

```
In [1]: import pandas as pd
import awkward as ak
import uproot
import numpy as np
from matplotlib import pyplot as plt
from numpy import asarray
from numpy import savetxt
```

```
In [2]: l = [[1], [2,3], [4,5,6]]
ls = [item for sublist in l for item in sublist]
print(ls)
```

```
[1, 2, 3, 4, 5, 6]
```

```
In [3]: array = uproot.lazy("data/hit_bbgem_484_nocuts.root:GEMHit;110")
print(len(array["nch"]))
```

```
146520
```

```
In [4]: module = []
strip = []
axis = []

t0 = []
t1 = []
t2 = []
t3 = []
t4 = []
t5 = []

for iev in range(len(array["nch"])):
    module.append([])
    strip.append([])
    axis.append([])
    t0.append([])
    t1.append([])
    t2.append([])
    t3.append([])
    t4.append([])
    t5.append([])
```

## Save module

```
In [5]: for iev in range(len(array["nch"])): #(Len(array["nch"])):
    if np.mod(iev, 10000) == 0:
        print(iev)
        module[iev] = list(array["moduleID",iev])
```

```
0
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
110000
120000
130000
140000
```

```
In [6]: module_flatten = [item for sublist in module for item in sublist]
```

```
In [7]: savetxt('data/hit_bbgem_484_nocuts/module_flatten.csv', module_flatten, delimiter=',')
```

## Save axis

```
In [12]: for iev in range(len(array["nch"])): #(Len(array["nch"])):
    if np.mod(iev, 10000) == 0:
```

```
print(iev)
axis[iev] = list(array["axis",iev])
```

```
0
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
110000
120000
130000
140000
```

```
In [13]: axis_flatten = [item for sublist in axis for item in sublist]
```

```
In [14]: savetxt('data/hit_bbgem_484_nocuts/axis_flatten.csv', axis_flatten, delimiter=',')
```

## Save strip

```
In [15]: for iev in range(len(array["nch"])): #(Len(array["nch"]):
         if np.mod(iev, 10000) == 0:
             print(iev)
             strip[iev] = list(array["strip",iev])
```

```
0
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
110000
120000
130000
140000
```

```
In [16]: strip_flatten = [item for sublist in strip for item in sublist]
```

```
In [17]: savetxt('data/hit_bbgem_484_nocuts/strip_flatten.csv', strip_flatten, delimiter=',')
```

## Save adc0 as t0

```
In [18]: for iev in range(len(array["nch"])): #(Len(array["nch"]):
         if np.mod(iev, 10000) == 0:
             print(iev)
             t0[iev] = list(array["adc0",iev])
```

```
0
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
110000
120000
130000
140000
```

```
In [19]: t0_flatten = [item for sublist in t0 for item in sublist]
```

```
In [20]: savetxt('data/hit_bbgem_484_nocuts/t0_flatten.csv', t0_flatten, delimiter=',')
```

## Save adc1 as t1

```
In [21]: for iev in range(len(array["nch"])): #(Len(array["nch"]):
         if np.mod(iev, 10000) == 0:
             print(iev)
         t1[iev] = list(array["adc1",iev])
```

```
0
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
110000
120000
130000
140000
```

```
In [22]: t1_flatten = [item for sublist in t1 for item in sublist]
```

```
In [23]: savetxt('data/hit_bbgem_484_nocuts/t1_flatten.csv', t1_flatten, delimiter=',')
```

## Save adc2 as t2

```
In [ ]: for iev in range(len(array["nch"])): #(Len(array["nch"]):
         if np.mod(iev, 10000) == 0:
             print(iev)
         t2[iev] = list(array["adc2",iev])
```

```
0
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
110000
120000
130000
140000
```

```
In [ ]: t2_flatten = [item for sublist in t2 for item in sublist]
```

```
In [ ]: savetxt('data/hit_bbgem_484_nocuts/t2_flatten.csv', t2_flatten, delimiter=',')
```

## Save adc3 as t3

```
In [ ]: for iev in range(len(array["nch"])): #(Len(array["nch"]):
         if np.mod(iev, 10000) == 0:
             print(iev)
         t3[iev] = list(array["adc3",iev])
```

```
In [ ]: t3_flatten = [item for sublist in t3 for item in sublist]
```

```
In [ ]: savetxt('data/hit_bbgem_484_nocuts/t3_flatten.csv', t3_flatten, delimiter=',')
```

## Save adc4 as t4

```
In [ ]: for iev in range(len(array["nch"])): #(Len(array["nch"]):
         if np.mod(iev, 10000) == 0:
             print(iev)
         t4[iev] = list(array["adc4",iev])
```

```
In [ ]: t4_flatten = [item for sublist in t4 for item in sublist]
```

```
In [ ]: savetxt('data/hit_bbgem_484_nocuts/t4_flatten.csv', t4_flatten, delimiter=',')
```

## Save adc5 as t5

```
In [ ]: for iev in range(len(array["nch"])): #(Len(array["nch"]):  
        if np.mod(iev, 10000) == 0:  
            print(iev)  
            t5[iev] = list(array["adc5",iev])
```

```
In [ ]: t5_flatten = [item for sublist in t5 for item in sublist]
```

```
In [ ]: savetxt('data/hit_bbgem_484_nocuts/t5_flatten.csv', t5_flatten, delimiter=',')
```

```
In [ ]:
```