

Comparison between 2 different daq.mac

Annalisa De Lorenzis - 11 July 2022

DAQ.mac

daq_Thr_2500000

by /project/rpp-blairt2k/rakutsu/develop/SmallParGunPup/20220324/

```
/DAQ/DigitizerOpt/TimingPrecision 0.1
/DAQ/TriggerSaveFailures/Mode 1
/DAQ/TriggerSaveFailures/TriggerTime 1000
/DAQ/TriggerSaveFailures/PreTriggerWindow -400
/DAQ/TriggerSaveFailures/PostTriggerWindow +2950
/DAQ/TriggerNDigits/Threshold 2500000
/DAQ/TriggerNDigits/Window 200
#/DAQ/TriggerNDigits/AdjustForNoise true
```

daq_Thr_5

by /project/rpp-blairt2k/machine_learning/production_software/WCSim/macros

```
/DAQ/DigitizerOpt/TimingPrecision 0.1
/DAQ/TriggerSaveFailures/Mode 1
/DAQ/TriggerSaveFailures/TriggerTime 0
#/DAQ/TriggerSaveFailures/PreTriggerWindow -400
#/DAQ/TriggerSaveFailures/PostTriggerWindow +950
/DAQ/TriggerNDigits/Threshold 5
/DAQ/TriggerNDigits/Window 10
/DAQ/TriggerNDigits/AdjustForNoise false
```

Generated 2 different root output files with [the same root input file](#) (WCSimInput_MaxVtx1_MaxTrack5_MaxTotEvis2GeV_3k_35.root):

- WCSimOutput_MaxVtx1_MaxTrack5_MaxTotEvis2GeV_3k_35_daq_Thr_2500000.root → .npz → .h5
- WCSimOutput_MaxVtx1_MaxTrack5_MaxTotEvis2GeV_3k_35_daq_Thr_5.root → .npz → .h5

Datasets production

SEED=35
NEVTGEN=3000
MaxTotEvisPerEvt=2000
MaxVtxPerEvt=1
MaxTrkPerEvt=5
MinTrkPerVtx=2

ParticleGunGenerator

WCSimInput.root

WCSim

daq.mac file

WCSimOutput_MaxVtx1_MaxTrack5_MaxTotEvis2GeV_3k_35_daq_Thr_2500000.root

Size: 1.6 G

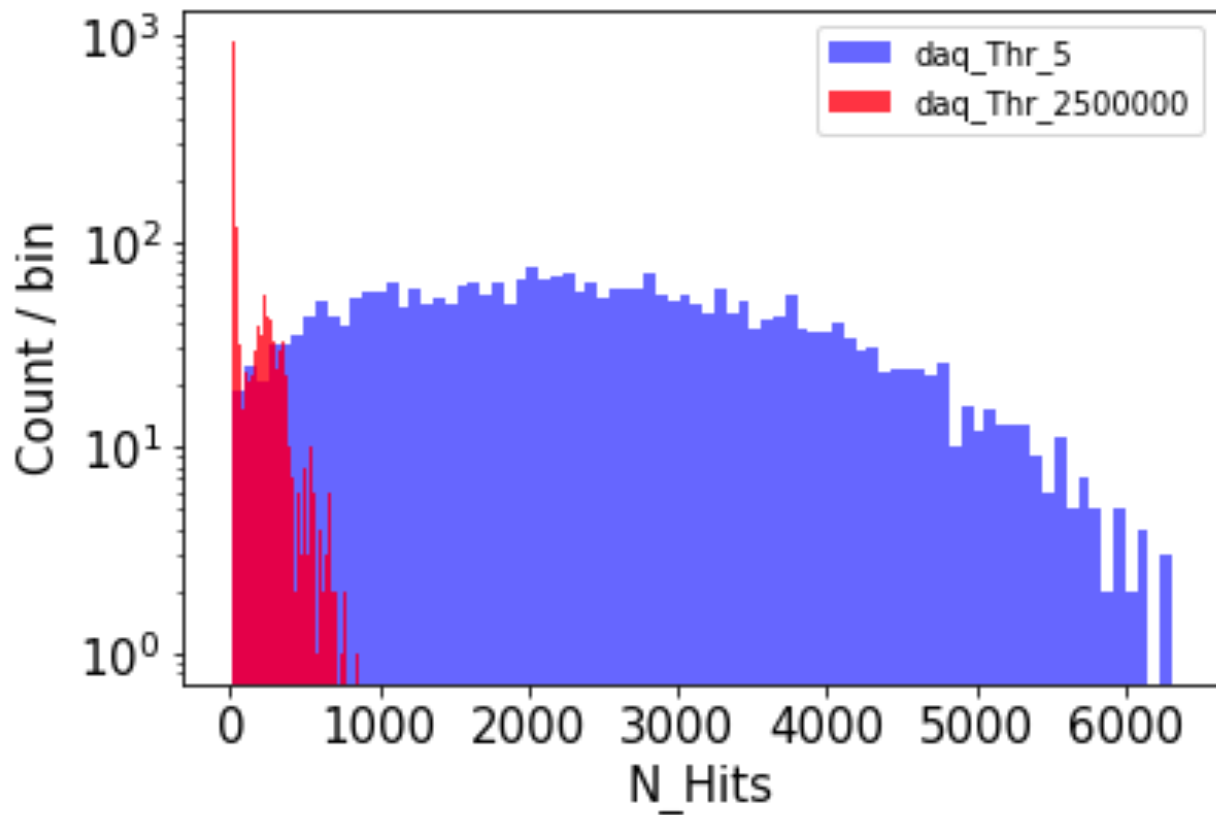
WCSimOutput_MaxVtx1_MaxTrack5_MaxTotEvis2GeV_3k_35_daq_Thr_5.root

