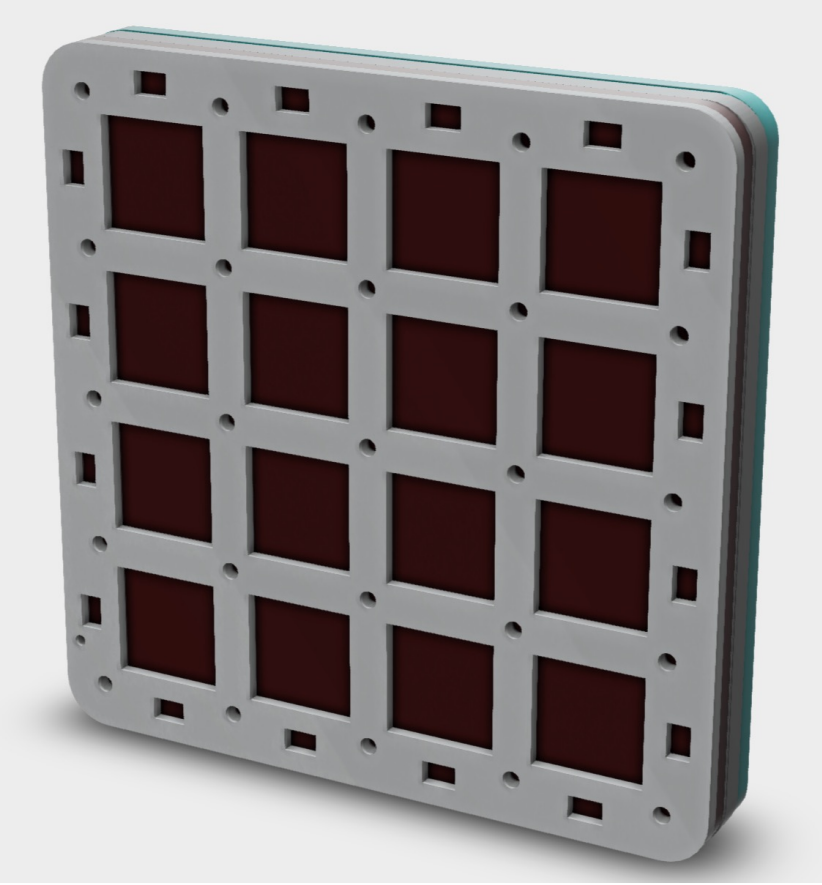
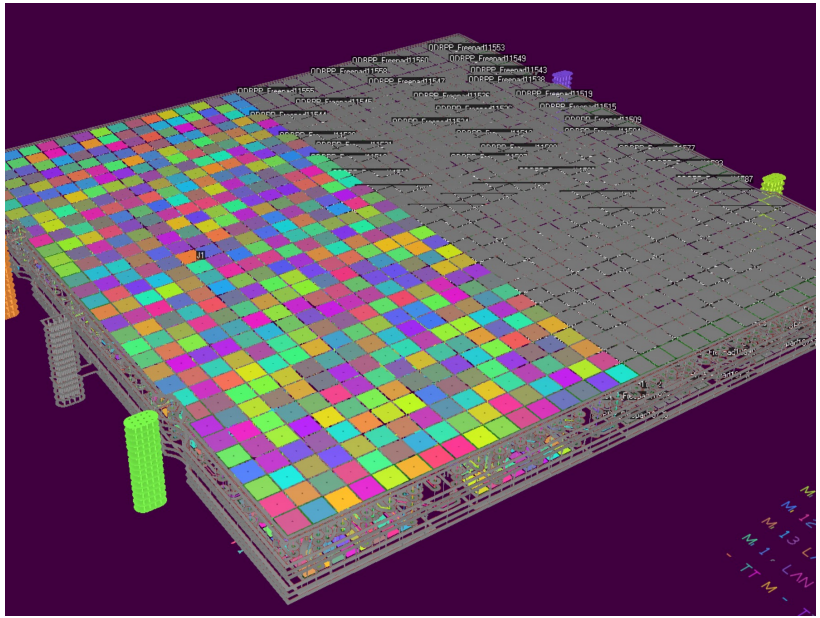
HRPPD design modification ideas



