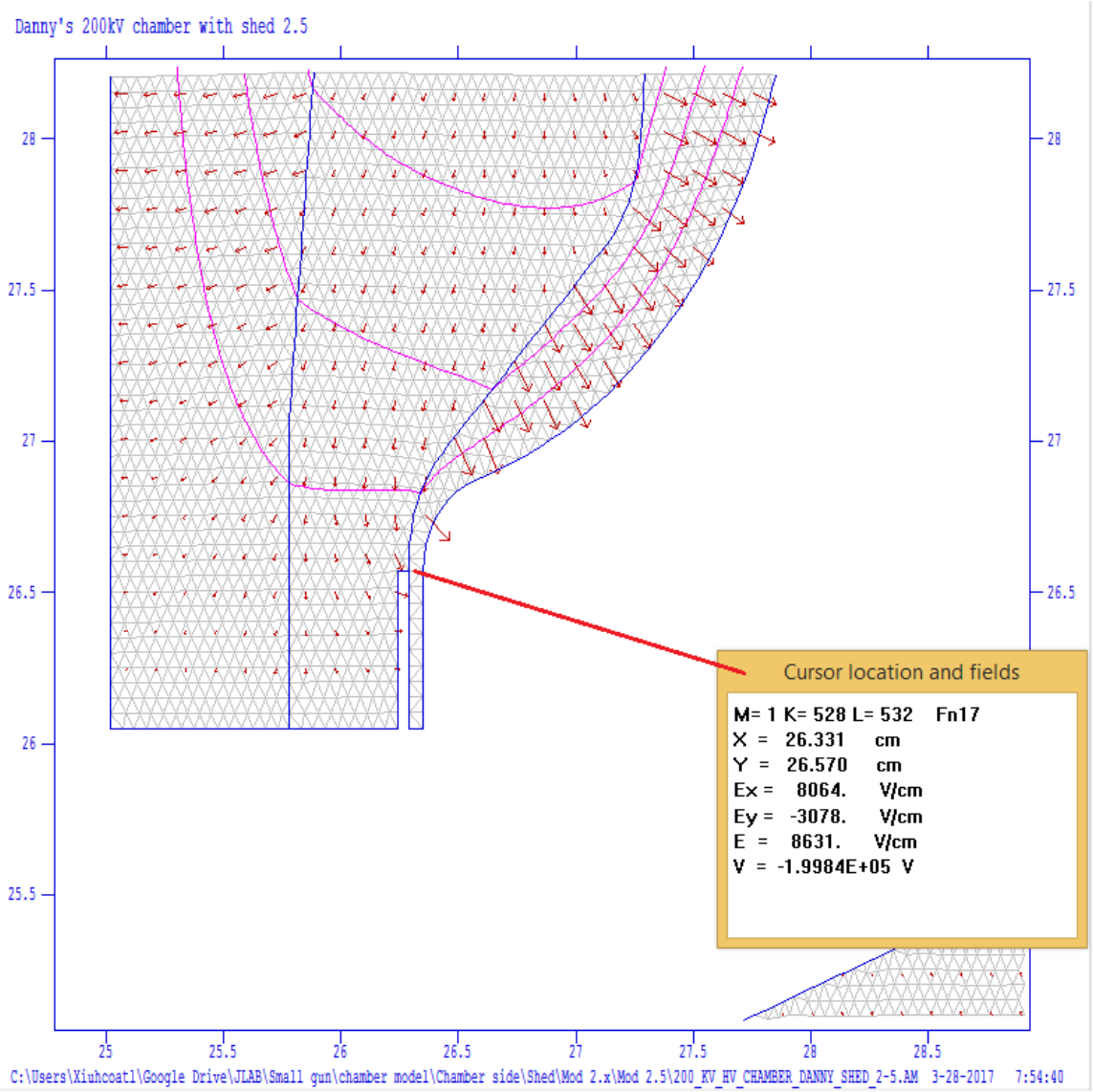
Baseline (left) vs Shed mod 2.5 (right) -200 kV fields on top of NEG's



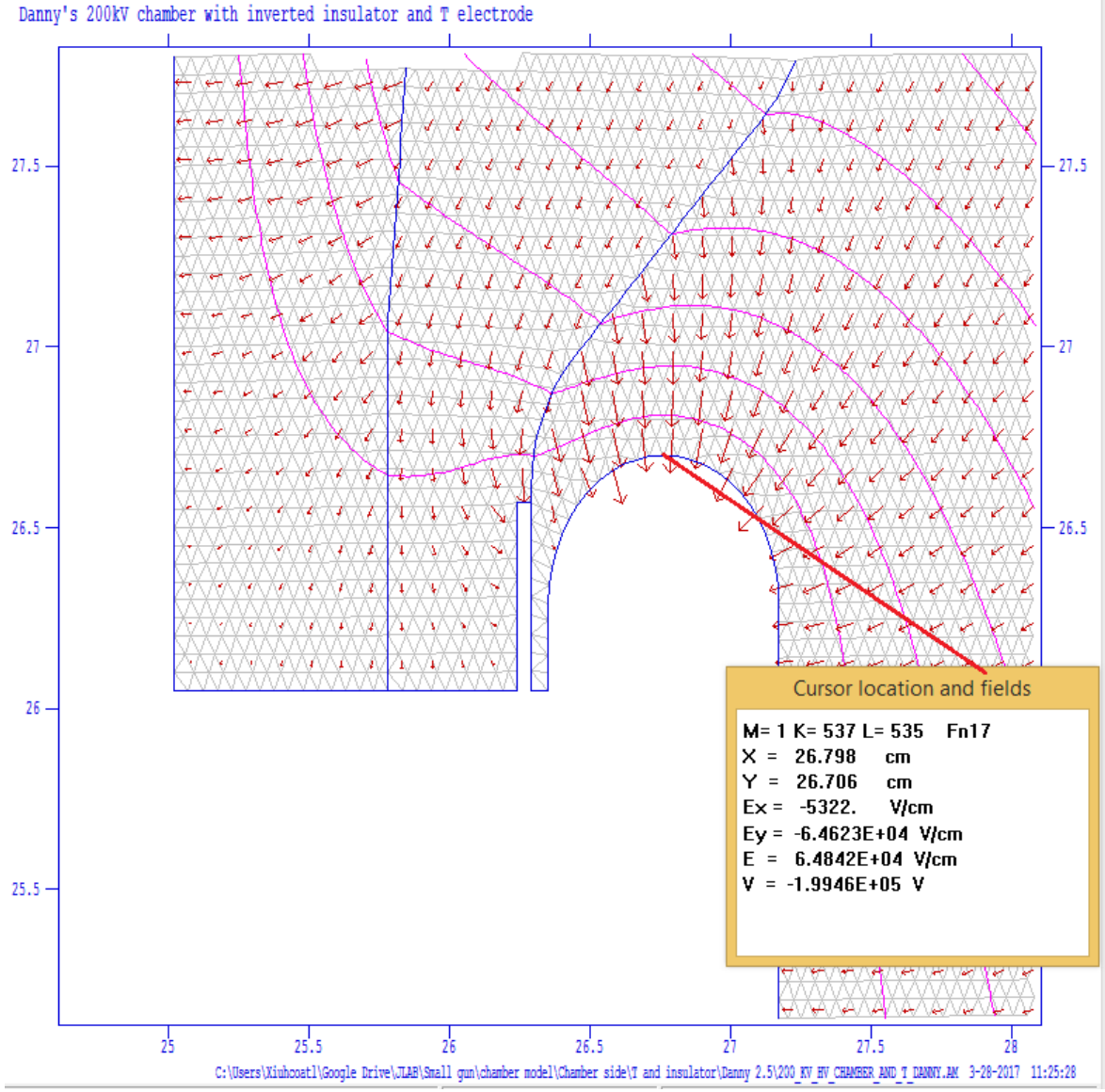


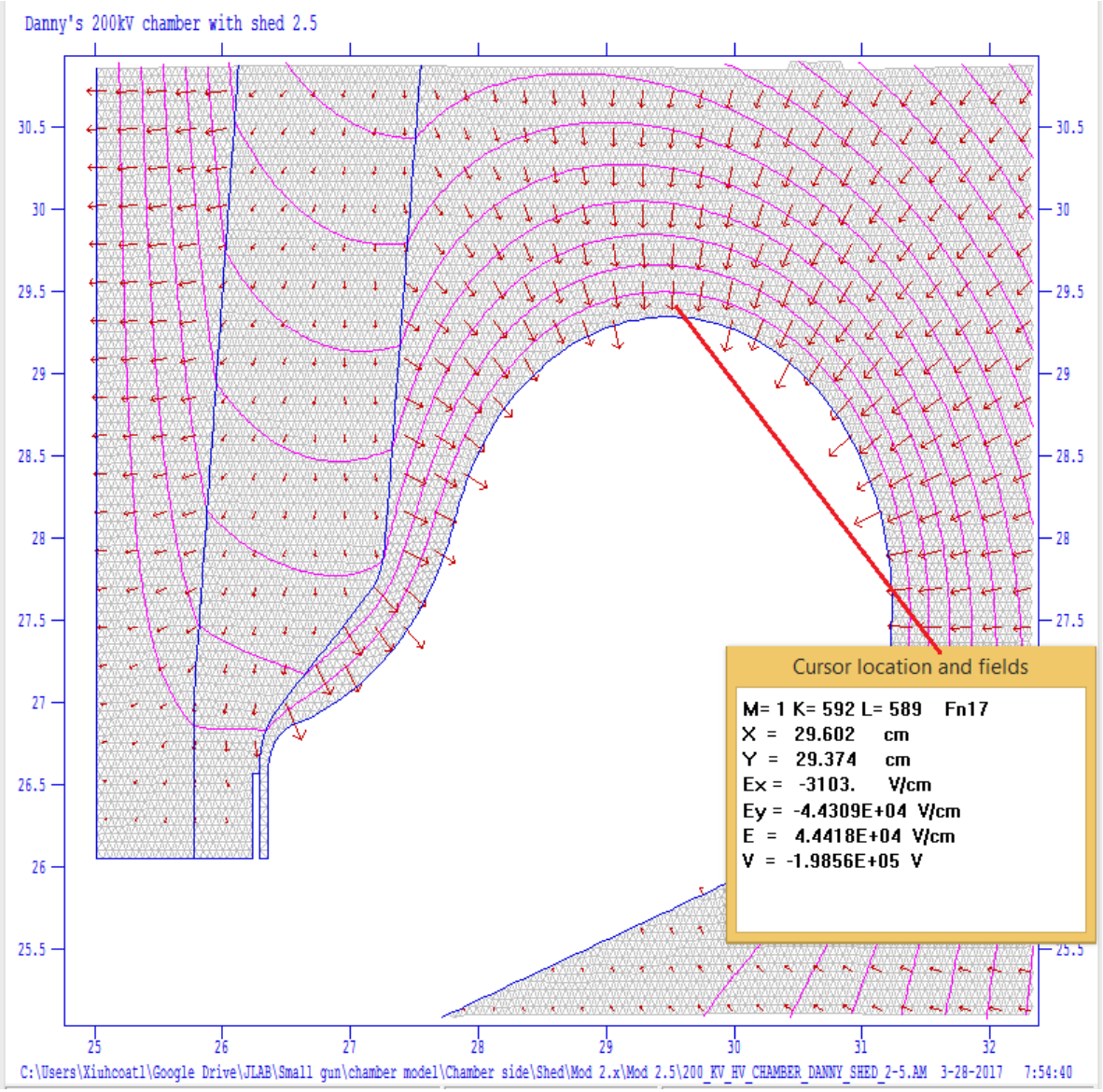
Baseline (left) vs Shed mod 2.5 (right) -200 kV fields triple point





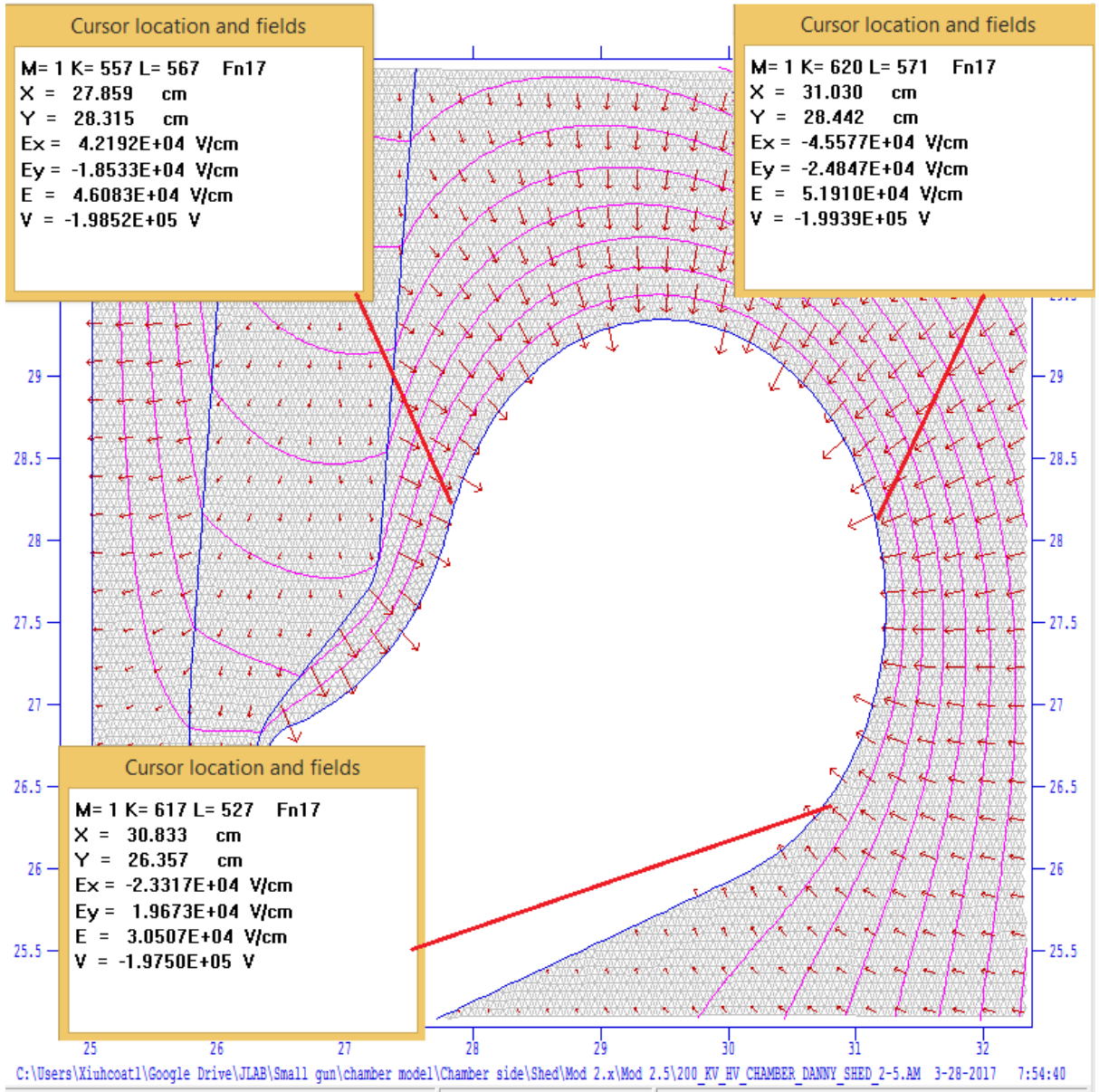
Baseline (left) vs Shed mod 2.5 (right) -200 kV fields cusp