Size: 1.7 G

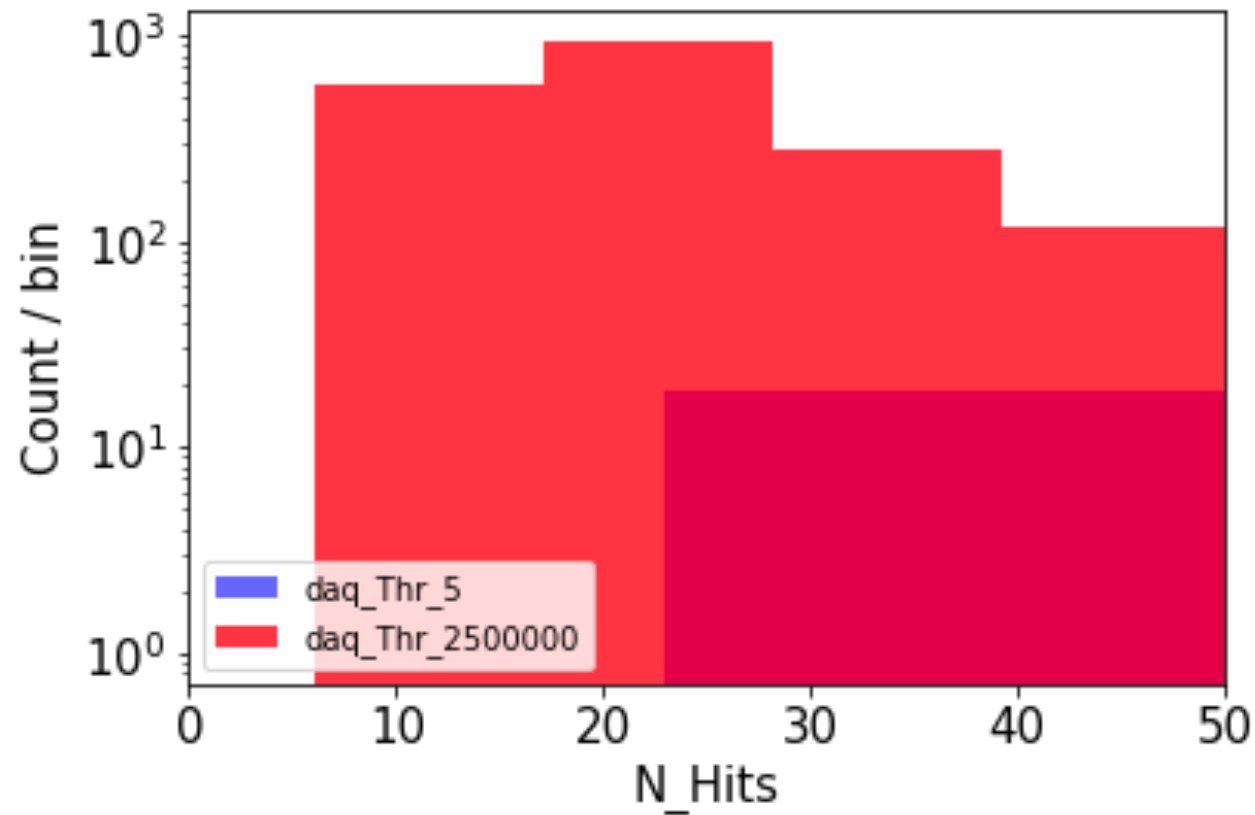
- WCSimOutput_MaxVtx1_MaxTrack5_MaxTotEvis2GeV_3k_35_daq_Thr_2500000.root → .npz → .h5
- WCSimOutput_MaxVtx1_MaxTrack5_MaxTotEvis2GeV_3k_35_daq_Thr_5.root → .npz → .h5

