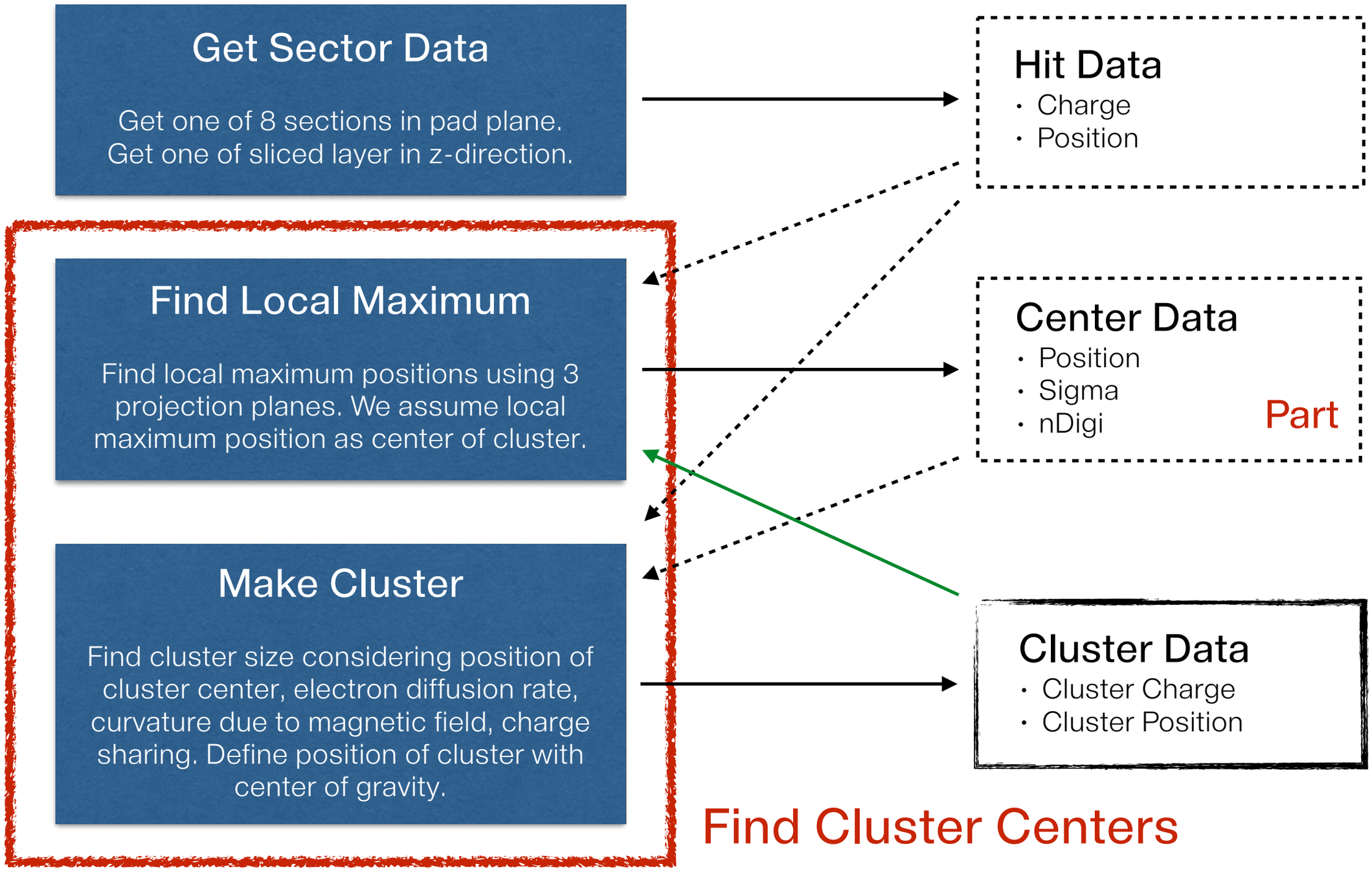
LAMPS-TPC Simulation

이정우 2013. 11. 22

Clustering


Get Sector Data
Get one of 8 sections in pad plane.
Get one of sliced layer in z-direction.
Hit Data
• Charge
• Position
Find Local Maximum
Find local maximum positions using 3 projection planes. We assume local maximum position as center of cluster.
Center Data
• Position
• Sigma
• nDigi
Part
Make Cluster
Find cluster size considering position of cluster center, electron diffusion rate, curvature due to magnetic field, charge sharing. Define position of cluster with center of gravity.
Cluster Data
• Cluster Charge
• Cluster Position
Find Cluster Centers

Get Sector Data

Get one of 8 sections in pad plane.
Get one of sliced layer in z-direction.