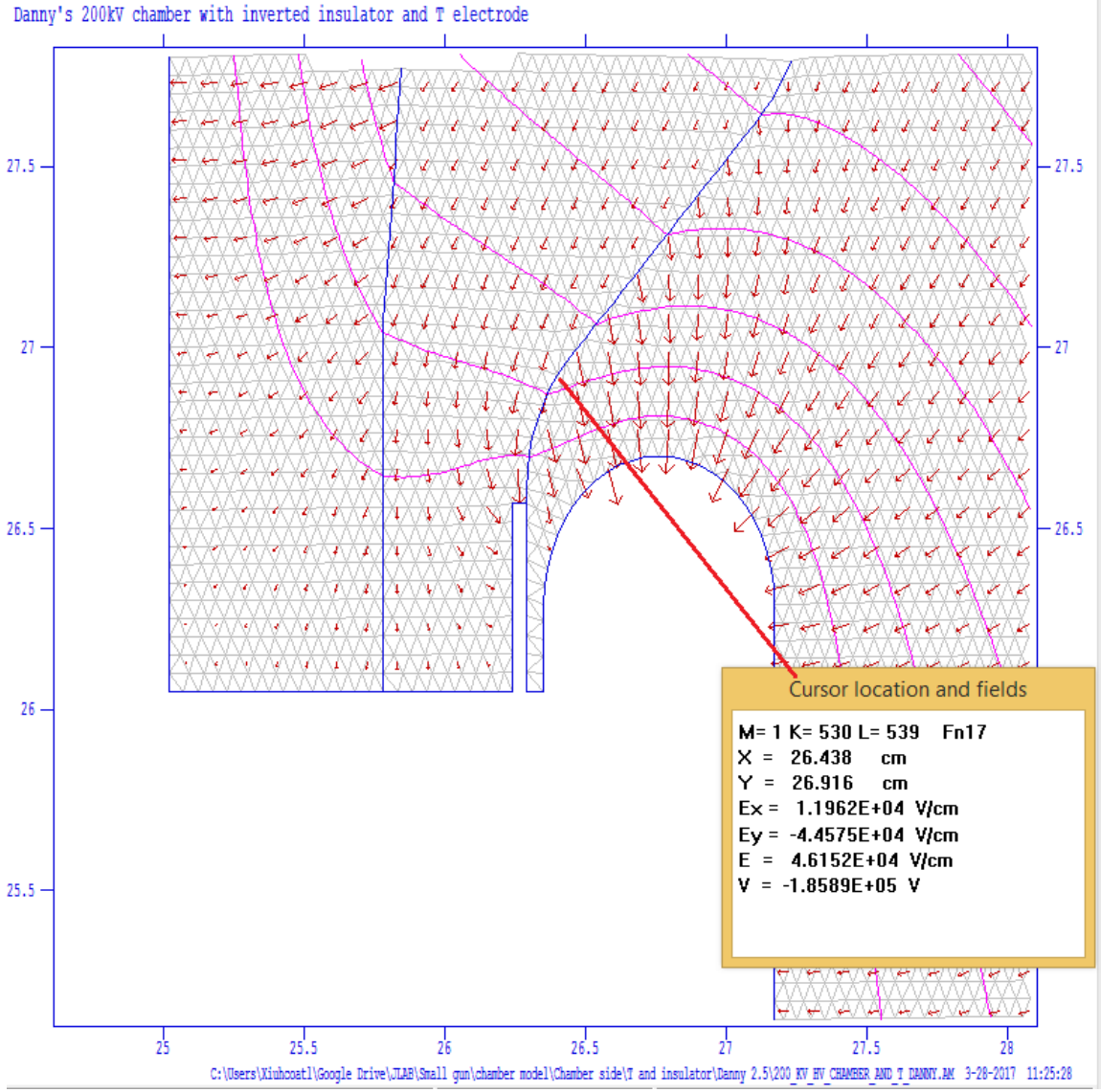


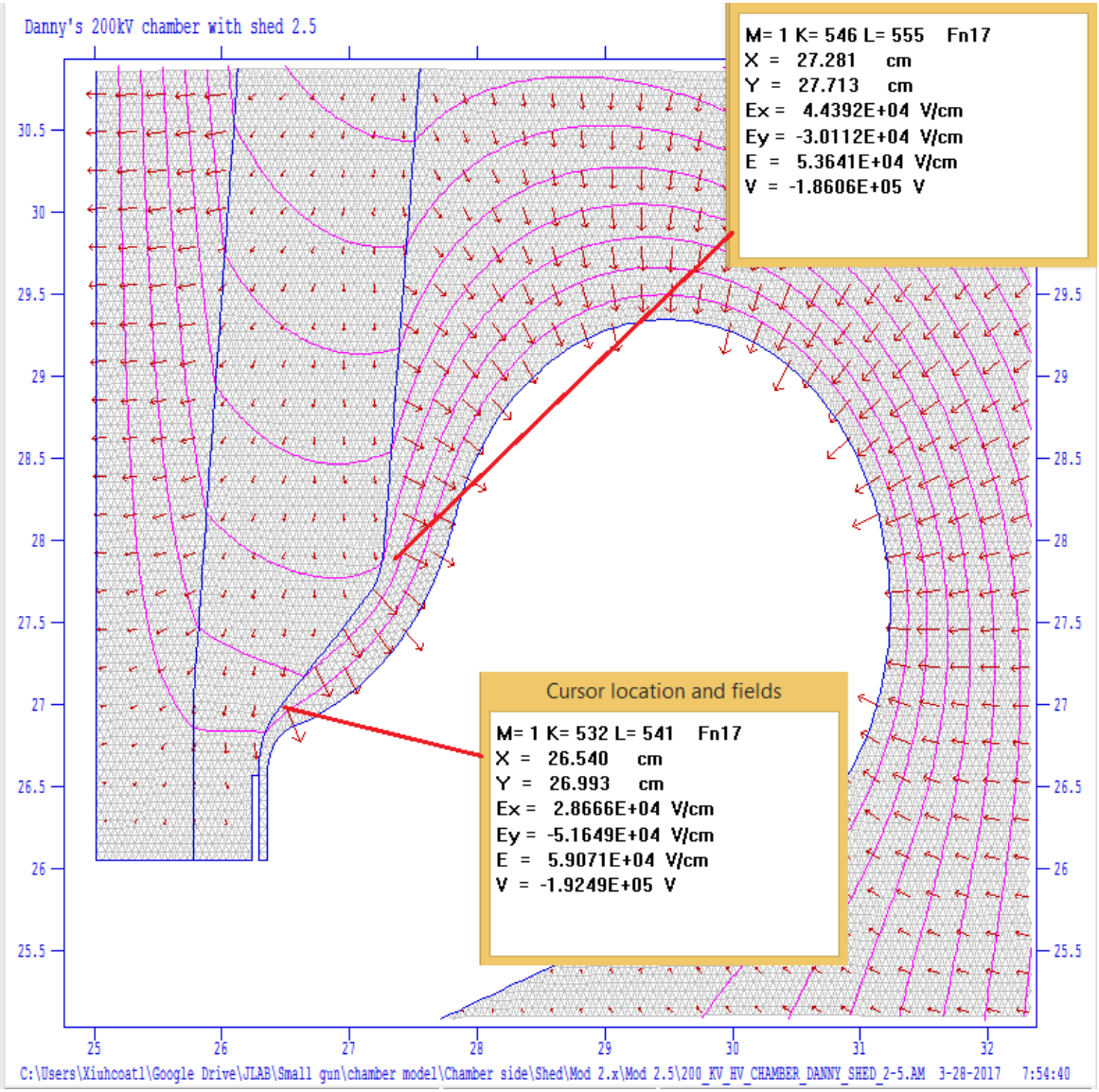
Shed mod 2.5 (right) -200 kV fields cusp detail

Reaches E=5.1MV/m near y=28 but remains below this value along the cusp.