Number of hits

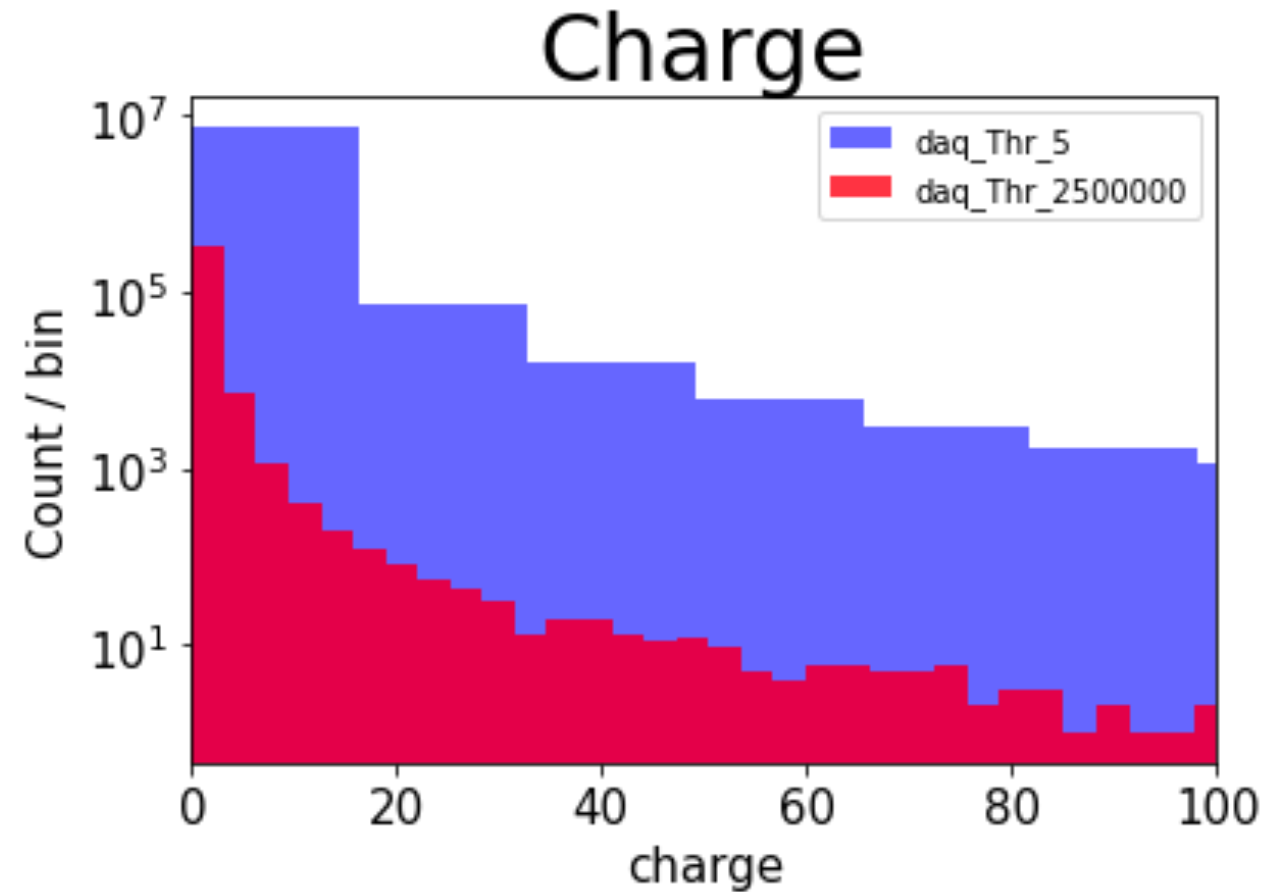