Hit Data

- Charge
- Position

Find Local Maximum

Find local maximum positions using 3 projection planes. We assume local maximum position as center of cluster.

Make Cluster

Find cluster size considering position of cluster center, electron diffusion rate, curvature due to magnetic field, charge sharing. Define position of cluster with center of gravity.

Finding All Cluster Centers

Cluster Data

- charge
- x, y, z
- σ_x, σ_y, σ_z
- nDigi

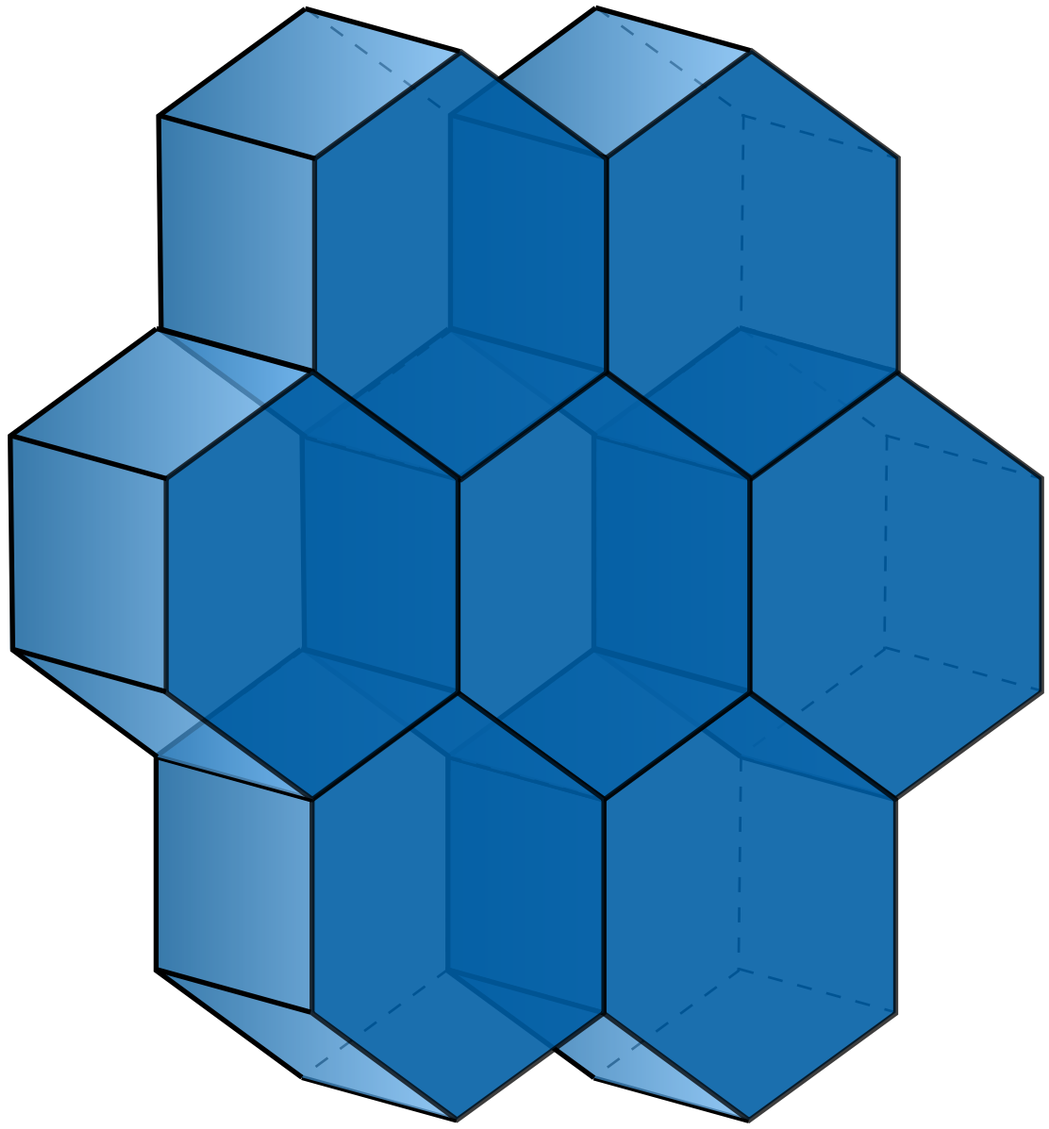
PRF Analysis

Find fitted Pad Response Function charge distribution for every cluster with cluster centers. Find charge sharing pad with PRF. Clusters are merged.