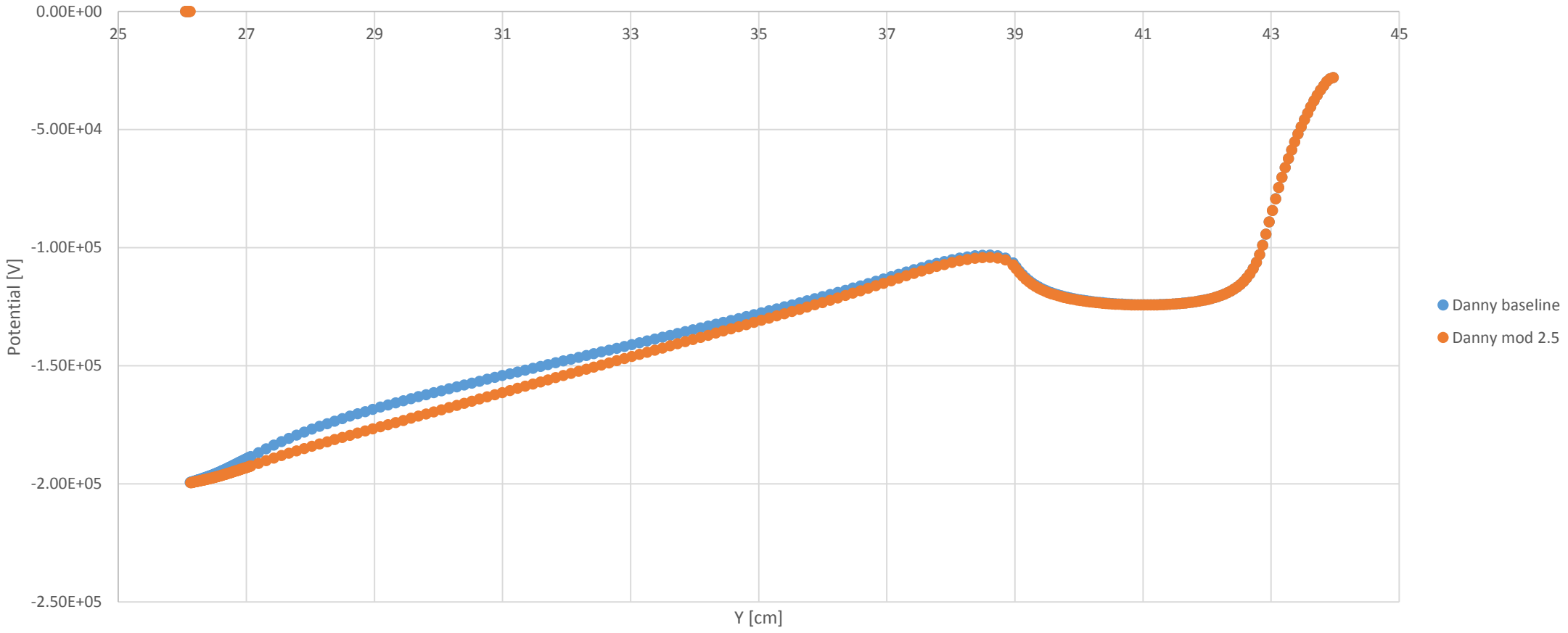


Baseline (left) vs Shed mod 2.5 (right) -200 kV fields insulator interface

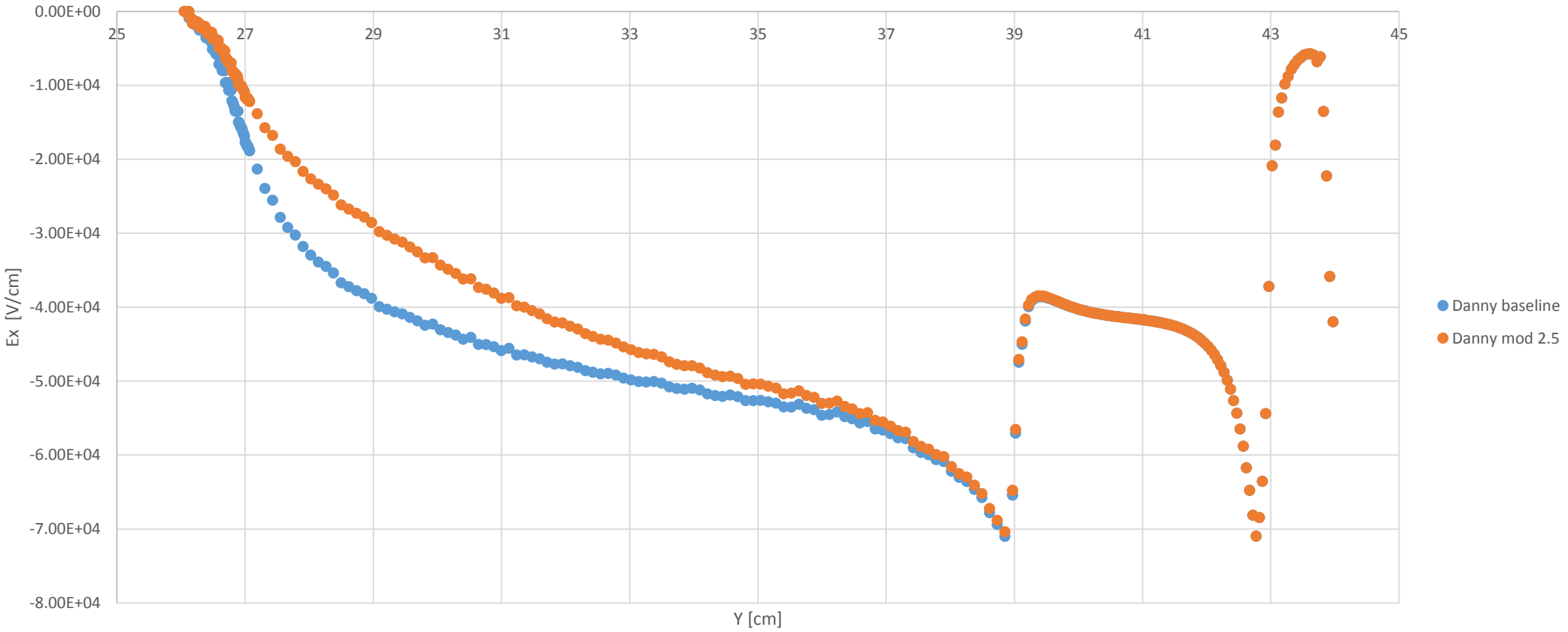




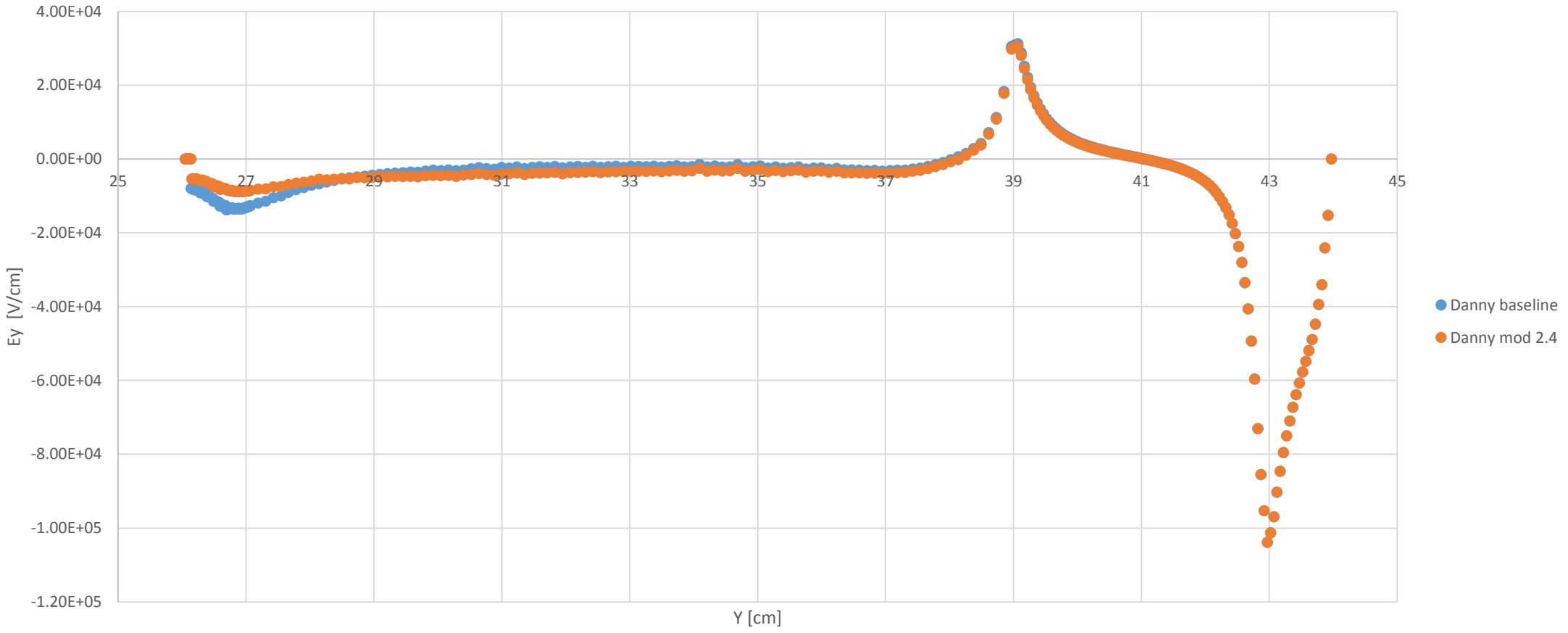
Baseline vs Shed mod 2.5 -200 kV Potentials



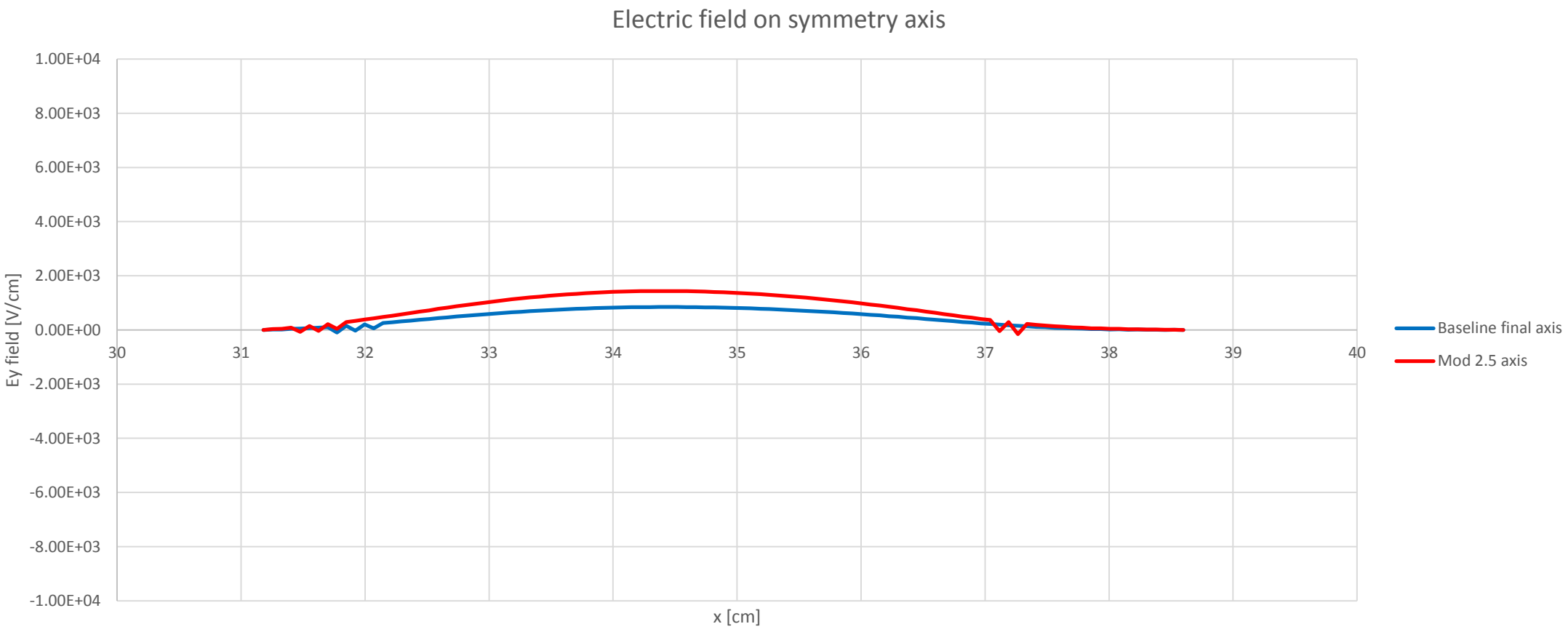
Baseline vs Shed mod 2.5 -200 kV Electric field Ex



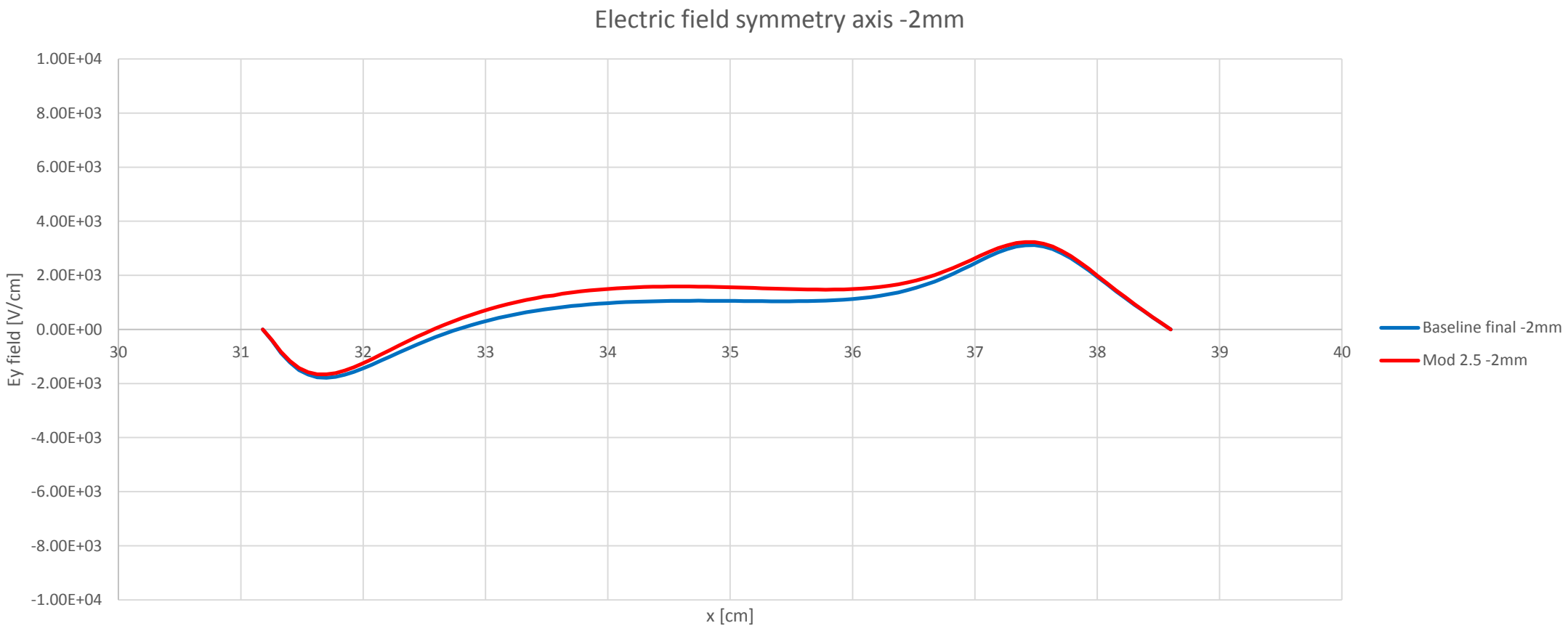
Baseline vs Shed mod 2.5 -200 kV Electric field Ey



