



# Wire-Cell ProtoDUNE Local Meeting

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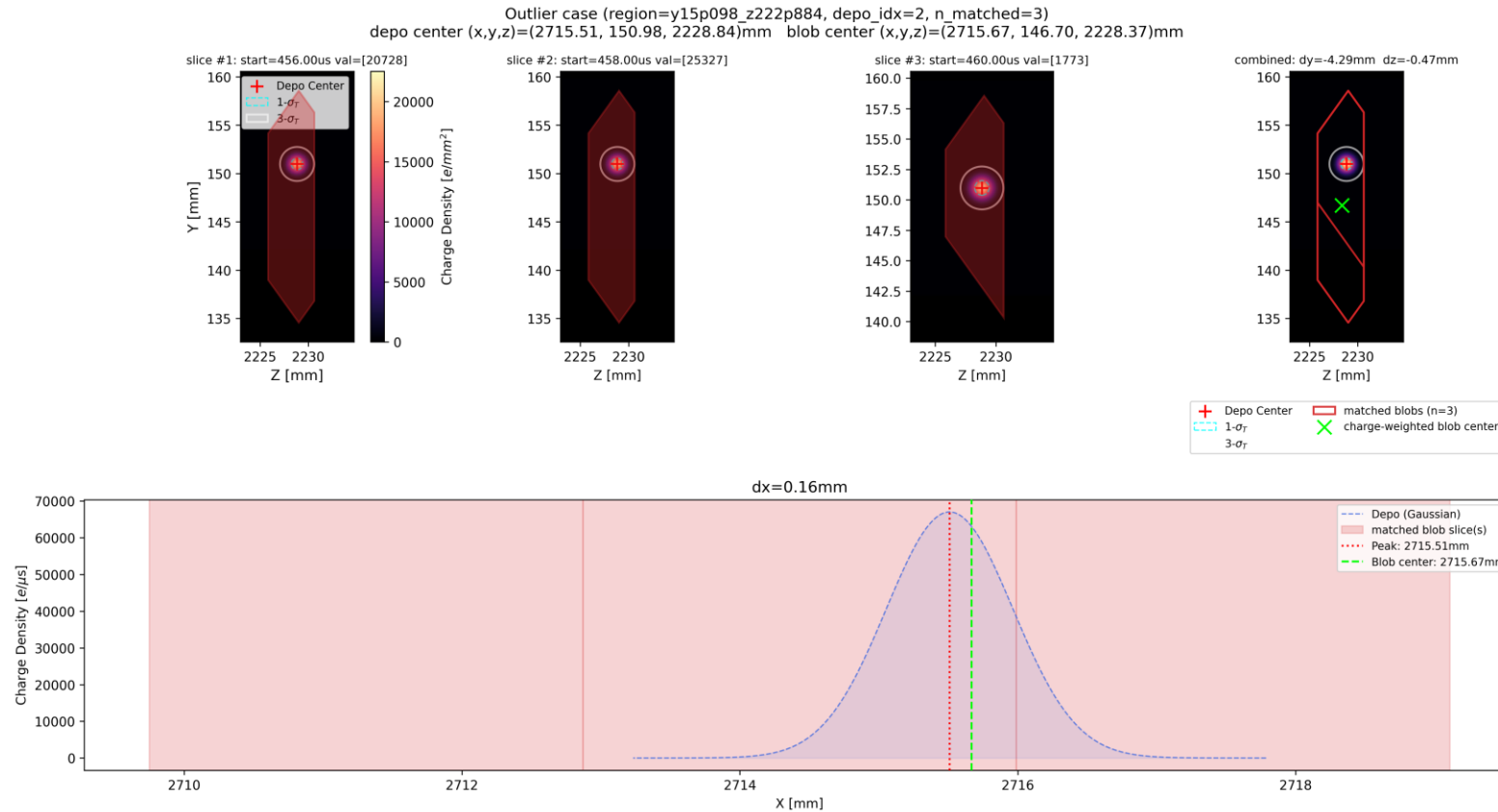
# Wire-Cell 3D Imaging

## Depo-Blob Center Comparison

- When a depo is generated near the anode, it was observed that the reconstructed blob forms larger.
- Here, I missed some smearing effects, and depots were visualized smaller.