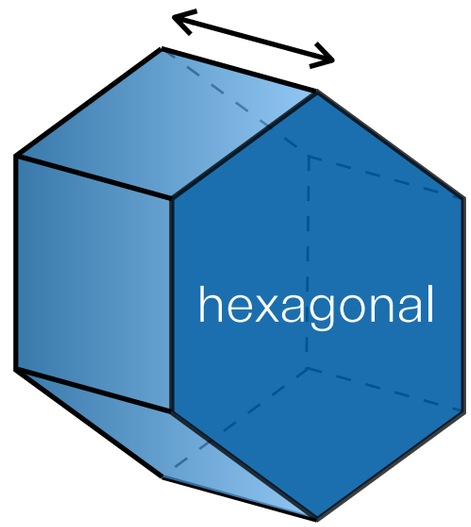
Corrected Cluster Data

- Charge
- Position
- σ_x, σ_y, σ_z

Digi

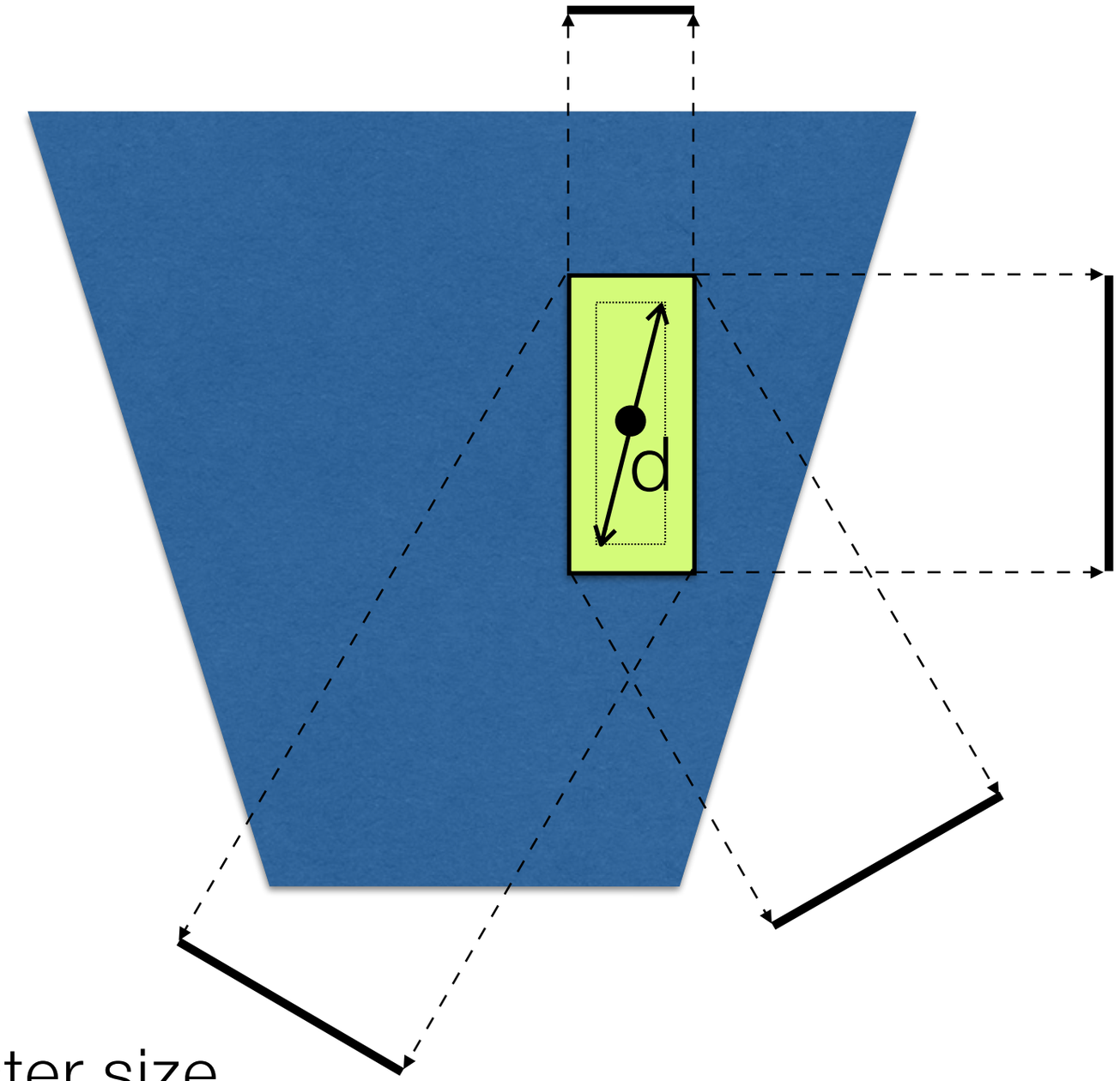


special resolution
along z-axis(1 mm)