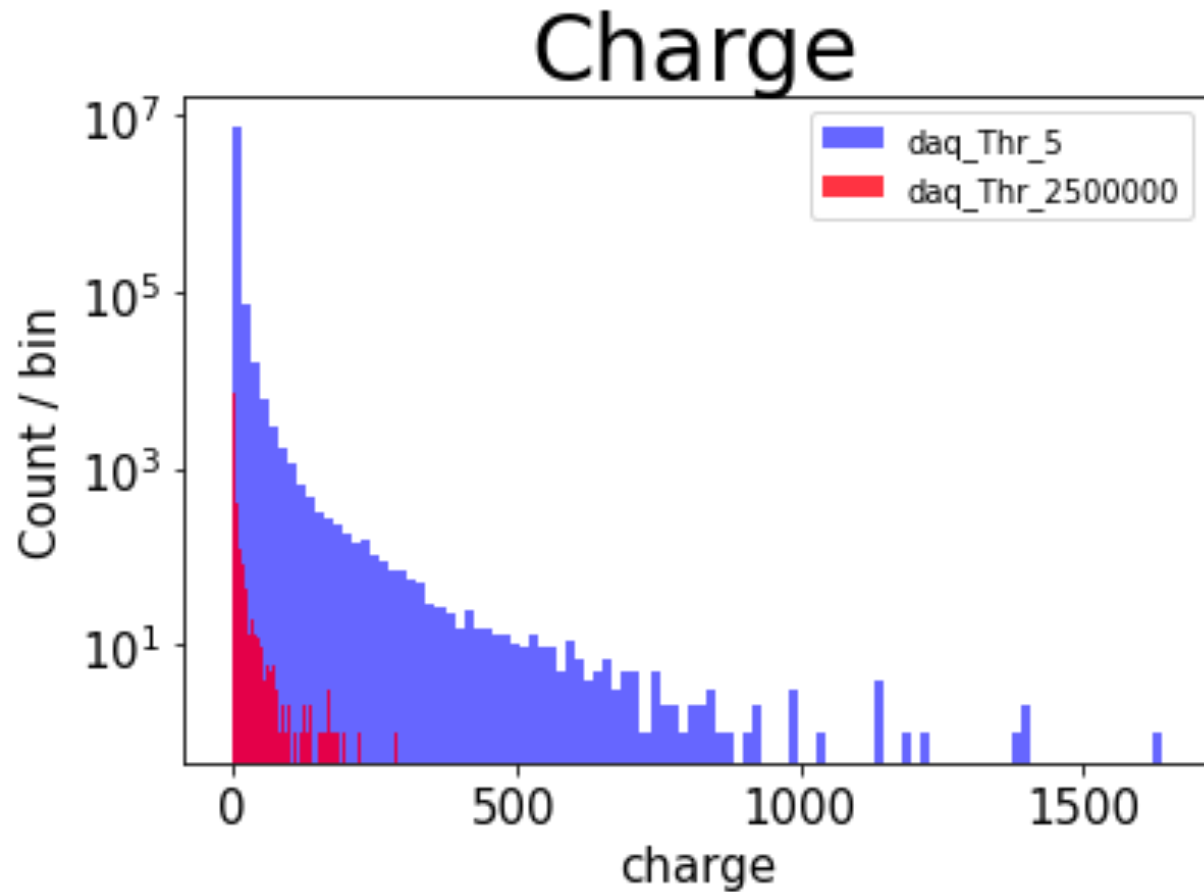
Number of hits