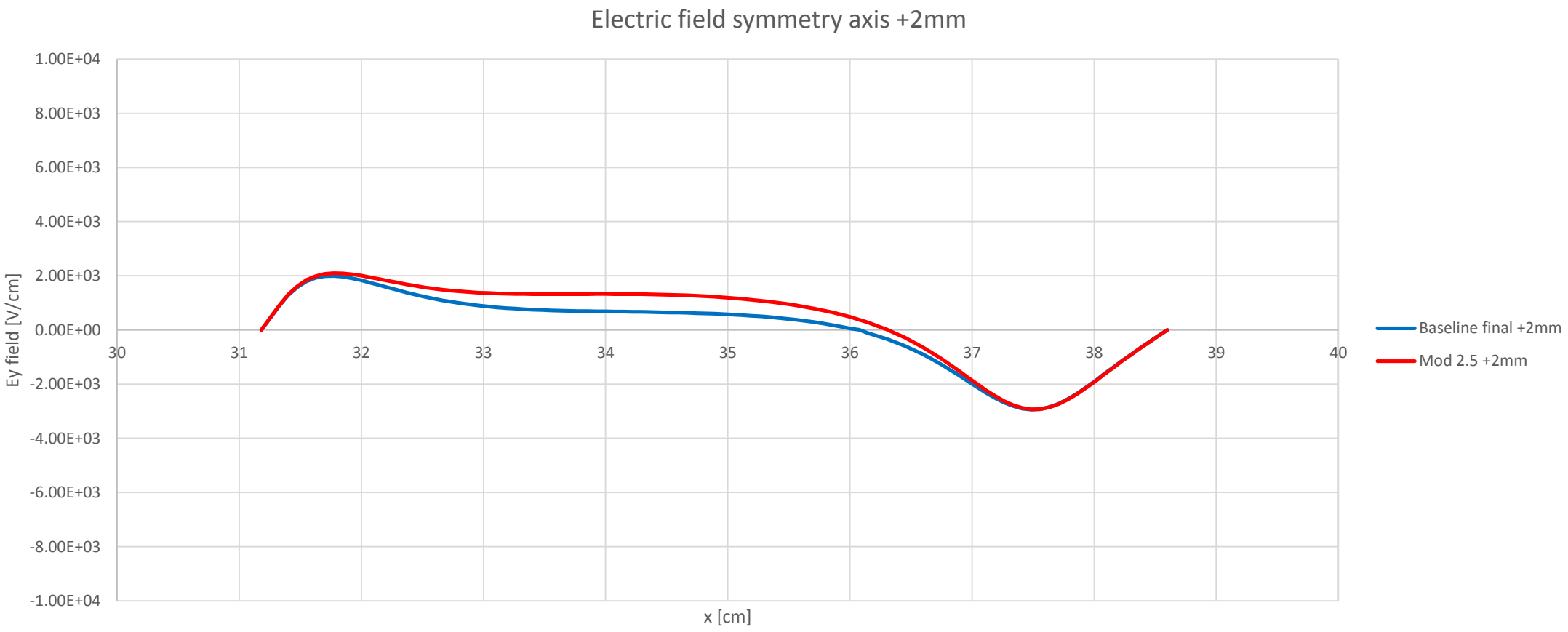
Cathode-anode gap: Ey field-axis



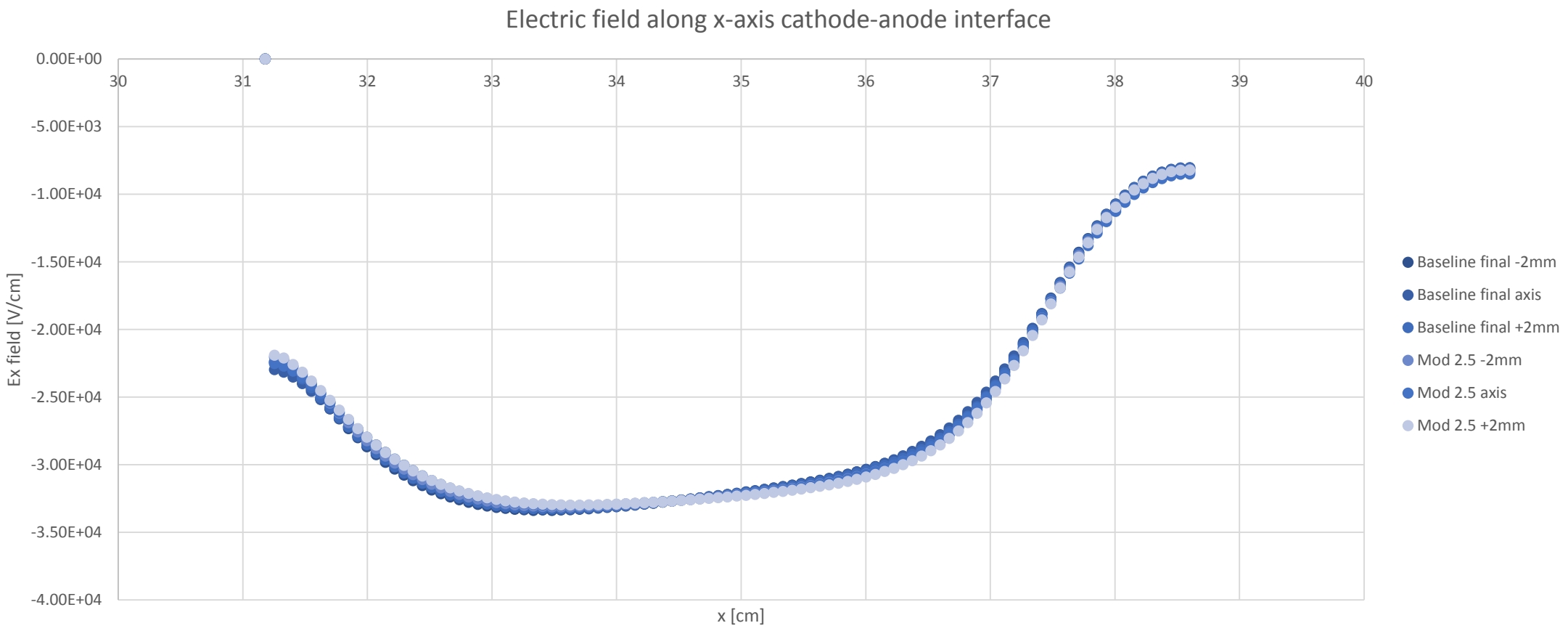
Cathode-anode gap: Ey field- axis -2mm



Cathode-anode gap: Ey field- axis +2mm



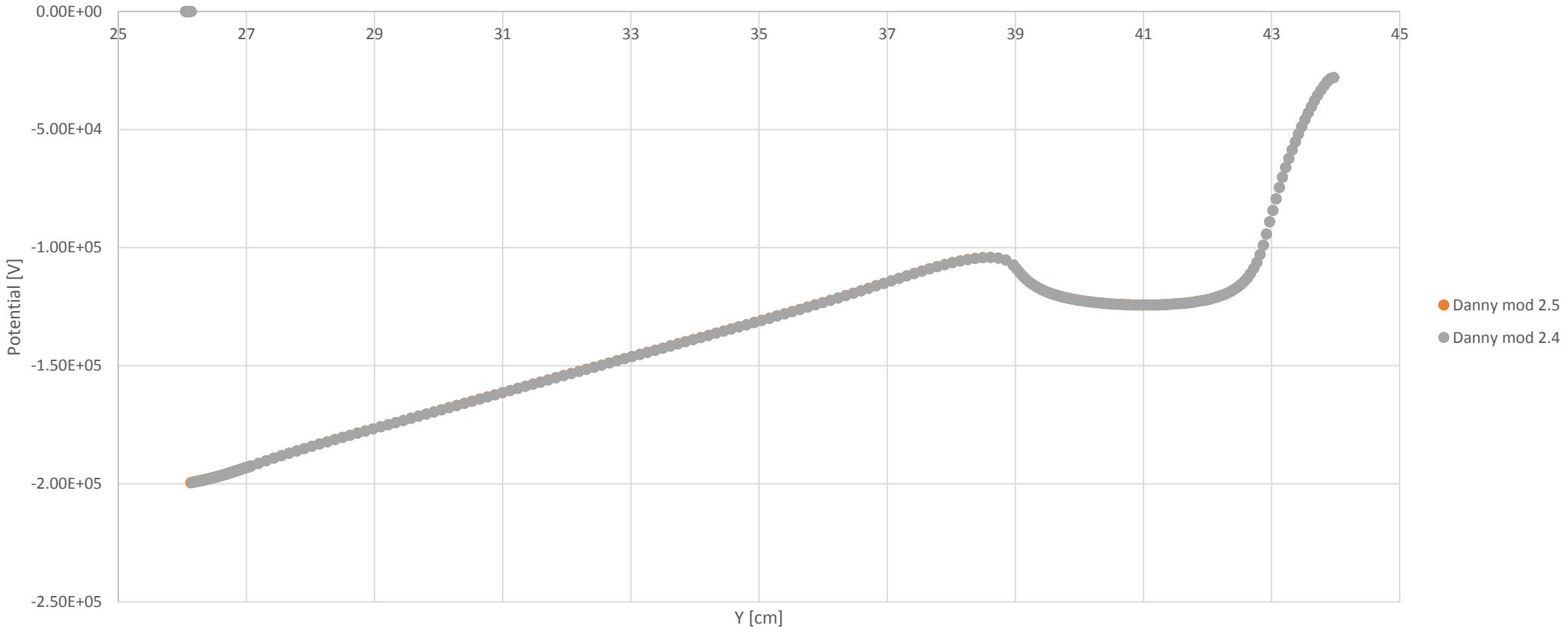
Cathode-anode gap: Ex field



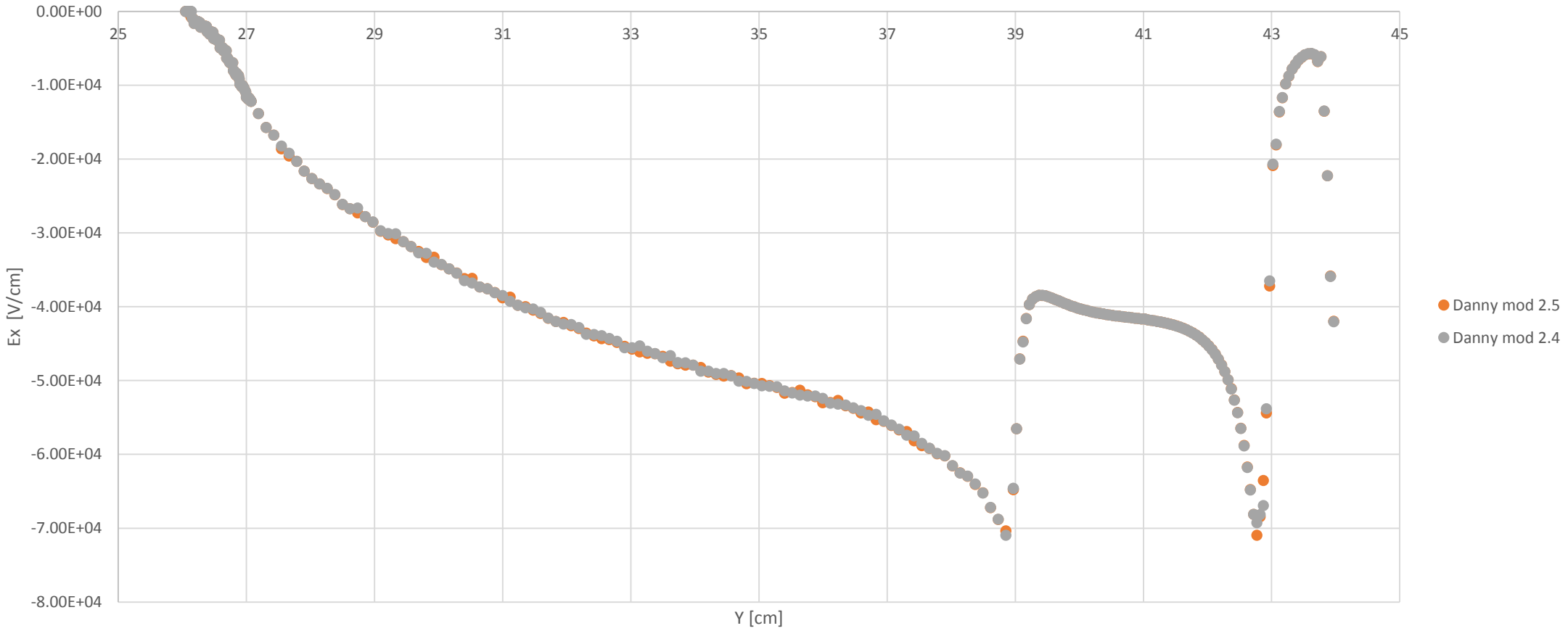
Now 2.4 vs 2.5 plots

They behave so similarly that they pretty much overlap.

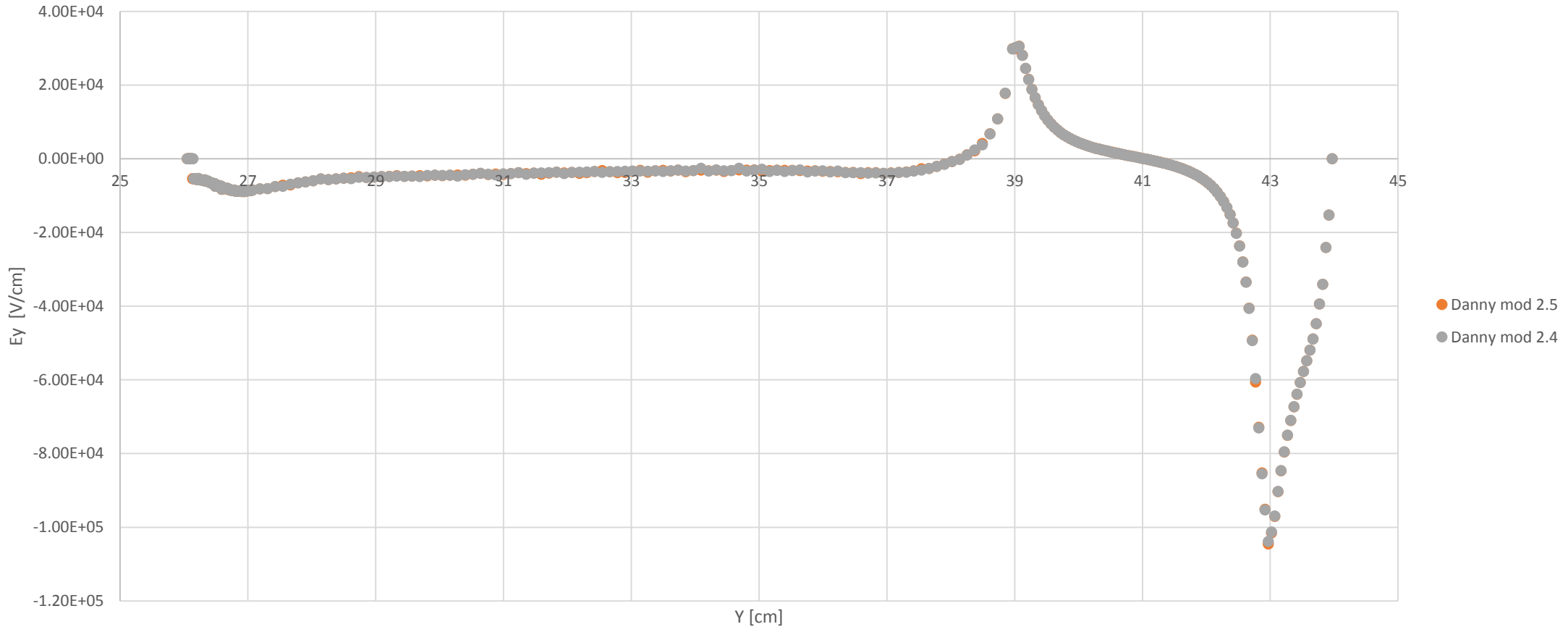
Shed mod 2.4 vs Shed mod 2.5 -200 kV Potentials



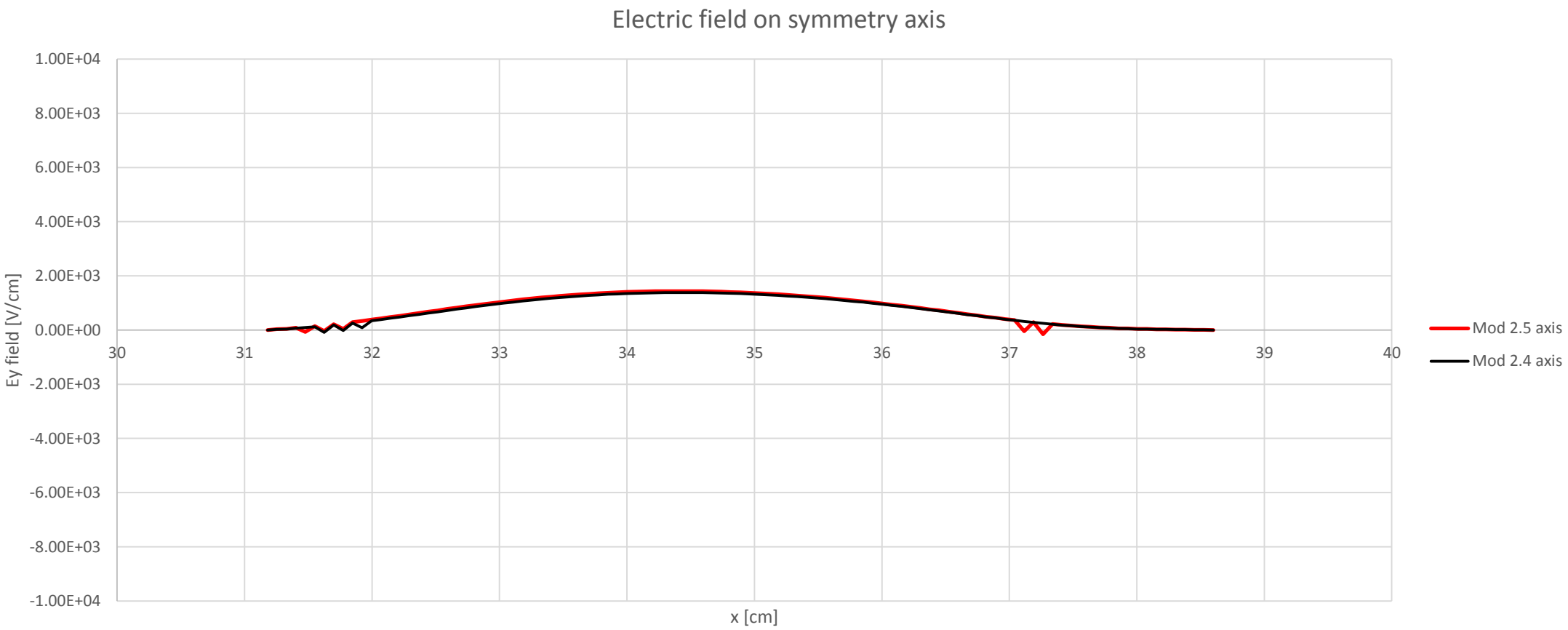
Shed mod 2.4 vs Shed mod 2.5 -200 kV Electric field Ex