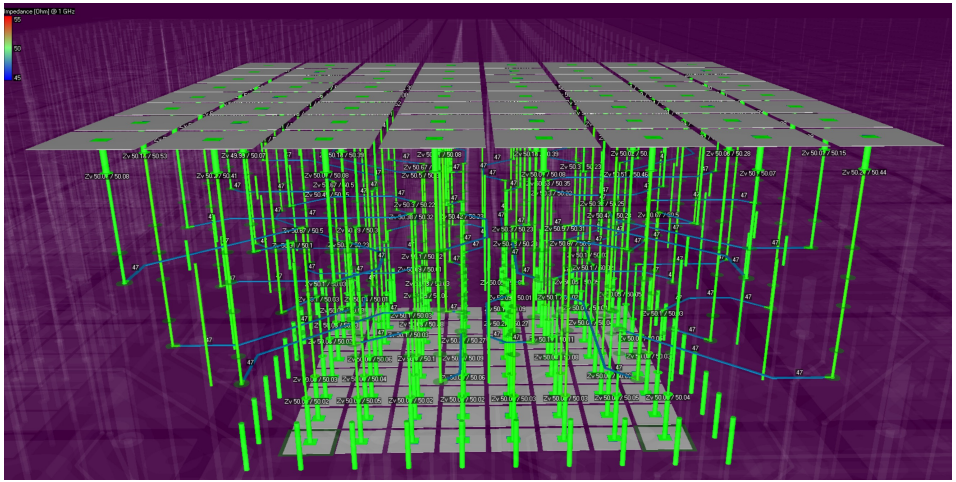
- Corners rounded at 8mm radius
- A permanently glued ~3mm thick plastic (peek?) panel
  - “Floating” signal compression interposers
  - “Floating” HV compression interposers
    - 8x MCP#2 bottom side
    - 4x for other electrodes
    - 4x ground (?)
  - Permanently embedded hex head screws or female threaded mechanical fixtures
- See a presentation from last week for more details

HRPPD anode + backplane signal modeling at JLab



A full HRPPD anode stackup

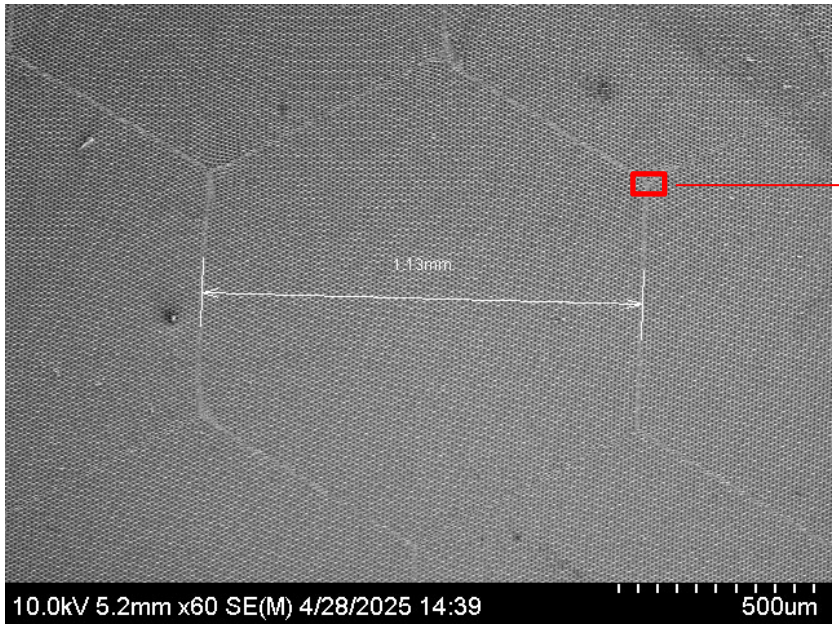
Use SIMBEOR (3D Electromagnetic Signal Integrity Modeling Software)