$$\sigma_T = \sqrt{T^2 + (s^{tran} \cdot p)^2}$$

```
"smear_long": [
    2.691862363980221,
    2.6750200122535057,
    2.7137567141154055
],
"smear_tran": [
    0.7377218875719689,
    0.7157764520393882,
    0.13980698710556544
]
```

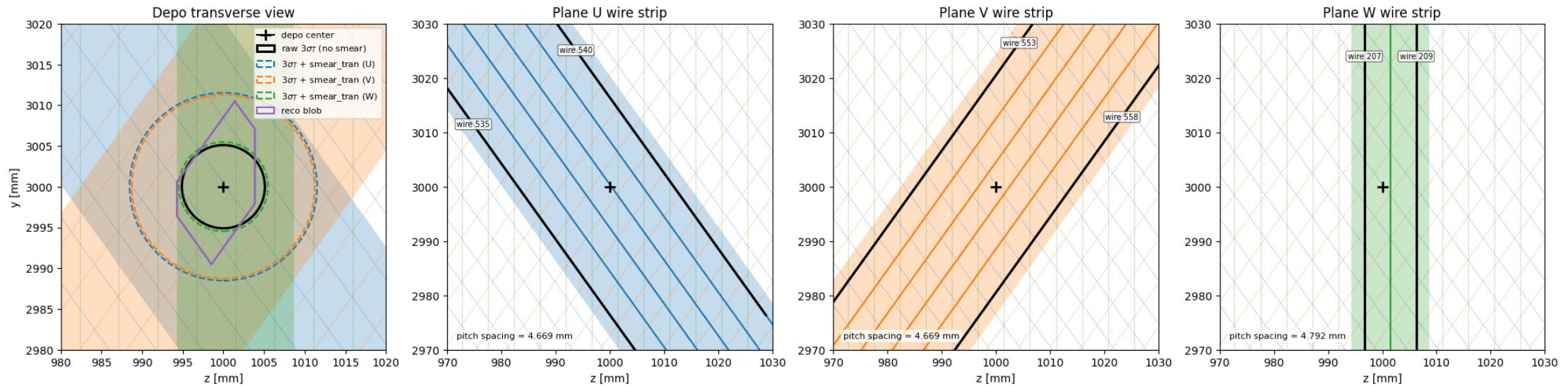


# Wire-Cell 3D Imaging

## Truth Smearing Checking

- Using `Depofluxsplat`, I checked how a point depo diffuses and smears on the anode.

| raw_3T | 3sig_U | 3sig_V | 3sig_W |
|--------|--------|--------|--------|
| 5.105  | 11.526 | 11.251 | 5.486  |