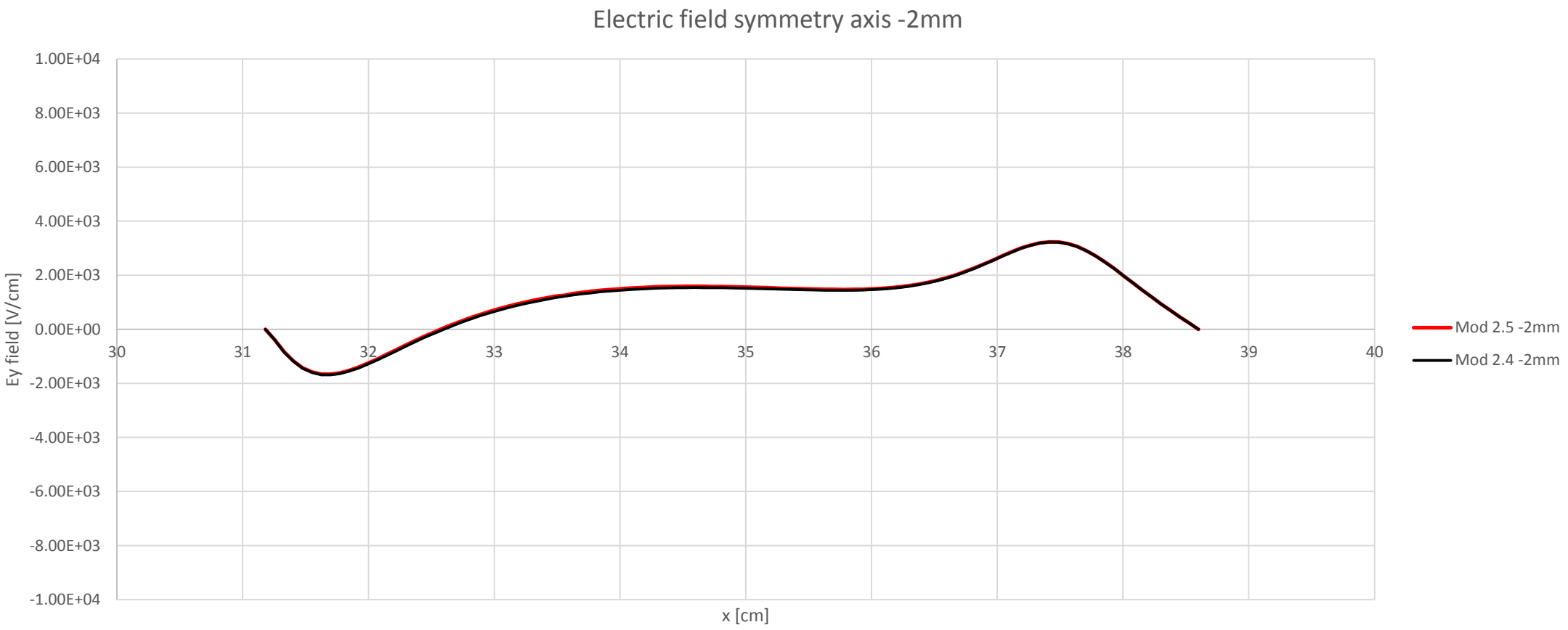
Shed mod 2.4 vs Shed mod 2.5 -200 kV Electric field Ey



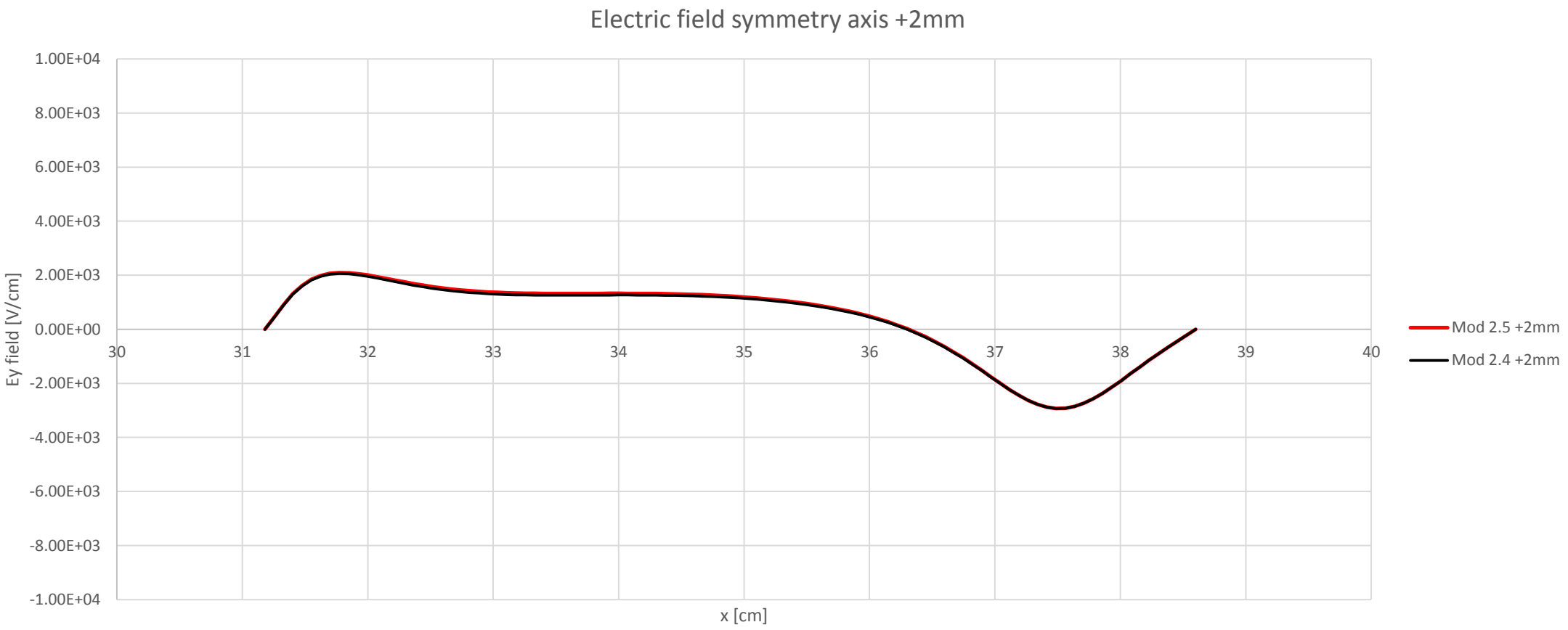
Cathode-anode gap: Ey field-axis



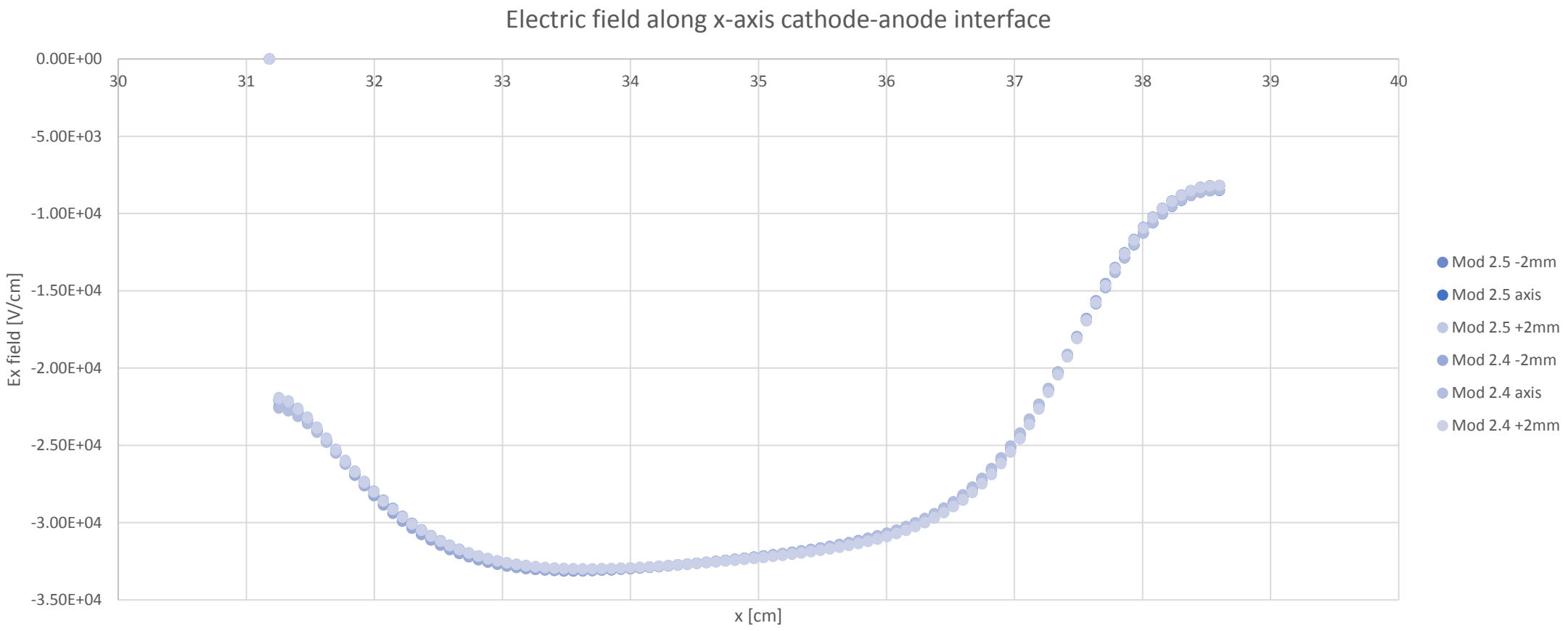
Cathode-anode gap: Ey field- axis -2mm



Cathode-anode gap: Ey field- axis +2mm



Cathode-anode gap: Ex field

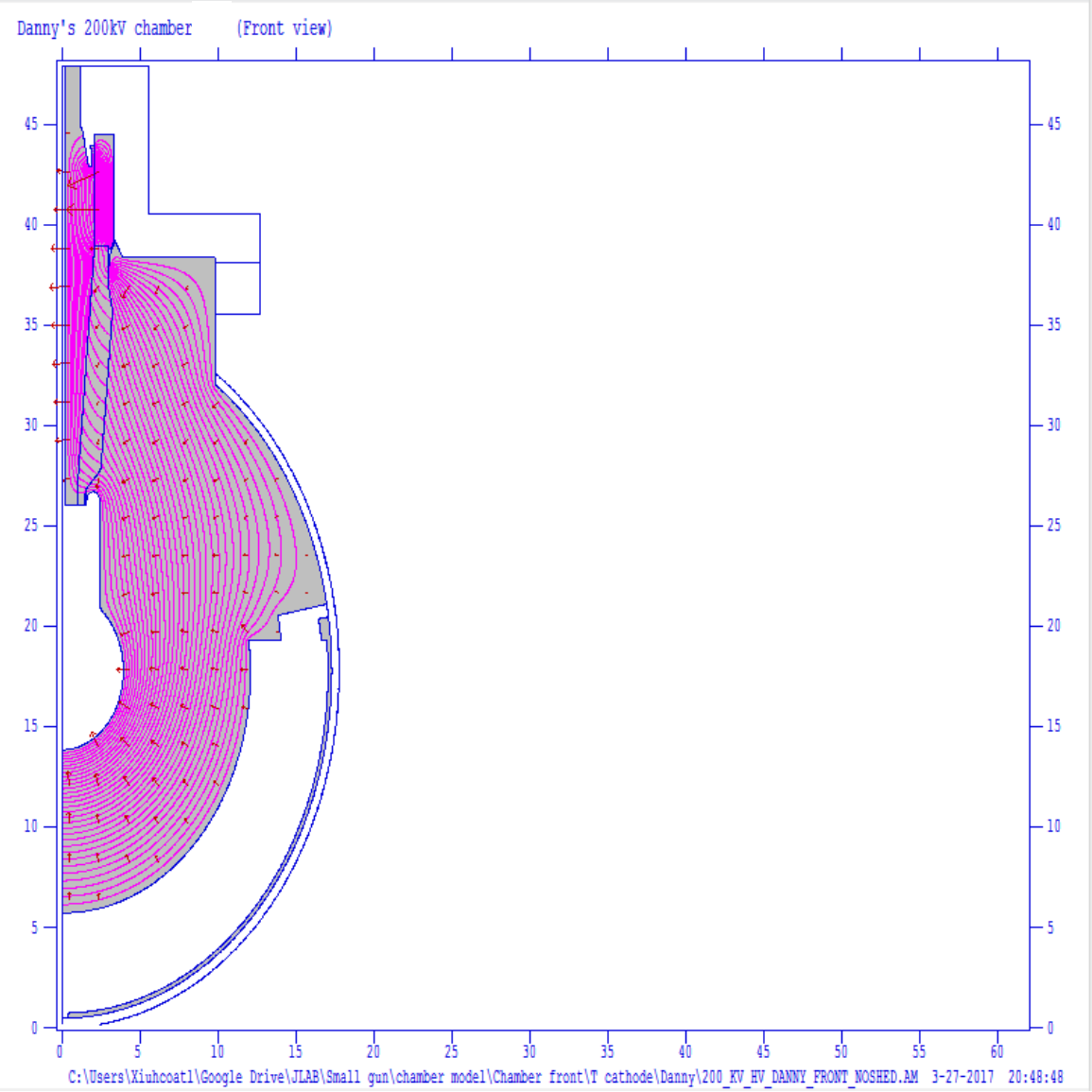


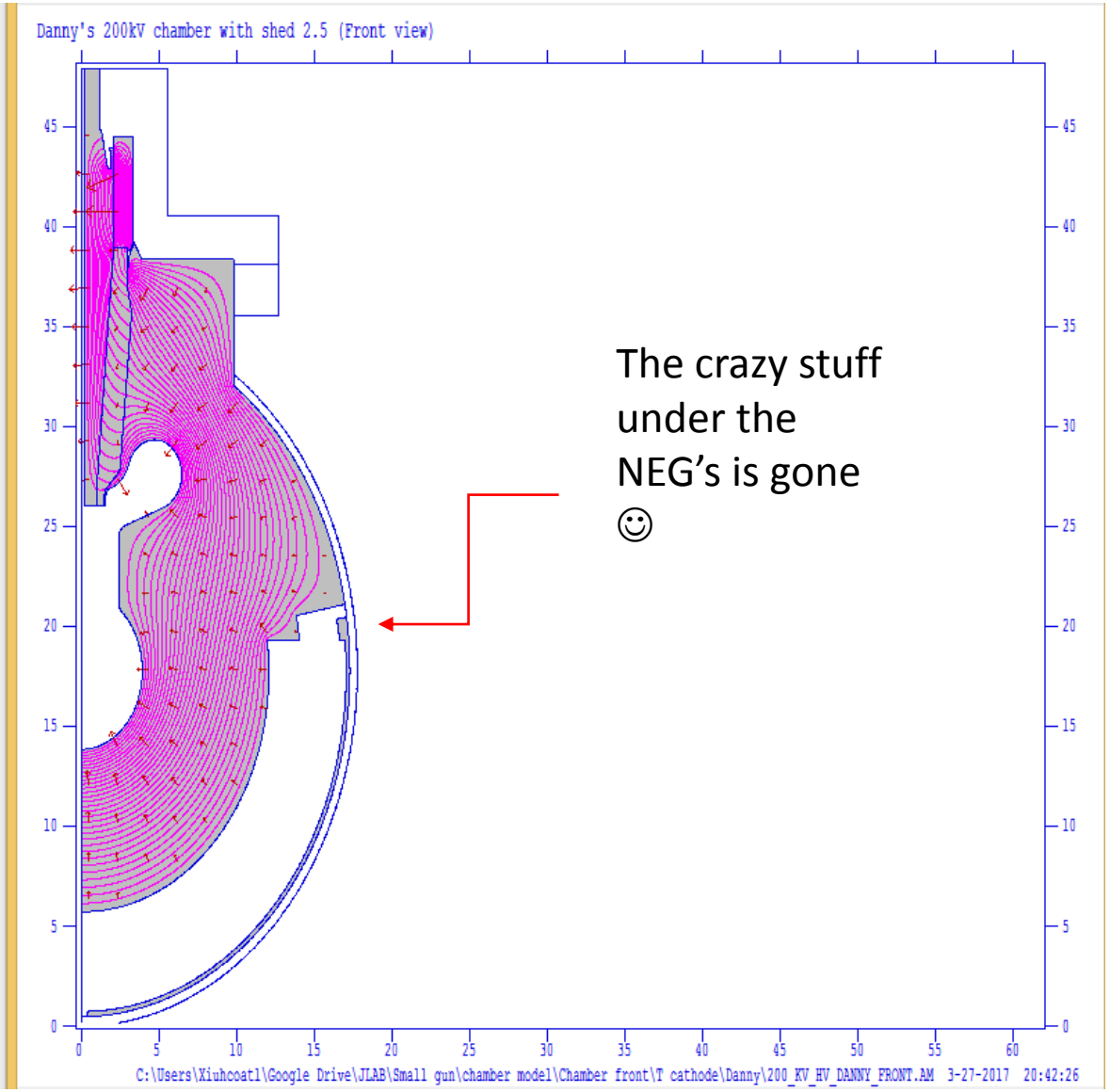
Danny’s Shed 2.5
(Front view)

Shed mod 2.5 at -200kV.