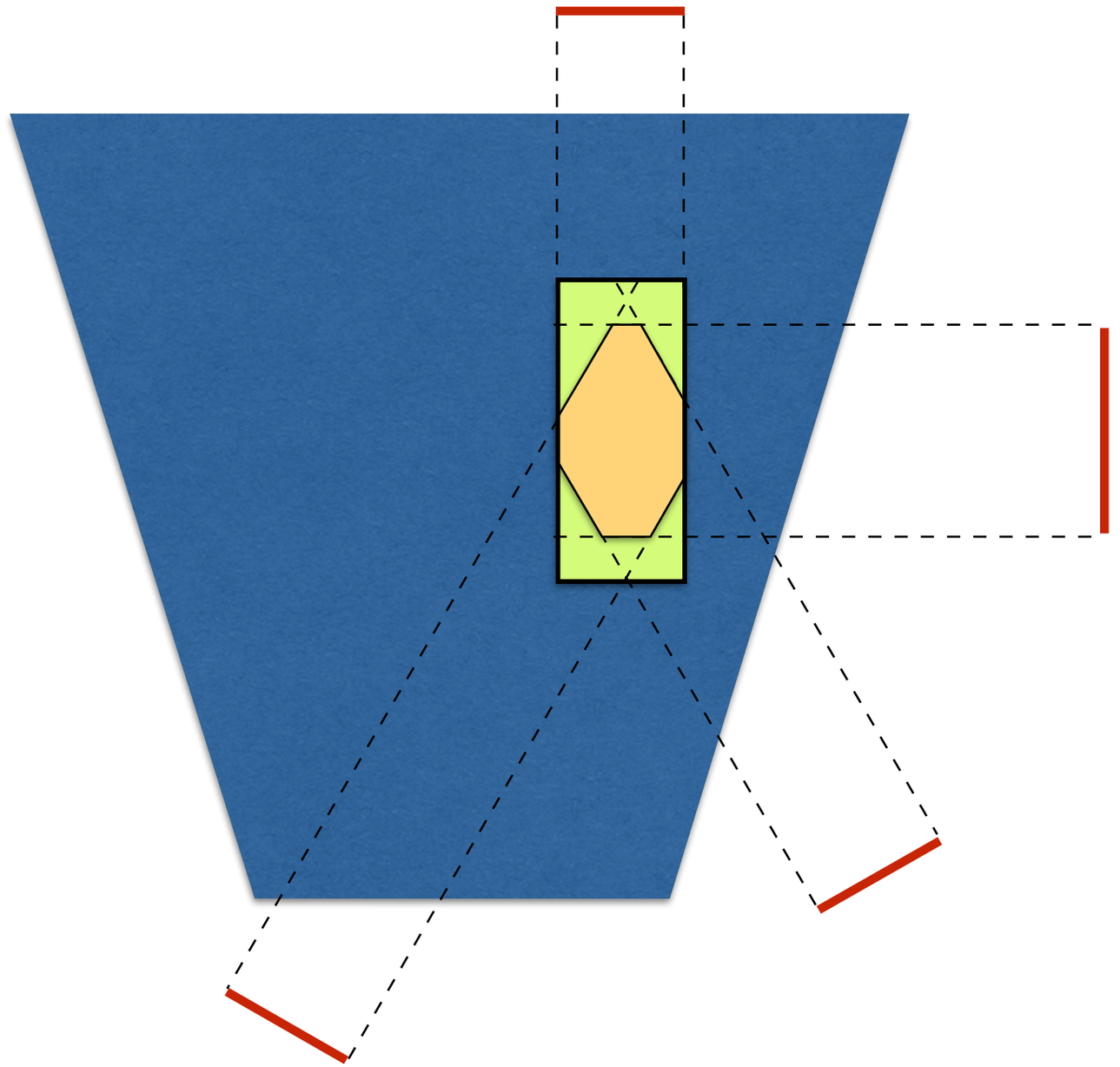
Digi

Pad Response Function Analysis



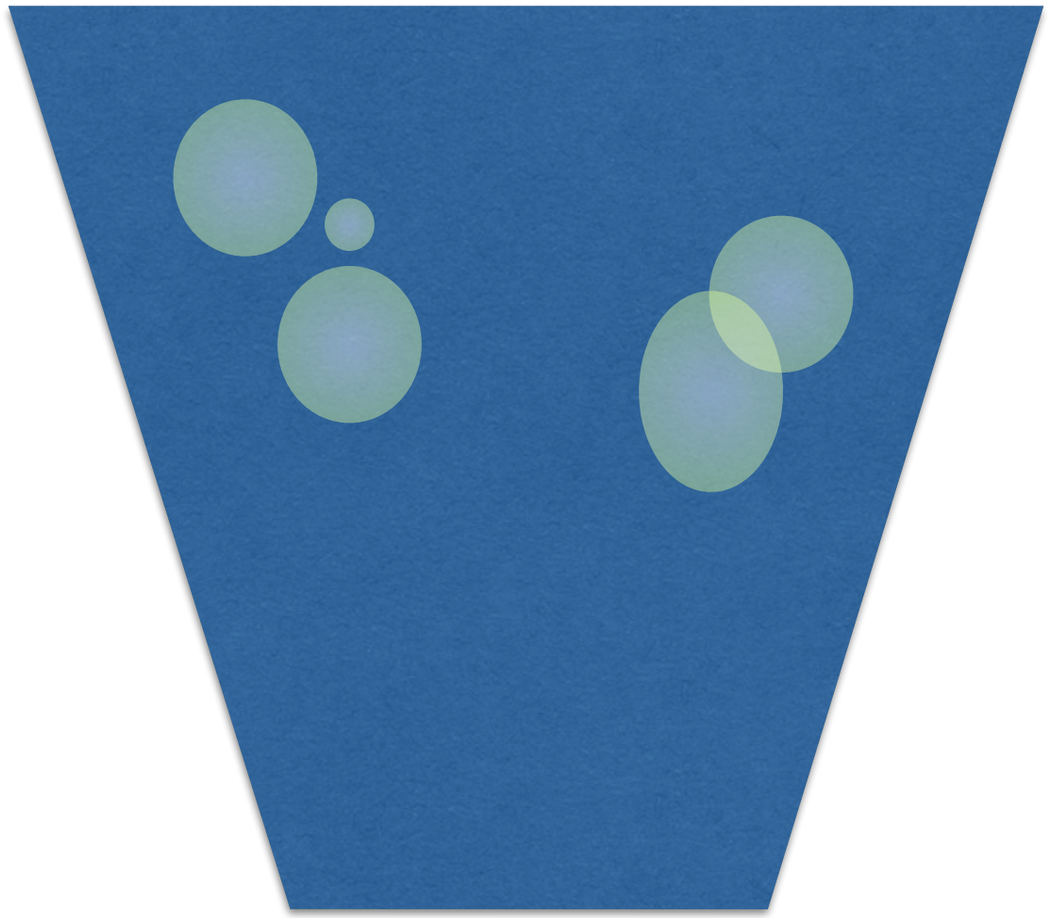
1. Assume cluster size.
2. Project to different projection planes.
3. Get cluster charge, position and standard deviation.

Pad Response Function Analysis



1. Effective cluster area is calculated with projection planes

Pad Response Function Analysis



1. Standard deviation along x-axis should be same in layer.
2. Overlap of clusters
3. Cluster with small digi or charge can be merged or deleted.