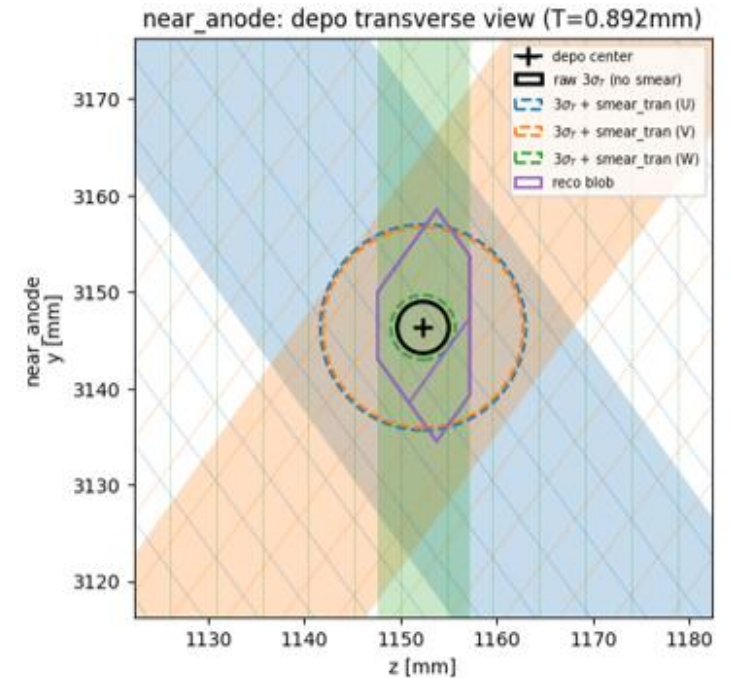
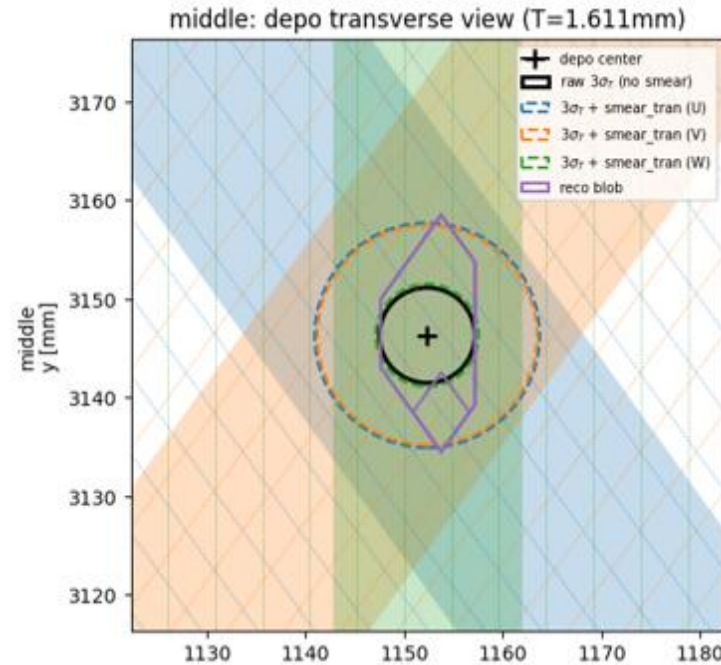
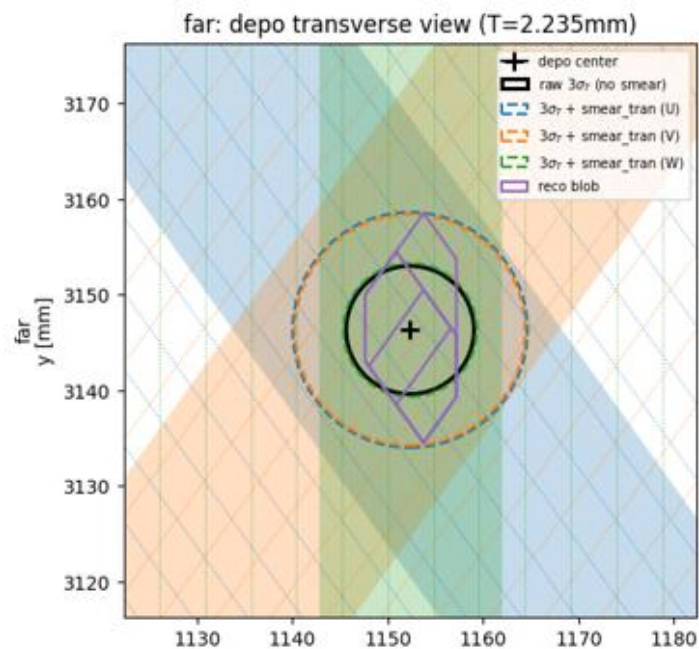
```
Plane U: DepoFluxSplat wire_range=[535, 541) | reco blob wires=[537, 538, 539]
Plane V: DepoFluxSplat wire_range=[553, 559) | reco blob wires=[555, 556] | rec
Plane W: DepoFluxSplat wire_range=[207, 210) | reco blob wires=[207, 208] | rec
```

# Wire-Cell 3D Imaging

## Truth Smearing Checking

- Checked how depos are diffused and smeared at various x-coordinates
  - Same (y,z)
  - far(x=10cm), middle(x=170cm), near(x=290cm)
- Depo size does not change dramatically with x-position due to smearing

| position   | raw_3T | 3sig_U | 3sig_V | 3sig_W |
|------------|--------|--------|--------|--------|
| far        | 6.705  | 12.318 | 12.061 | 7.000  |
| middle     | 4.833  | 11.408 | 11.130 | 5.235  |
| near_anode | 2.676  | 10.674 | 10.377 | 3.347  |



# Backup