

Woodpecker

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Build a toolkit: Woodpecker

Larsoft part: run on gpvm

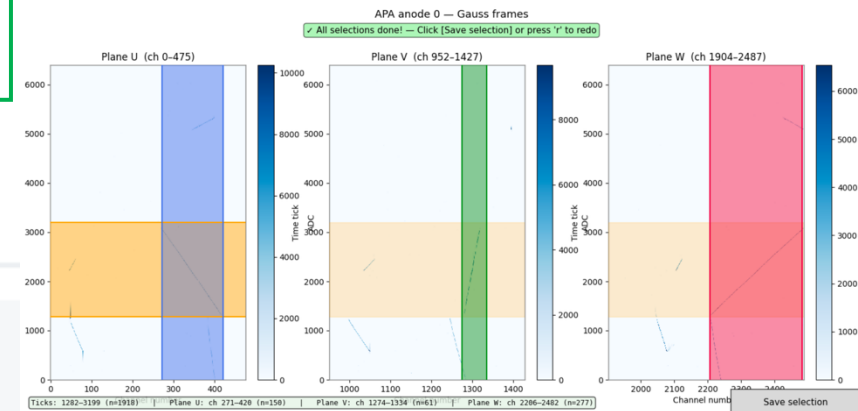
Noise filter + signal processing

[pdvd/wcls-nf-sp-out.jsonnet](#)

output files: .npy; contains raw; gauss; wiener

Woodpecker

Typical workflow



```
protodune-sp-frames-anode<N>.tar.bz2 (WireCell FrameFileSink output)
```

```
woodpecker select → masked anode<N>.tar.bz2 in woodpecker_data/
```

```
woodpecker run-img → imaging clusters in woodpecker_data/
```

```
woodpecker run-clustering → bee upload.zip + tracks-*.json in woodpecker_data/
```

```
woodpecker extract-tracks → inspect track list
```

```
woodpecker run-sim-check → simulated raw frames (longest track)  
woodpecker_data/protodune-sp-frames-sim-anode<N>
```

```
woodpecker plot-frames → U/V/W wire-plane image (PNG)
```

run wire-cell img+cluster

Extract track info

run wire-cell simulation

Plot

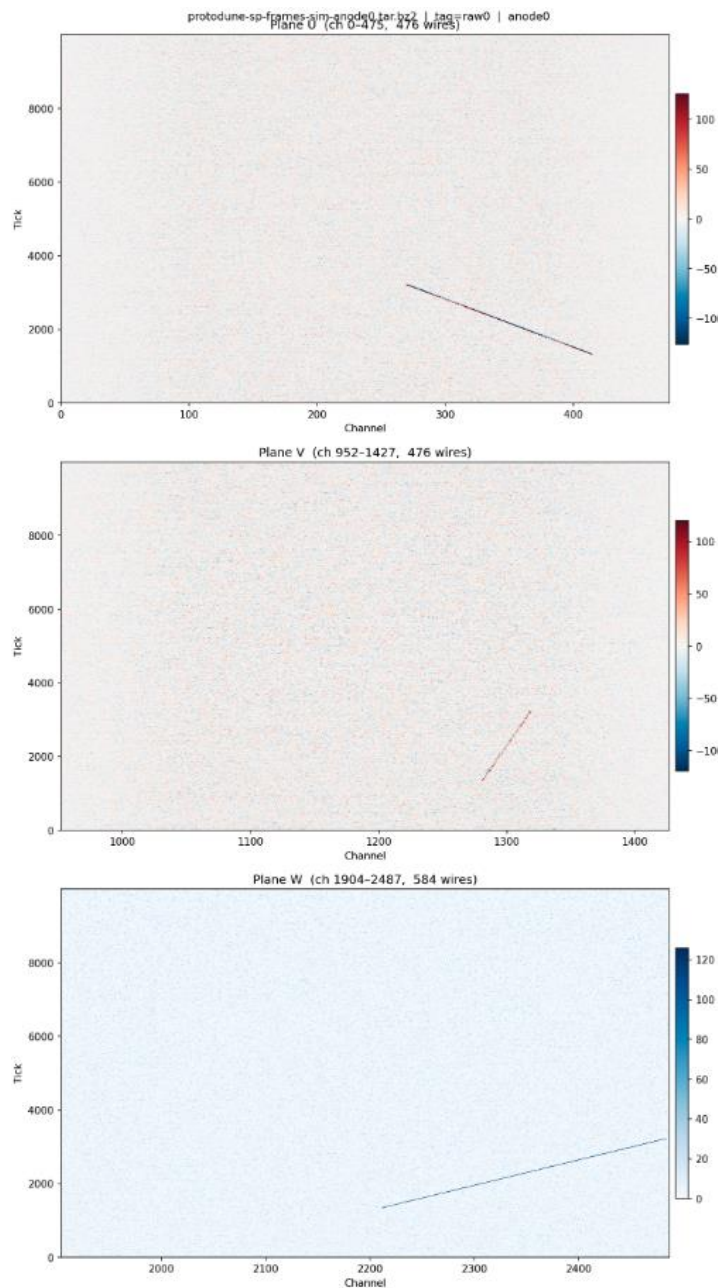
TBD:

compare data and simulation

Extracted track info

```
{
  "cluster_id": 3,
  "n_points": 468,
  "source_file": "data/0/0-clustering-apa0-face0.json",
  "total_charge": 8861678.0,
  "centroid": [
    -195.3025360107422,
    -76.98346710205078,
    87.31829833984375
  ],
  "direction": [
    0.686101496219635,
    -0.23249433934688568,
    0.6893556118011475
  ],
  "length_cm": 202.375,
  "start": [
    -274.39764404296875,
    -50.181068420410156,
    7.848045349121094
  ],
  "end": [
    -135.5478515625,
    -97.23211669921875,
    147.3563995361328
  ],
  "linearity": 0.999896,
  "theta_deg": 46.4209,
  "phi_deg": -18.7196
},
```

Simulation



Raw data

