Status of the MiniSPD software

Current status

- Decoding. Finished for straws and silicons (done by Bogdan Topko);
- Clustering. Implemented simple cluster finding algorithm;
- Hits production. Simple hits production in local coordinates;
- Tracks reconstruction;
- Cluster center correction;
- Alignment;
- RT-correlation calculation.

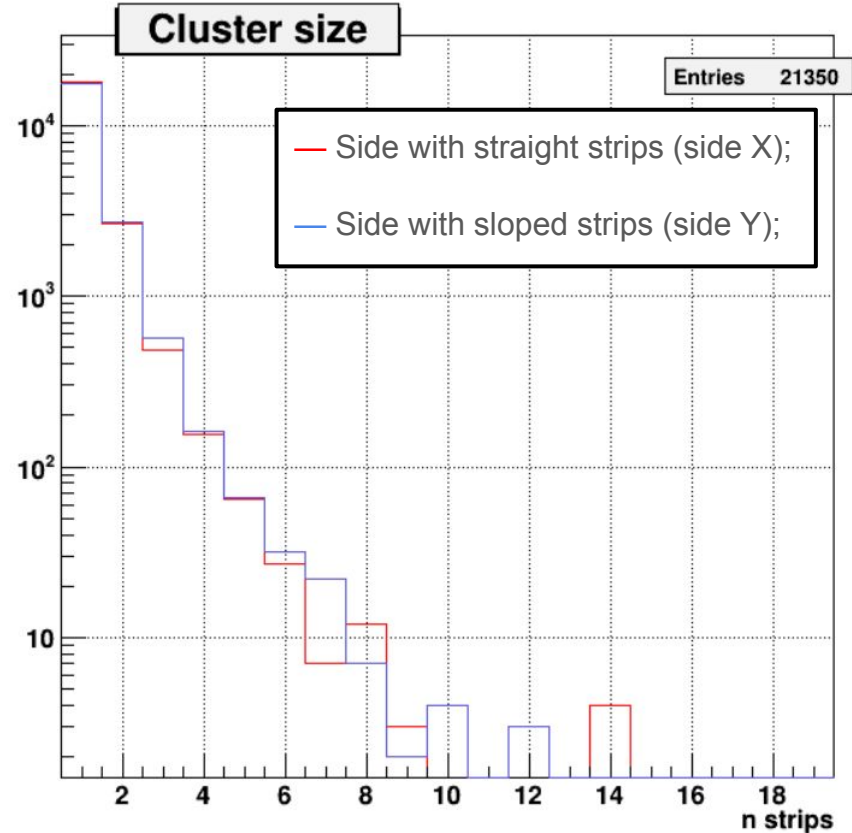# Cluster position. Clusters size distribution

We assume absence of clusters intersection (~2000 events per day);

For 1-strip clusters their position is calculated as center of the strip;

For clusters composed of more than one strip the Center-of-Gravity method is applied:

$$X_{CoG} = \frac{\sum_i a_{2,i} X_i}{\sum_i a_{2,i}}$$

After track finding algorithm implementation it will be possible to correct position by taking into account charge sharing nonlinearity.

Cluster size

Entries   21350

— Side with straight strips (side X);

— Side with sloped strips (side Y);