- Front view cross-section (only half, since the chamber is symmetric in this view).
- Now includes thickness
- NEG's have been grounded to prevent the "crazy" fields appearing under them
  - **This does not mean the were not grounded before, they where, but they did not have contact with the base of the chamber.**
- Fields around the shed, cathode and NEG's.

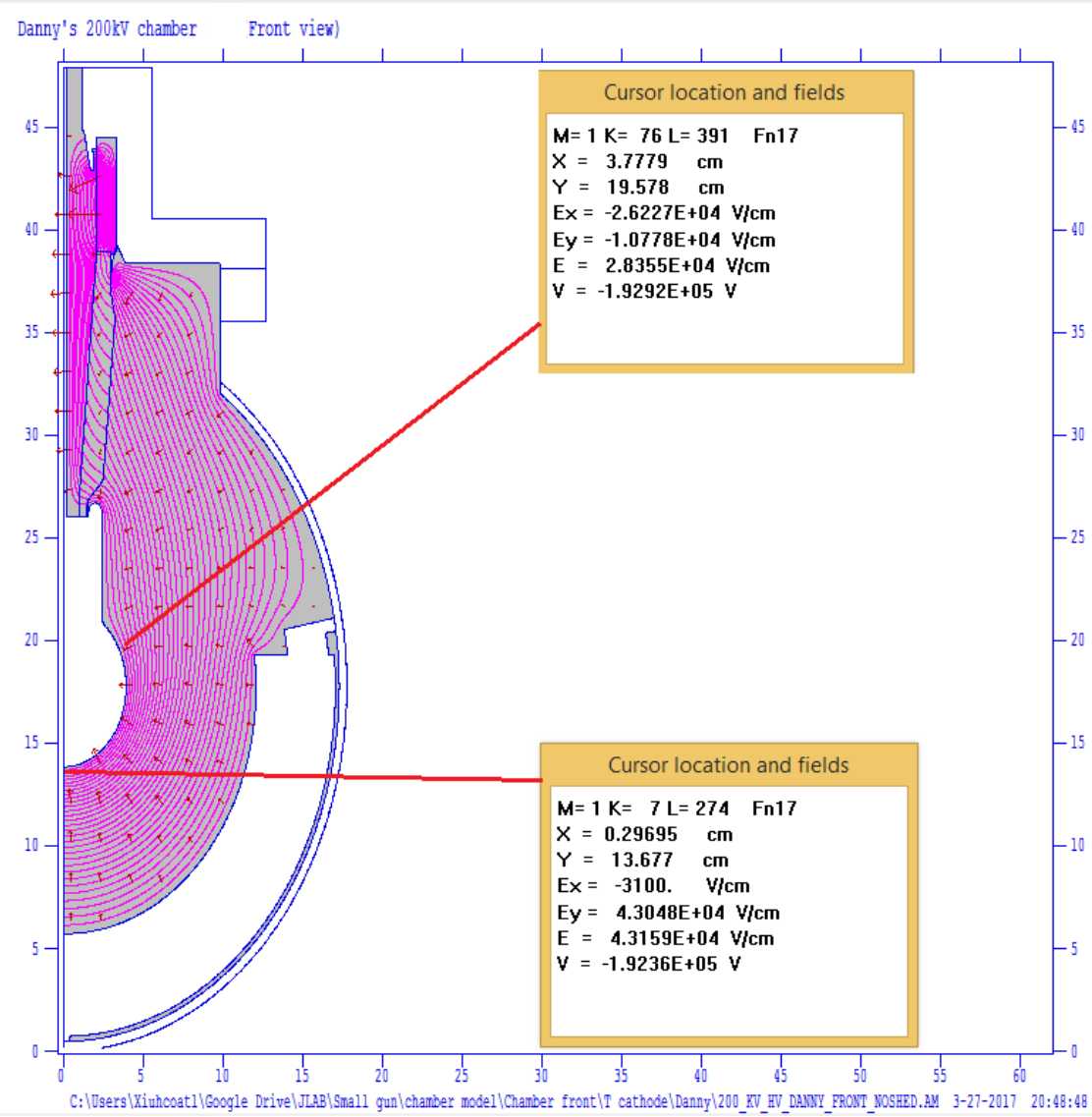
Baseline (left) vs Shed mod 2.5 (right) -200 kV

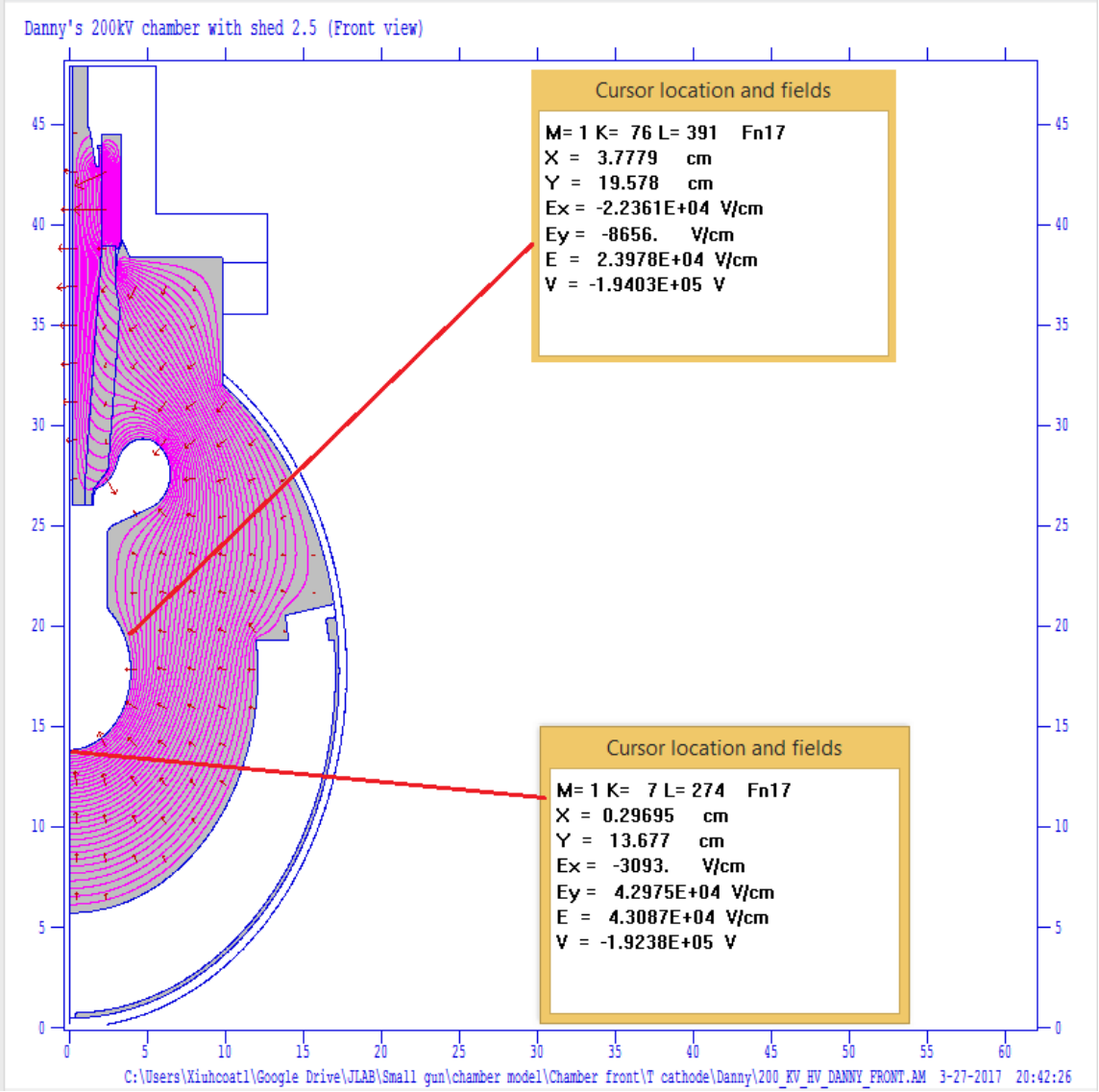




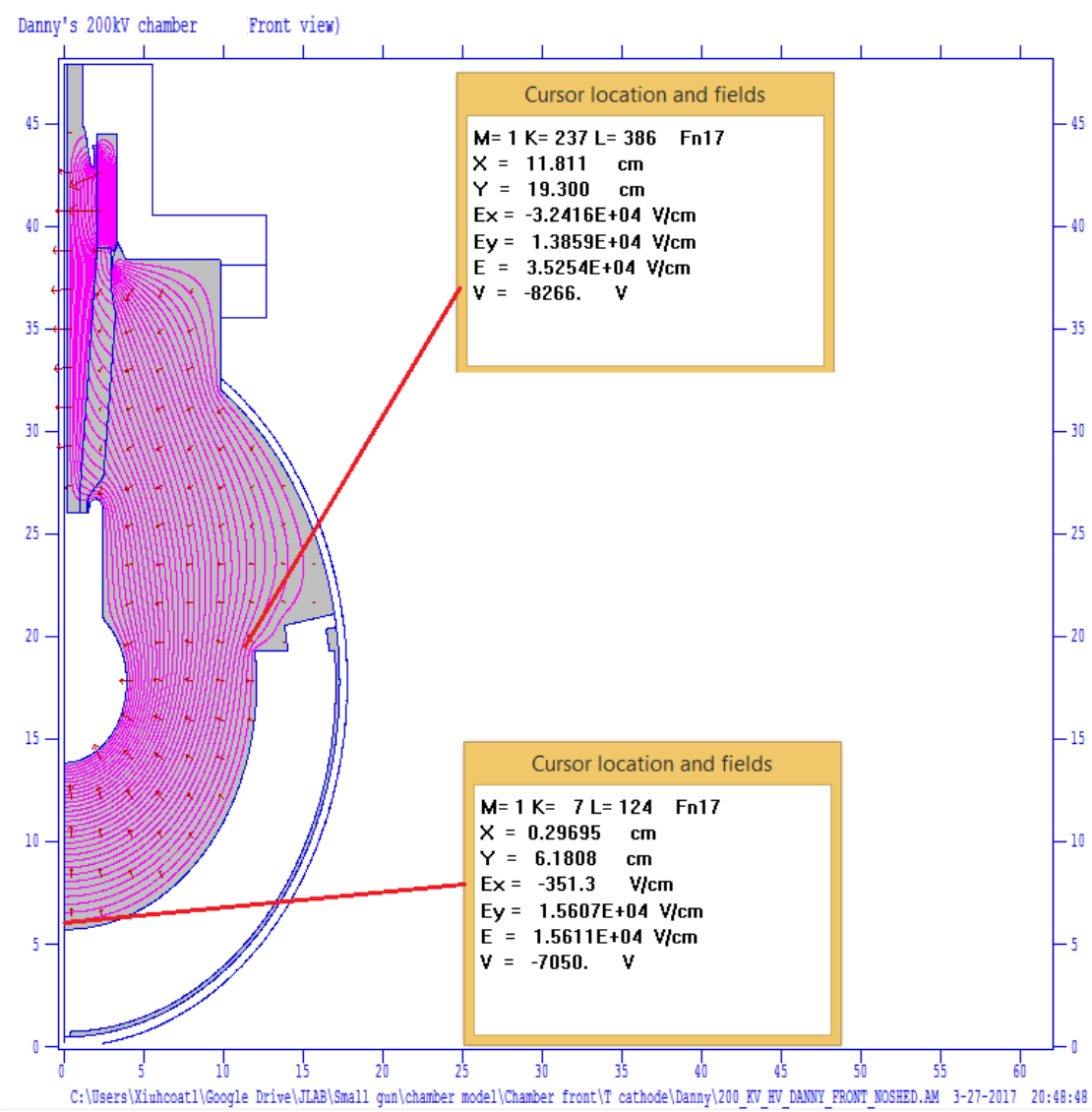
The crazy stuff under the NEG's is gone ☺