Number of hits

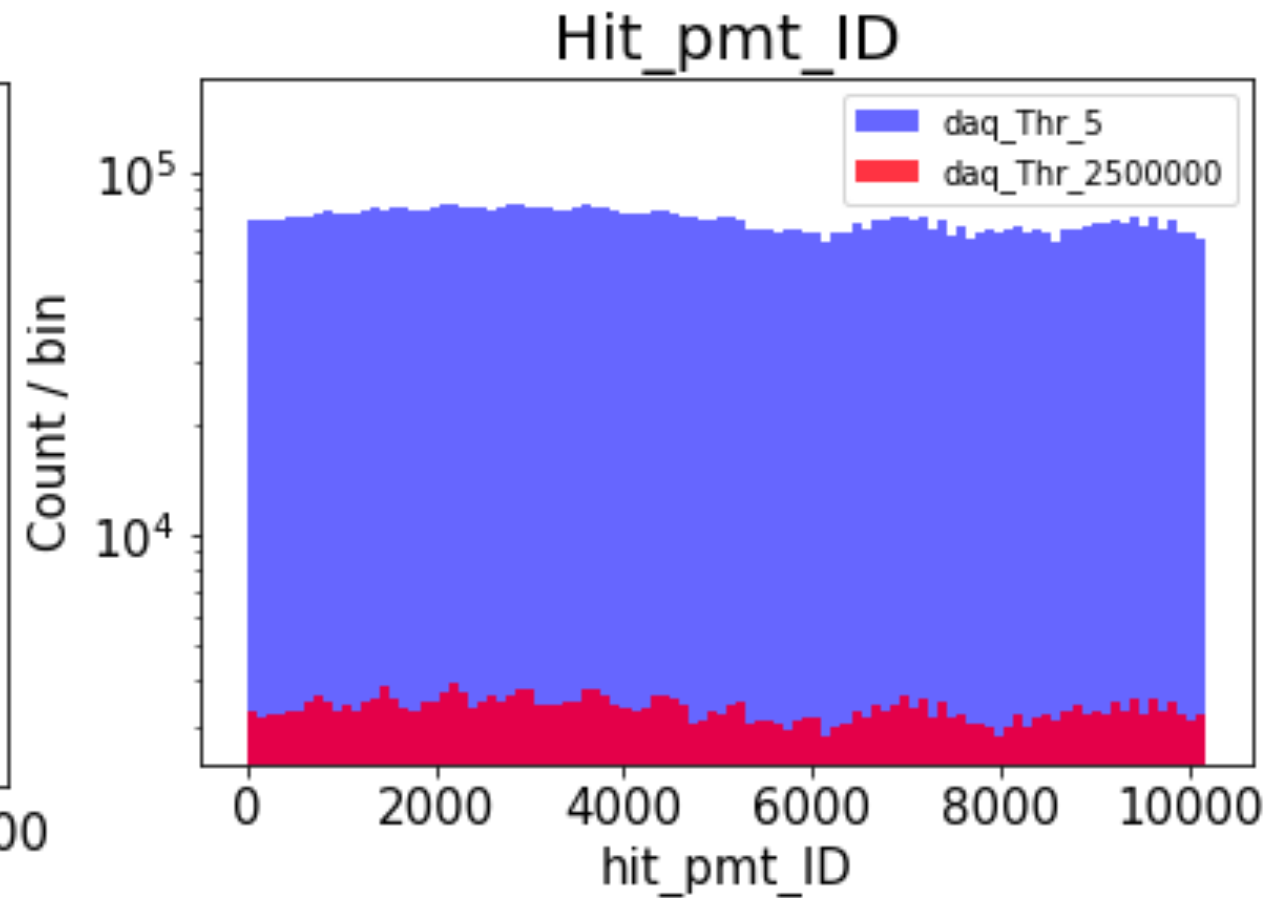