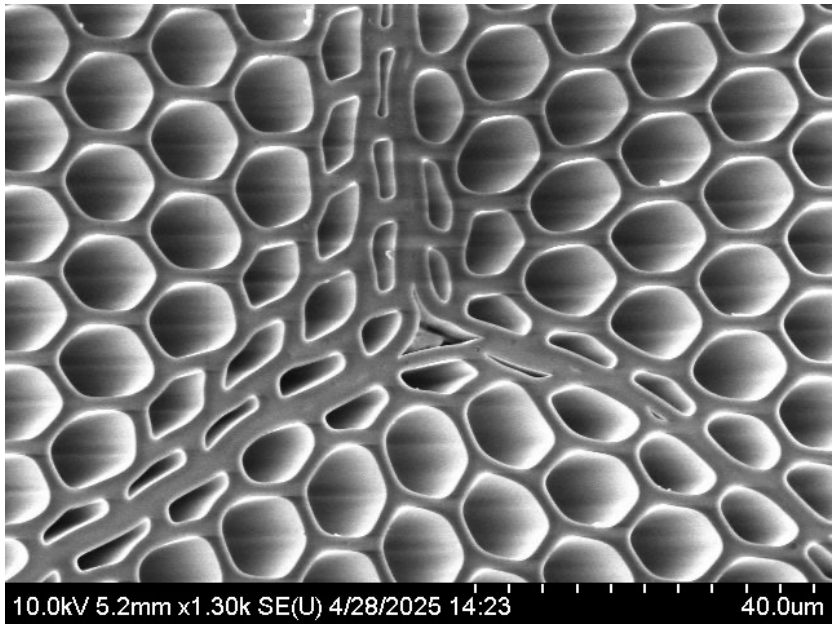


A zoomed in 8x8 pad area

- Work in progress; so far confirmed via and trace impedance ~50 Ohm, as well as absence of cross-talk in a 2D configuration (within a single layer)
- Goal: perform a complete 3D modeling and provide recommendations for final HRPPD design modifications, including HV circuitry *by the end of July [with milestones]*

Incom MCP structure

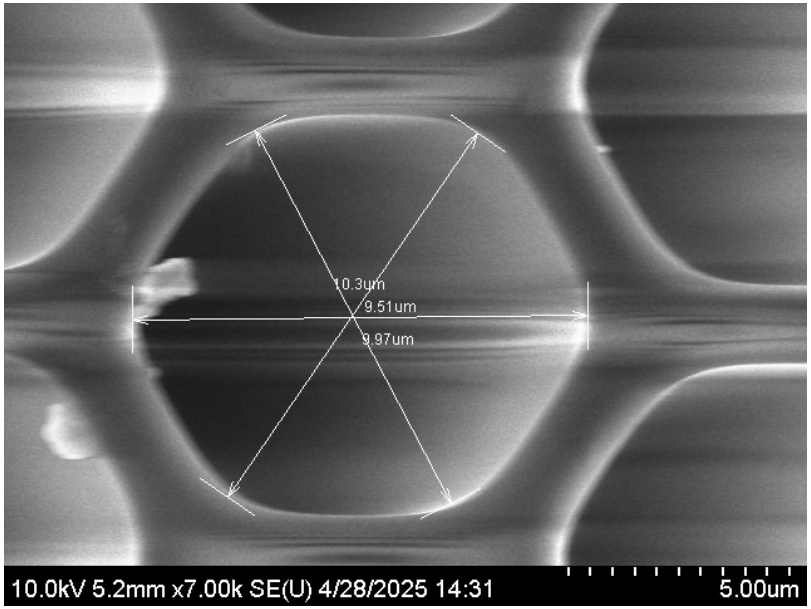


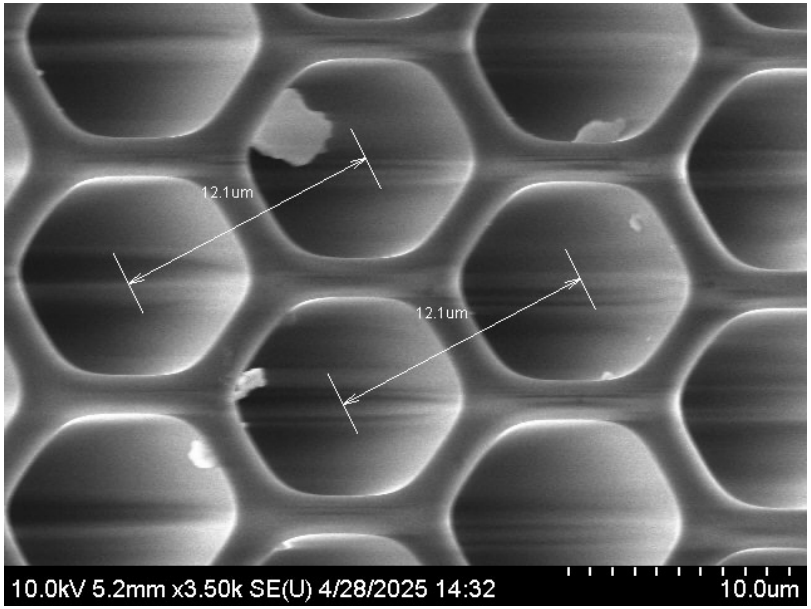


Long capillary bunches of ~1.1 mm size hexagonal section, fused together and later on cut into thin plates

HRPPD collection efficiency optimization

10 μm pores with ~12 μm pore-to-pore distance (so better than expected), as measured @ BNL CFN





- Primary photoelectrons hitting interstitial space are either lost or produce timing distribution tails
- There are options how to recover them though (and Incom can do this, in principle):
  - Thin down the walls even further
  - Etch the pore ends to a “conical” shape

Considered as an option for a renewed PED contract as well as a BNL CFN proposal