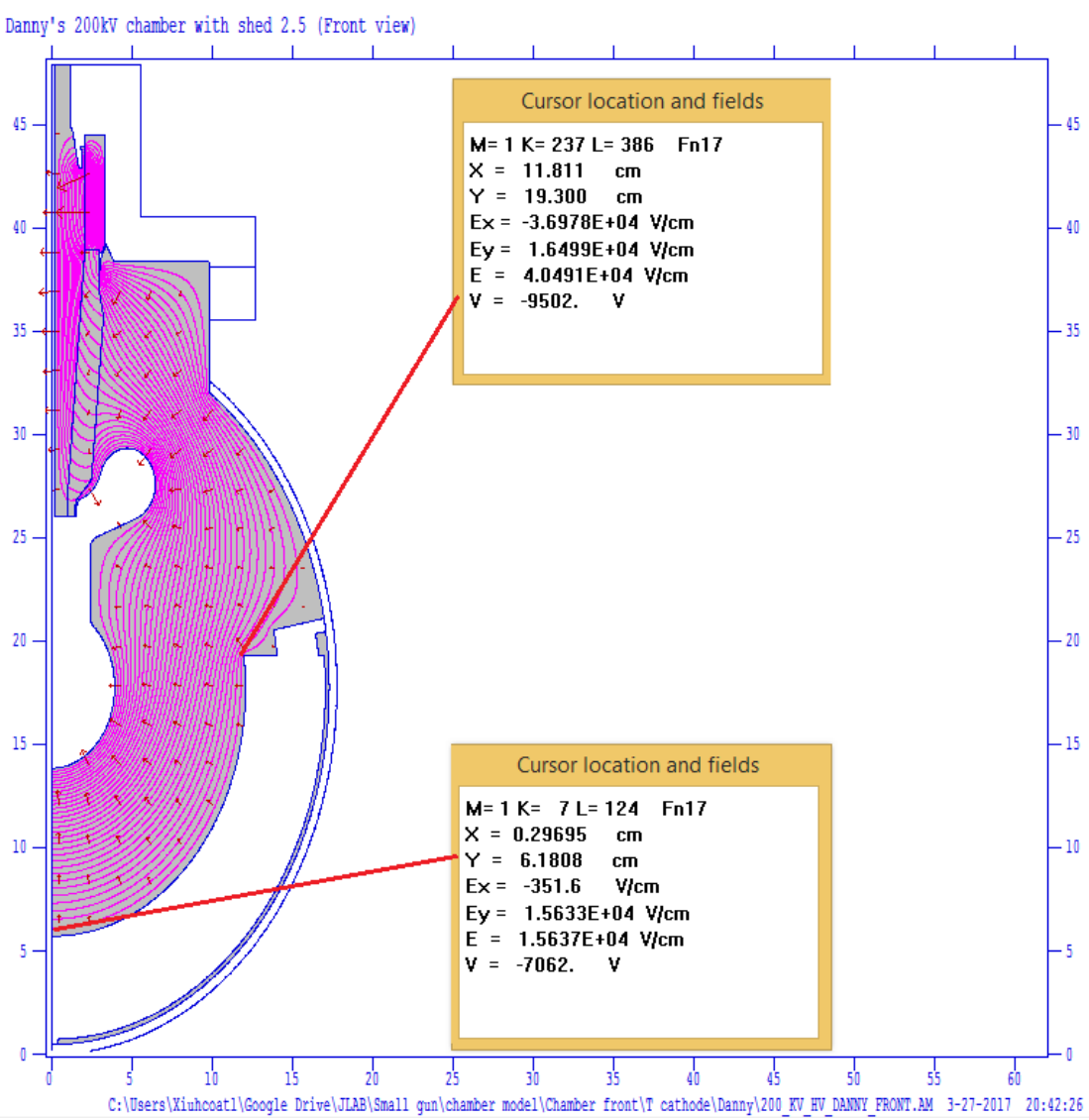
Baseline (left) vs Shed mod 2.5 (right) -200 kV fields around edges



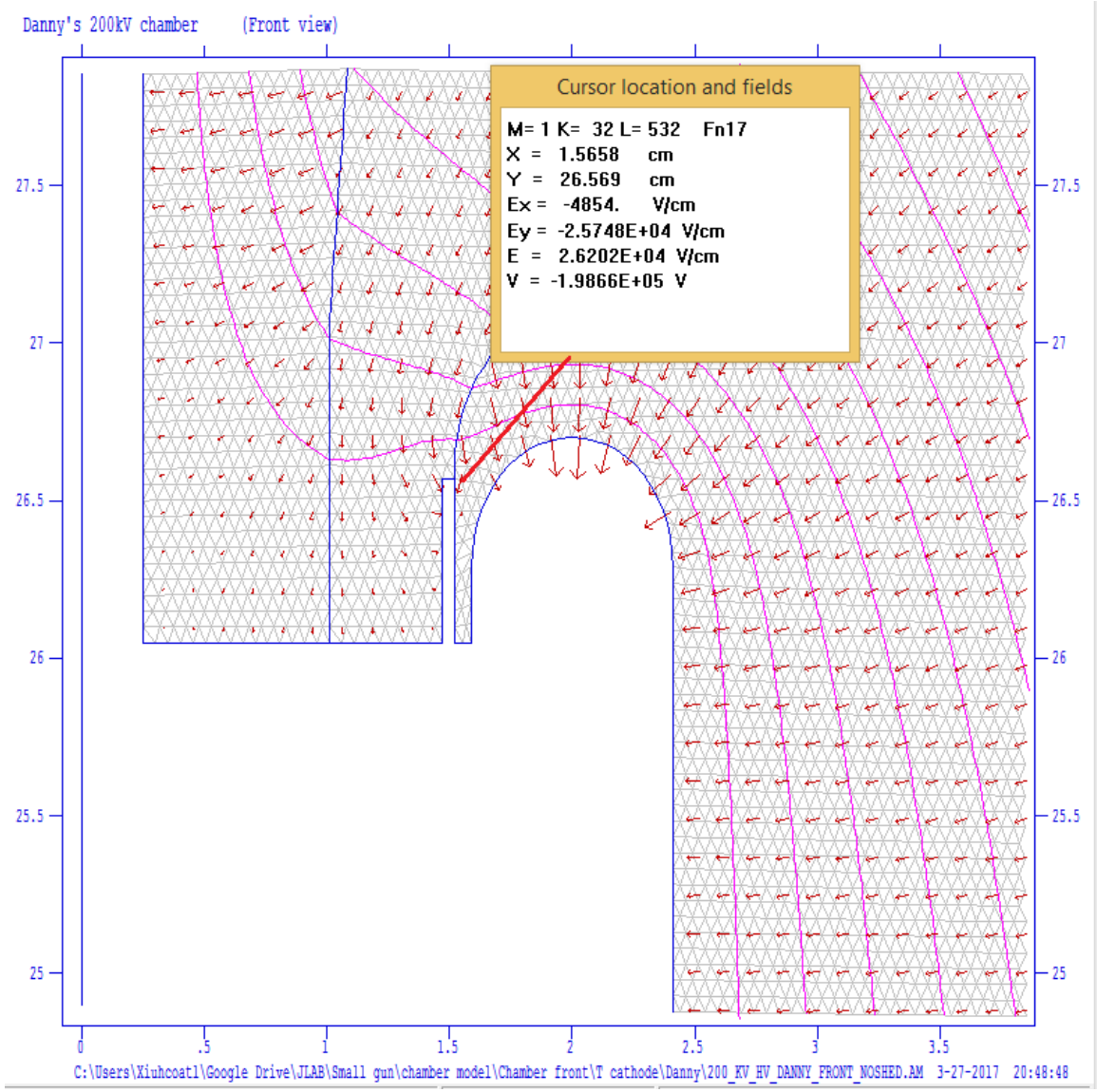


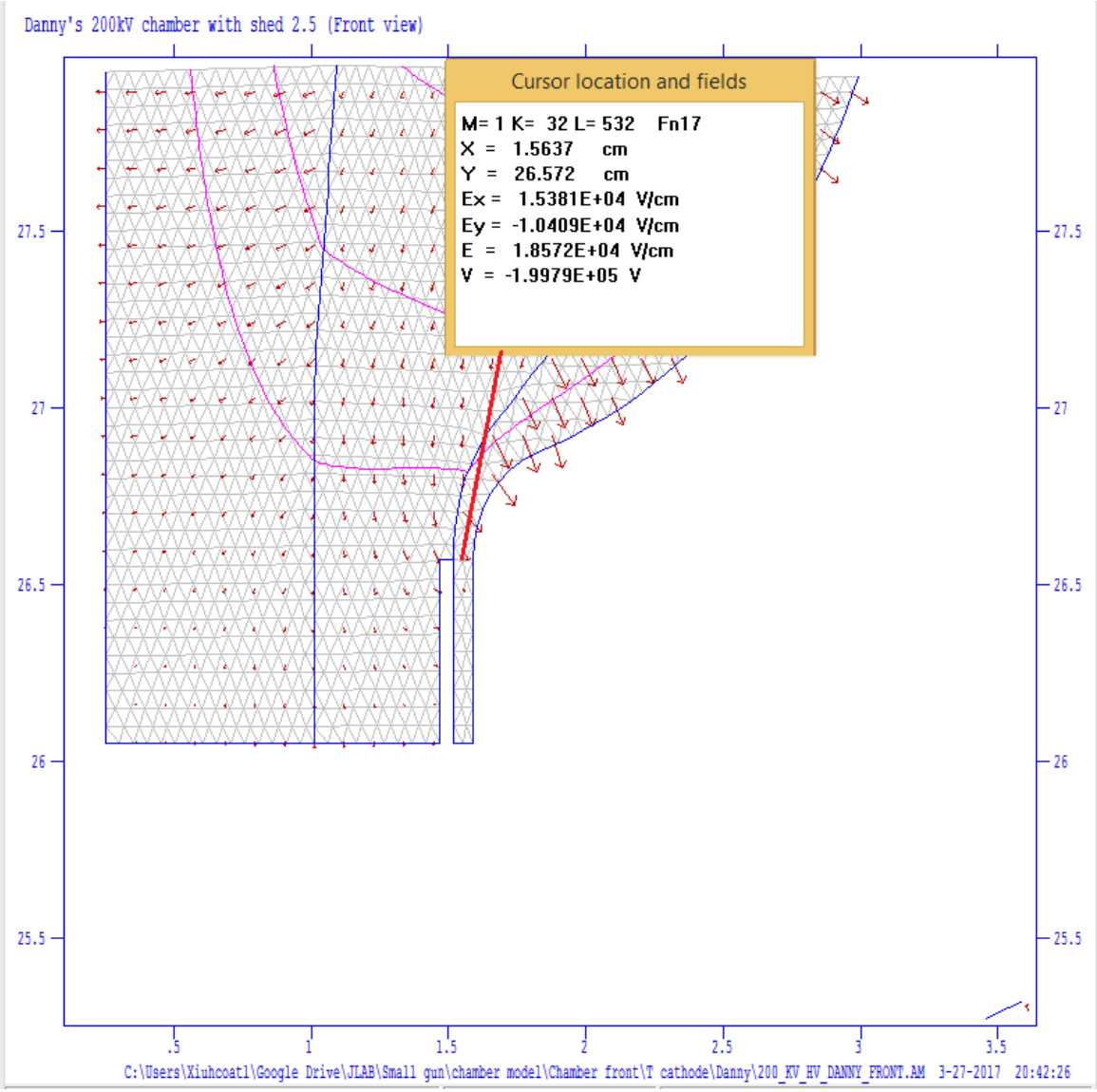
Baseline (left) vs Shed mod 2.5 (right) -200 kV fields on top of NEG's