n strips

Amplitude distribution

Spike at 200 is probably caused by noise. After track finding algorithm implementation we will manage to clean it.
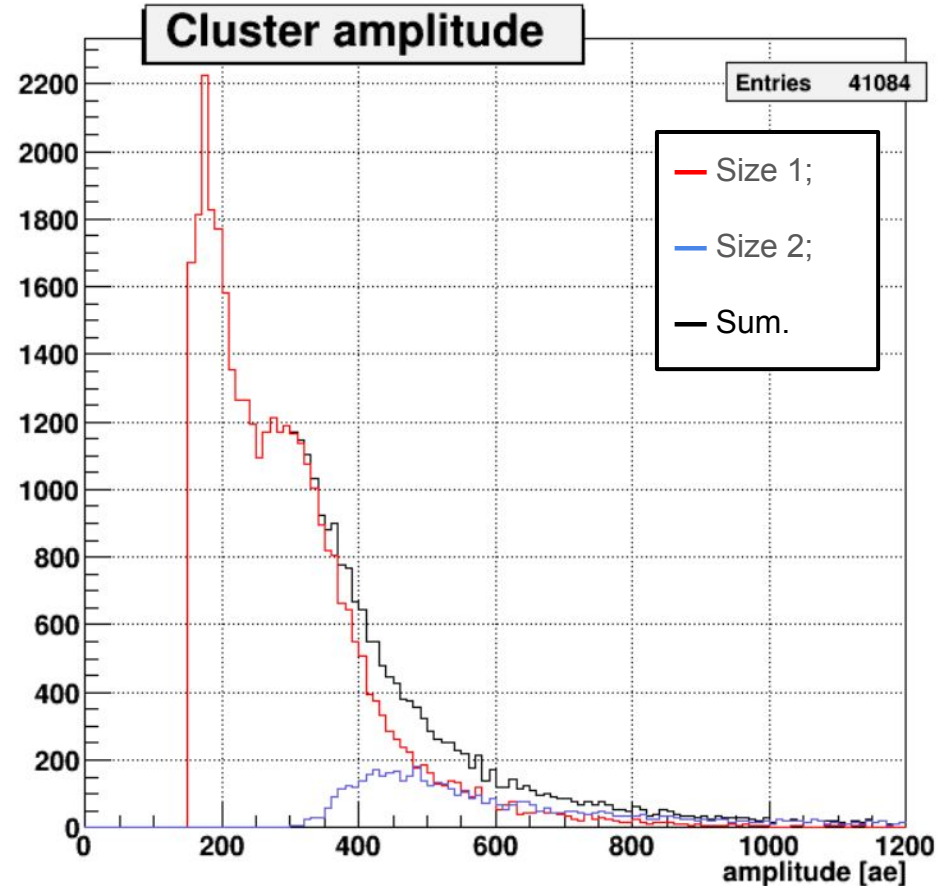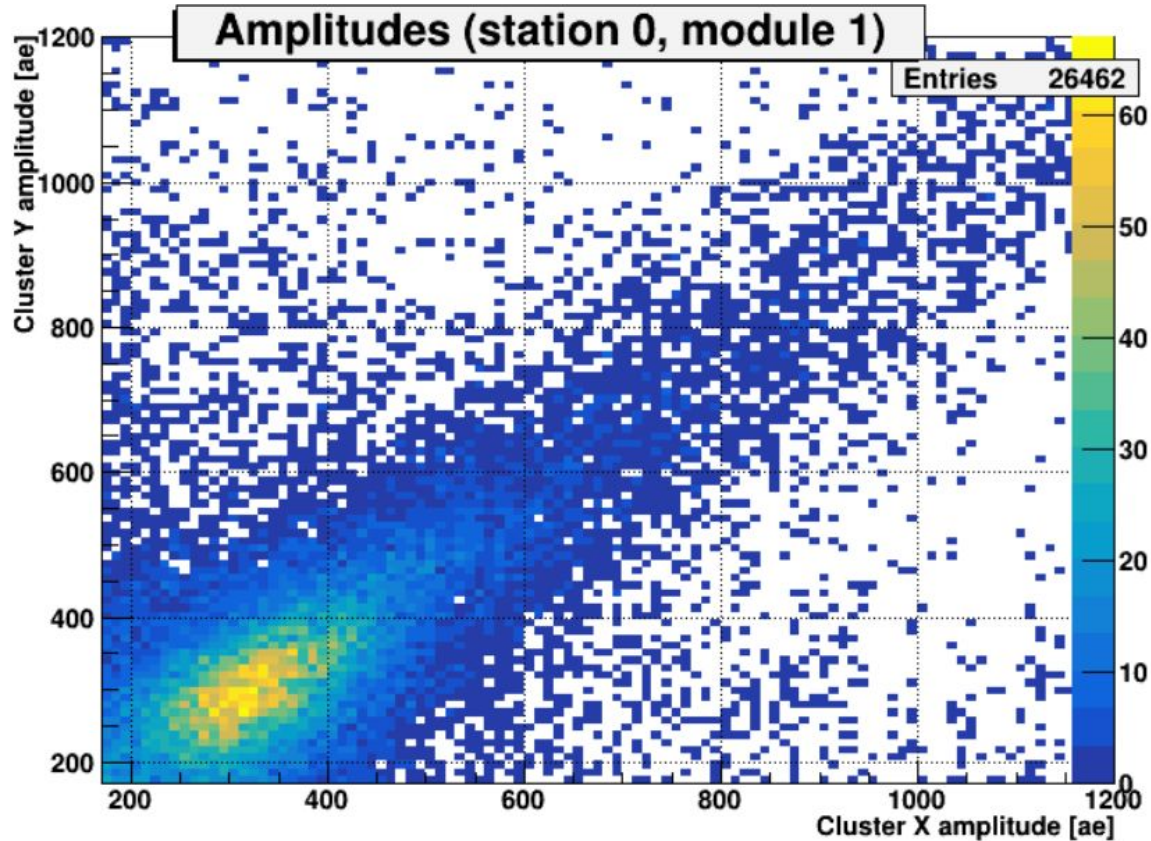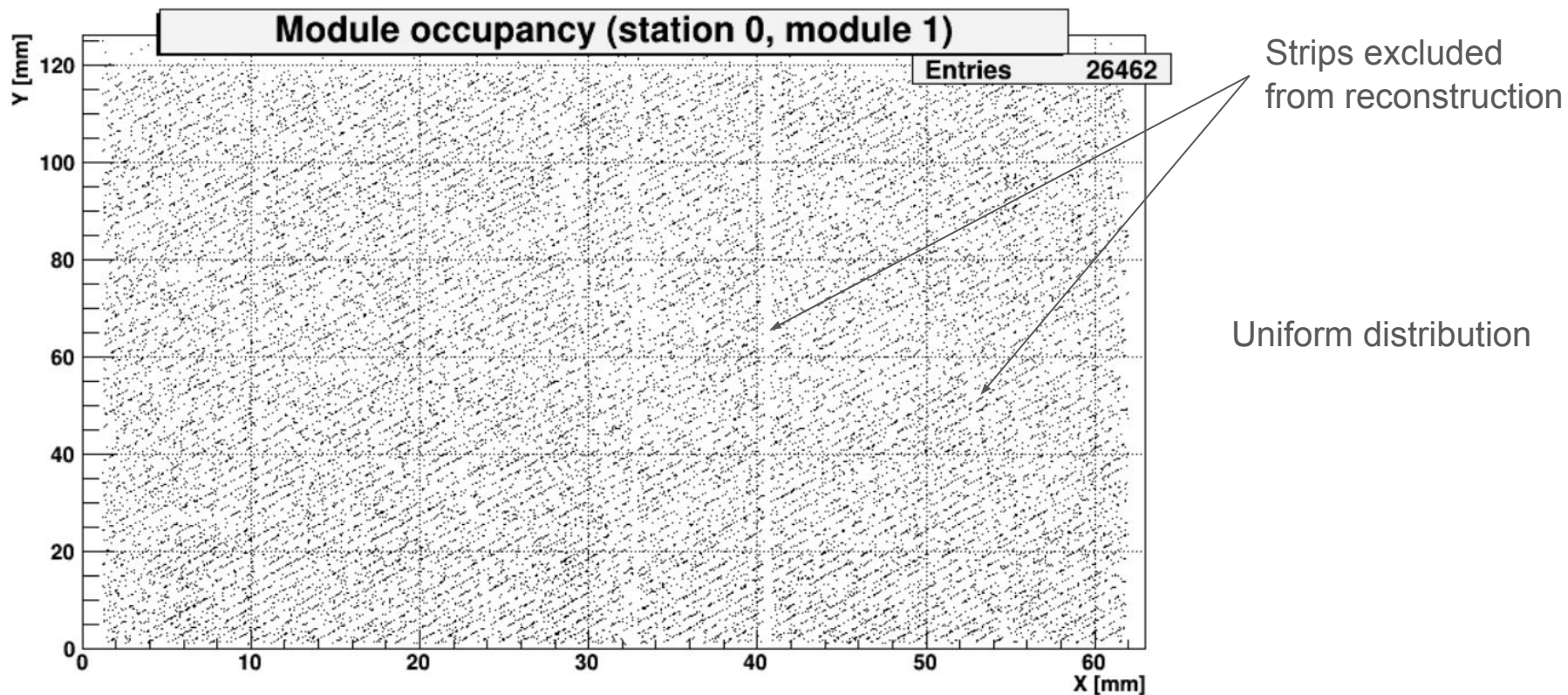
Signals amplitudes

Hit calculated as an intersection of two clusters.

Signals amplitudes of these two clusters should correlate.

Some noise is present.

Module occupancy (local coordinate system)

Strips excluded from reconstruction

Uniform distribution

Next steps:

Track finding algorithm.

Track fitting by the minimum chi-square method. In the future it probably will be replaced by Kalman filter (Genfit).