Iiwi Investigation
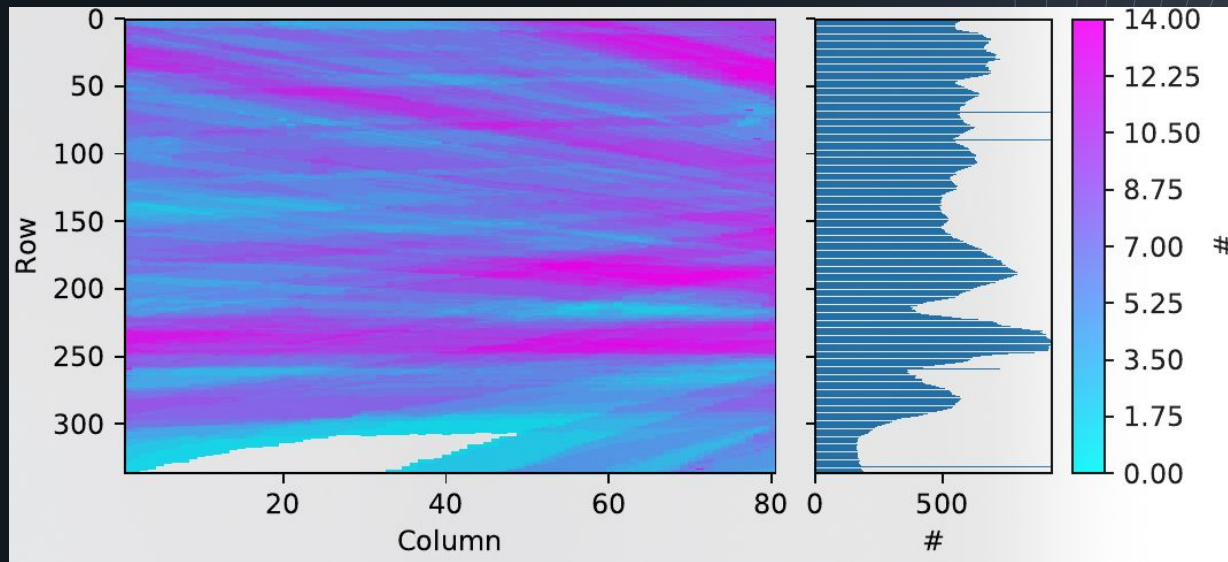
- External trigger configuration fix first just showed 0% progress bar
- Now shows progress bar slowly rising
- Data used to not save unless we canceled it (now works for some reason)
- Script ends if 1,000,000 triggers or 600 seconds has passed
- Configuration is set to 100 (not 256) samples after trigger?

Understanding head-tail

- Head-tail assignment procedure is as follows
- Take x, y, z, and pixel charge for each hit
- Concat into one array (column-wise), called data
- Take SVD of (data - mean)
- Take θ and φ from data
  - If cos(θ) < 0, flip vector direction, take new θ and φ from x, y, z
- Take dot product of V from SVD and each point?
- Check against midpoints and assign some values

```python
uu, dd, vv = np.linalg.svd(data - datamean)
vec = TVector3(vv[0][0],vv[0][1],vv[0][2])

theta = vec.Theta() #RADIANS
phi = vec.Phi() #RADIANS
if np.cos(theta) < 0:
    vec = -1 * vec
    theta = vec.Theta()
    phi = vec.Phi()

v = np.array([vec.x(), vec.y(), vec.z()])
projection = []
for point in data:
    projection += [np.dot(point, v)]
maxp = max(projection)
minp = min(projection)
length = maxp - minp
midp = 0.5*float(maxp+minp)
hc = 0
tc = 0
for i,val in enumerate(projection):
    if val > midp:
        hc += q[i]
    elif val < midp:
        tc += q[i]
    elif val == midp and i%2 == 0:
        hc += q[i]
    elif val == midp and i%2 != 0:
        tc += q[i]
hcf = hc/(hc+tc)
```