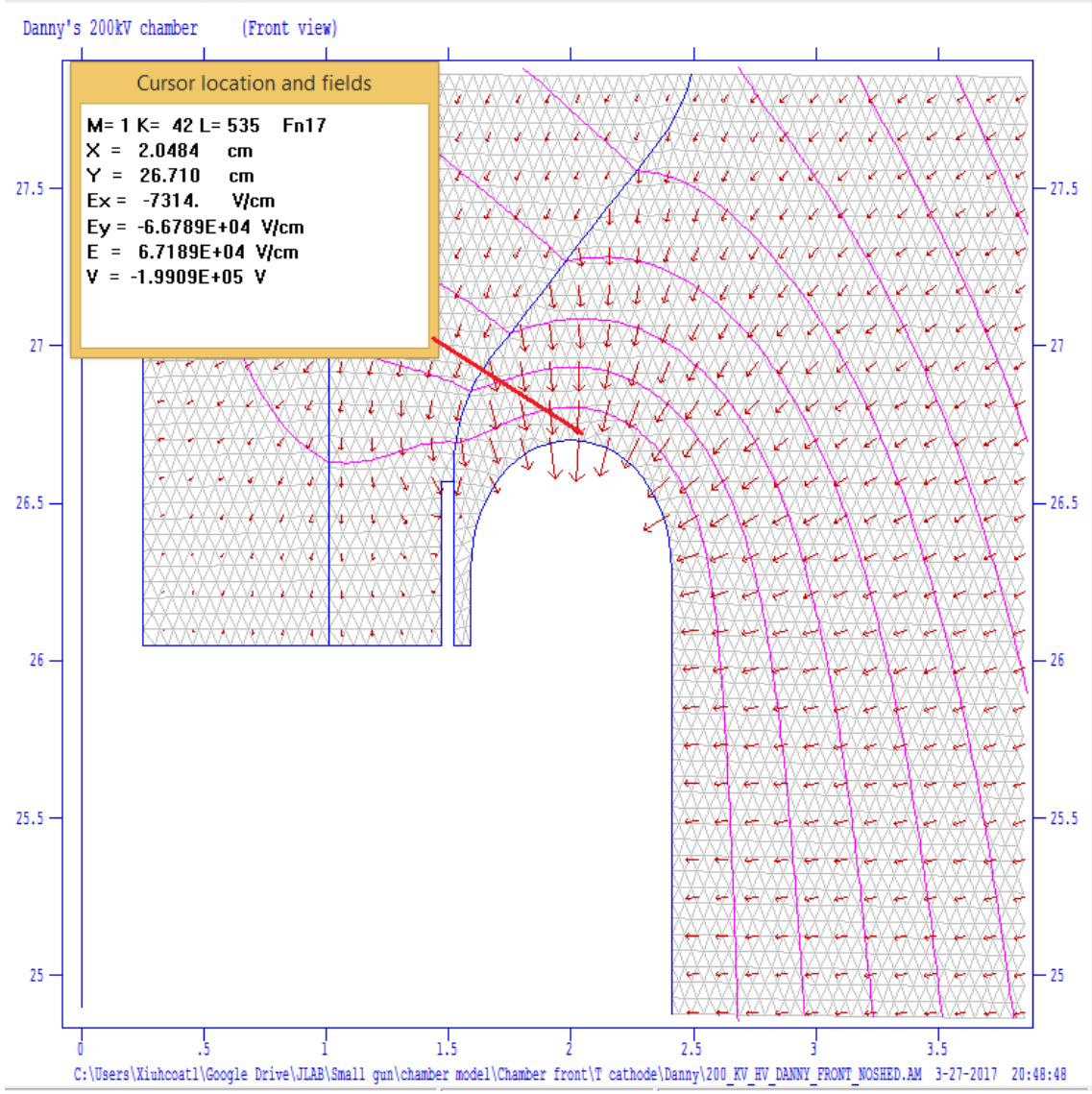


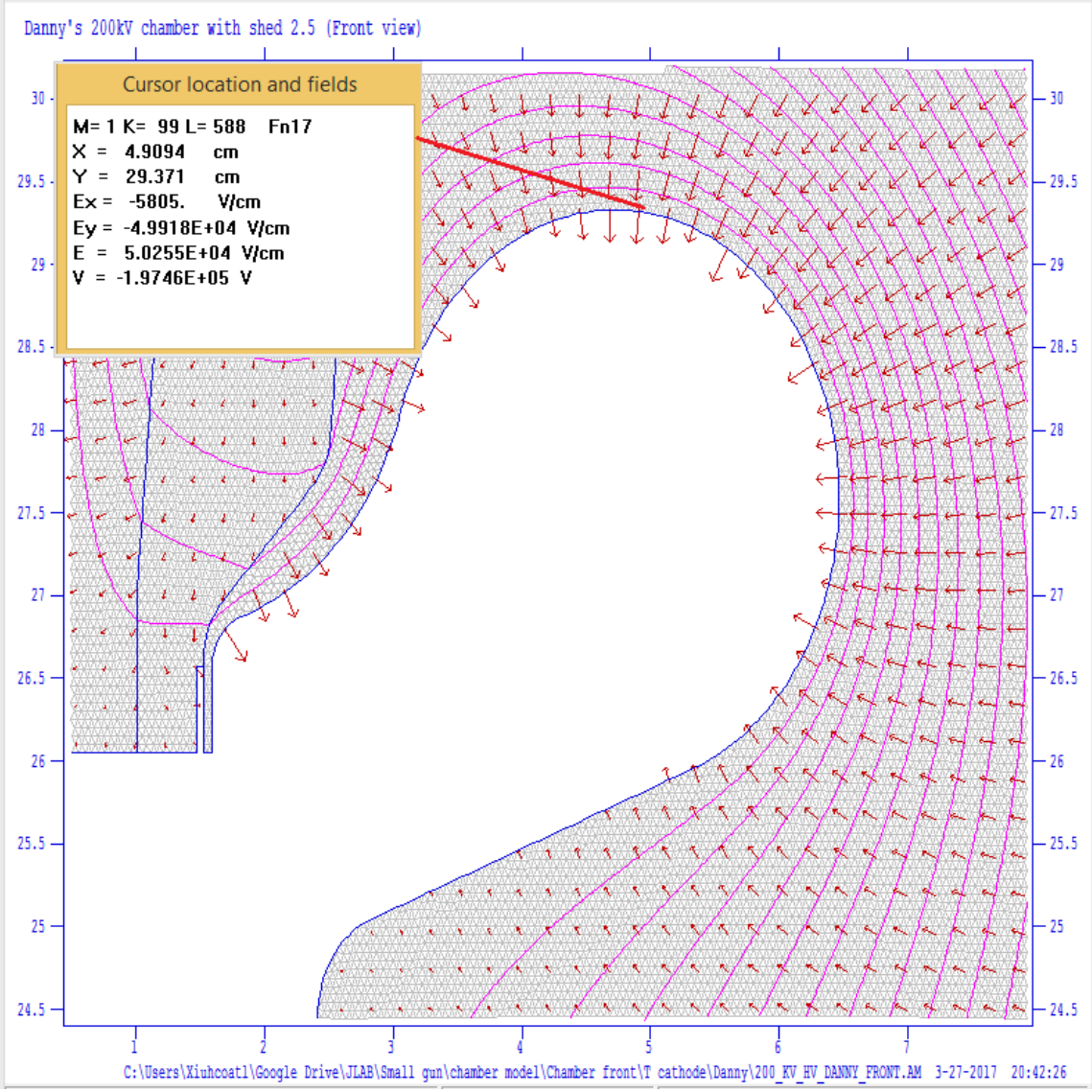
Baseline (left) vs Shed mod 2.5 (right) -200 kV fields triple point





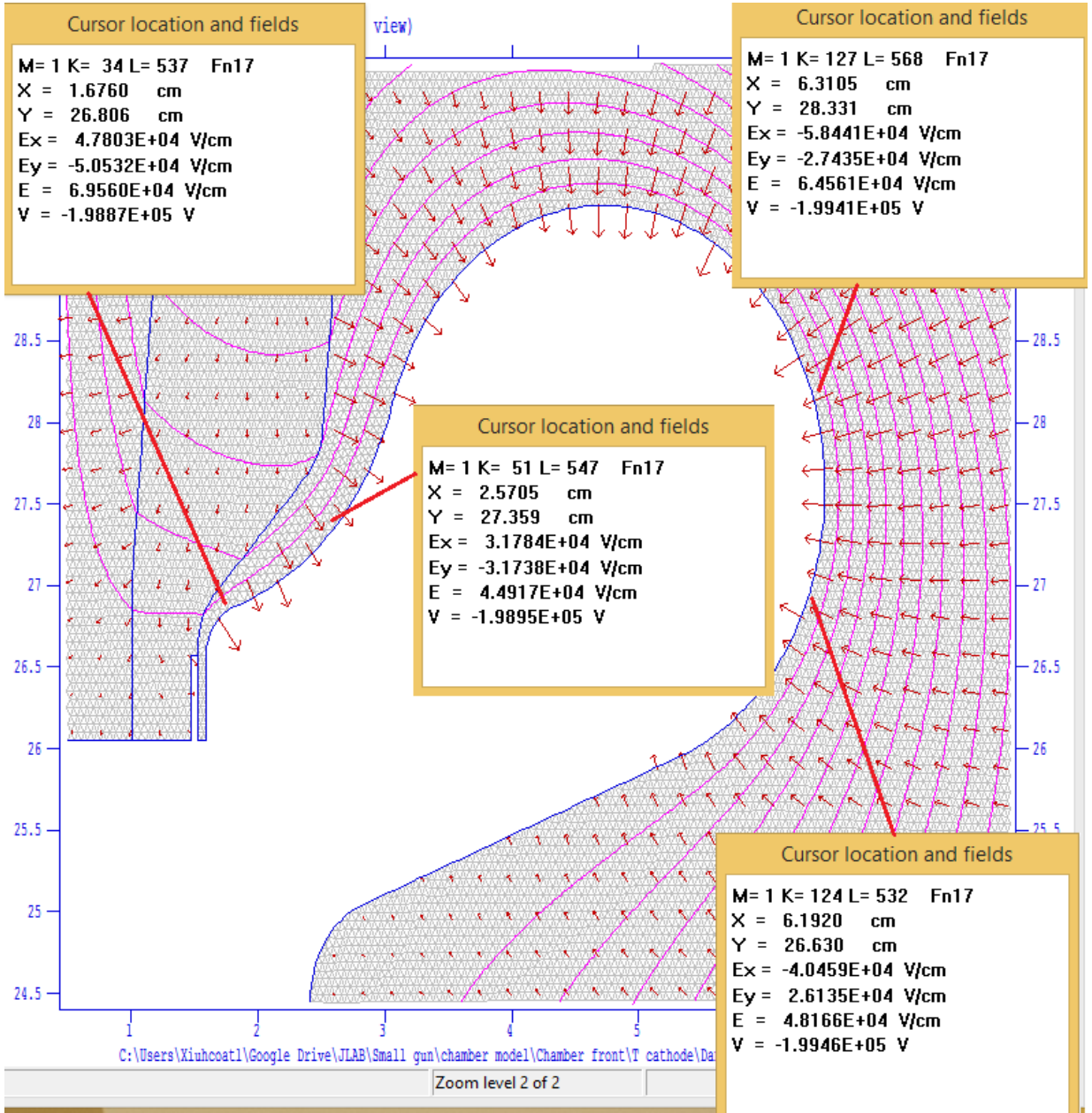
Baseline (left) vs Shed mod 2.5 (right) -200 kV fields cusp



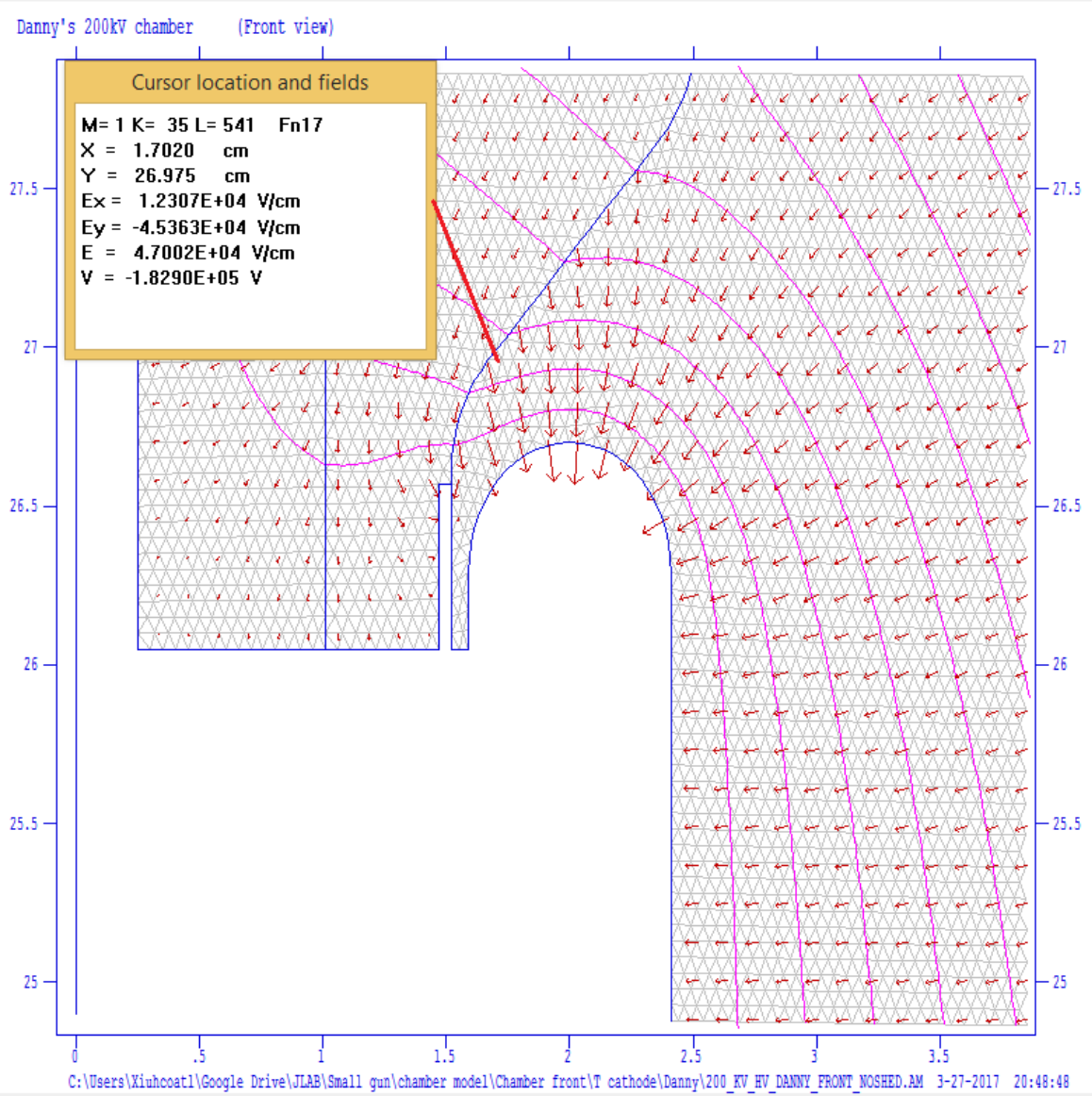


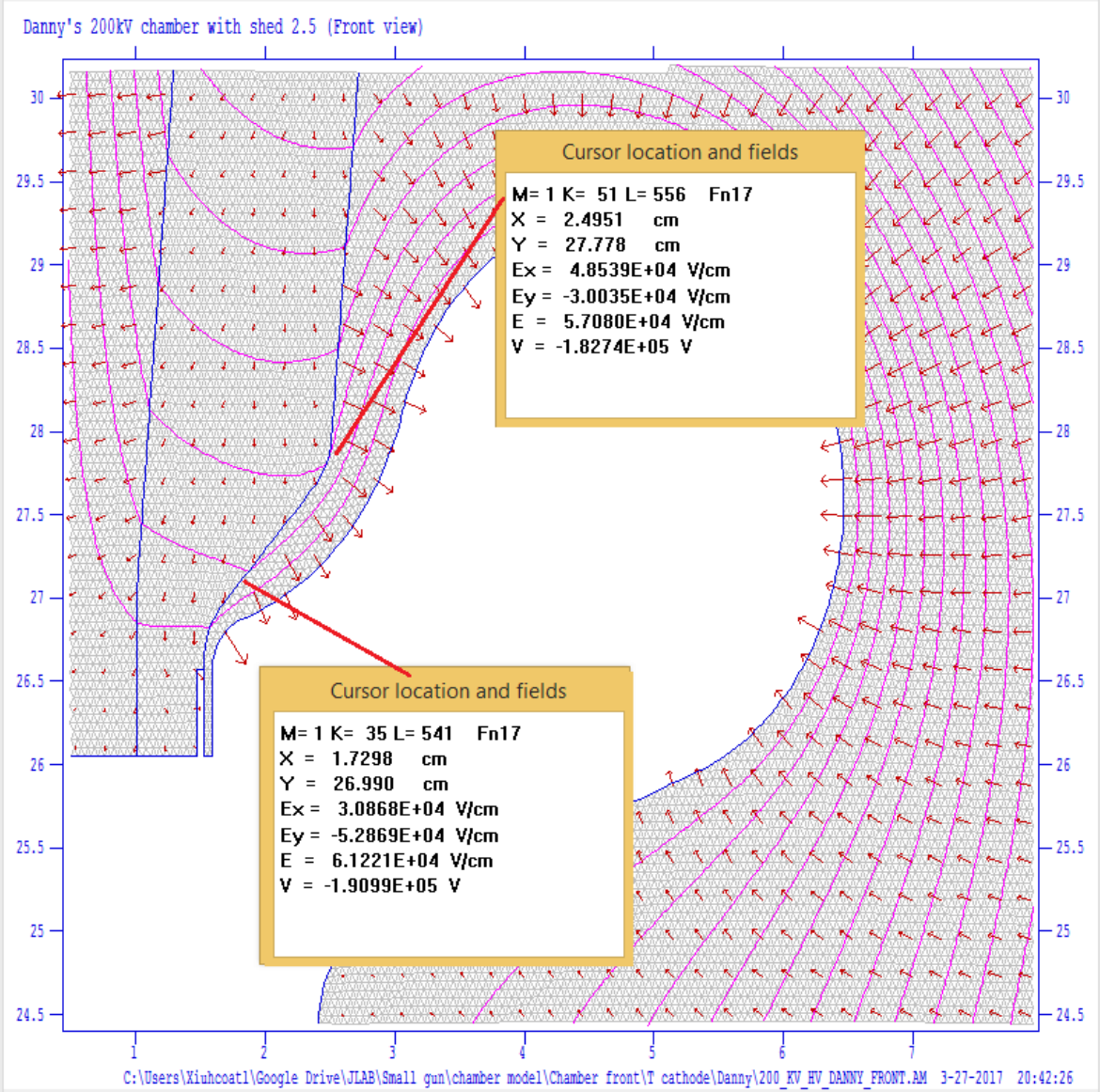
Baseline (left) vs Shed mod 2.5 (right) -200 kV fields cusp detail

Reaches E=6.4MV/m near y=28.3 but remains below this value along the cusp.



Baseline (left) vs Shed mod 2.5 (right) -200 kV fields insulator interface





Fin.