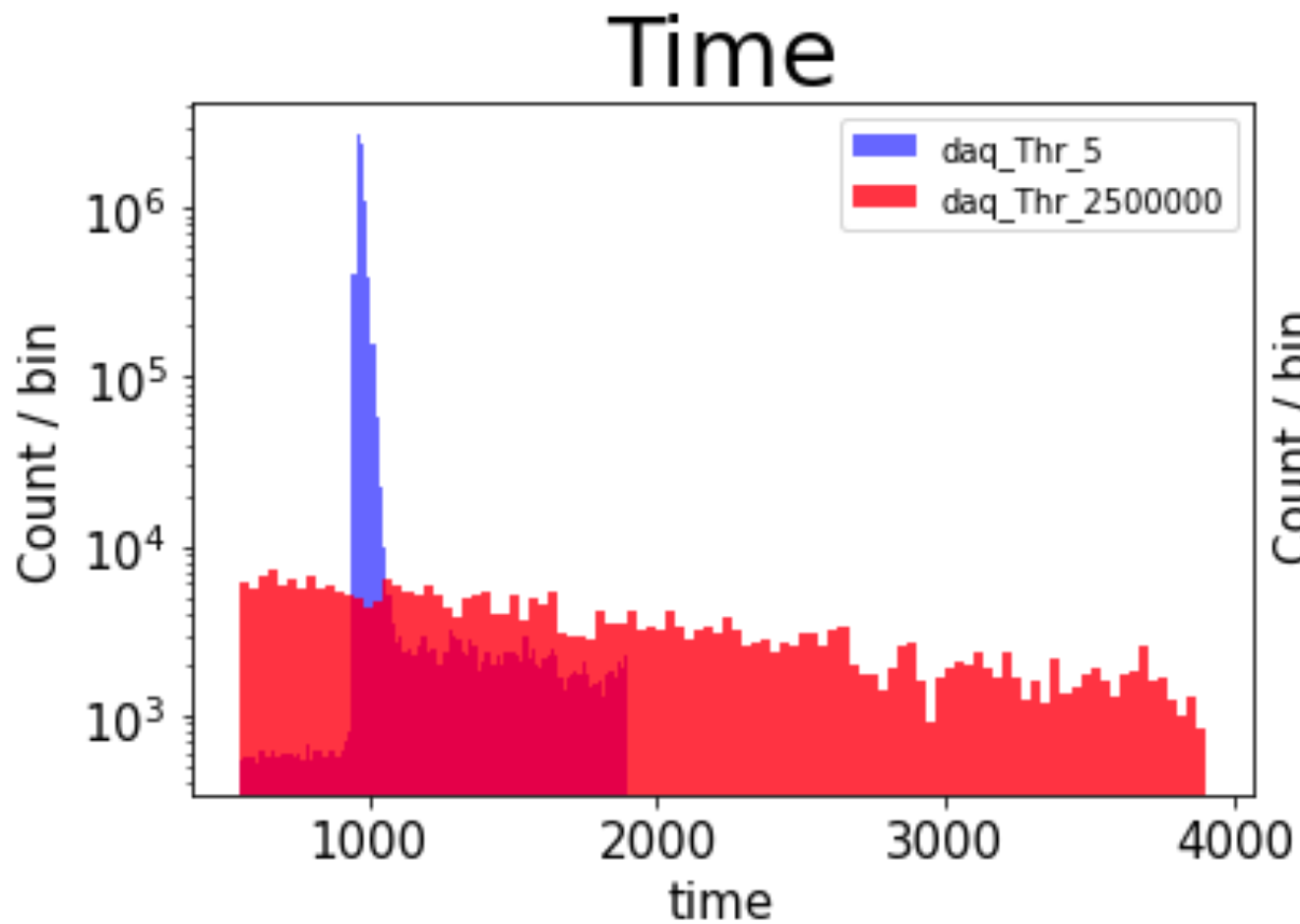


Charge PMT

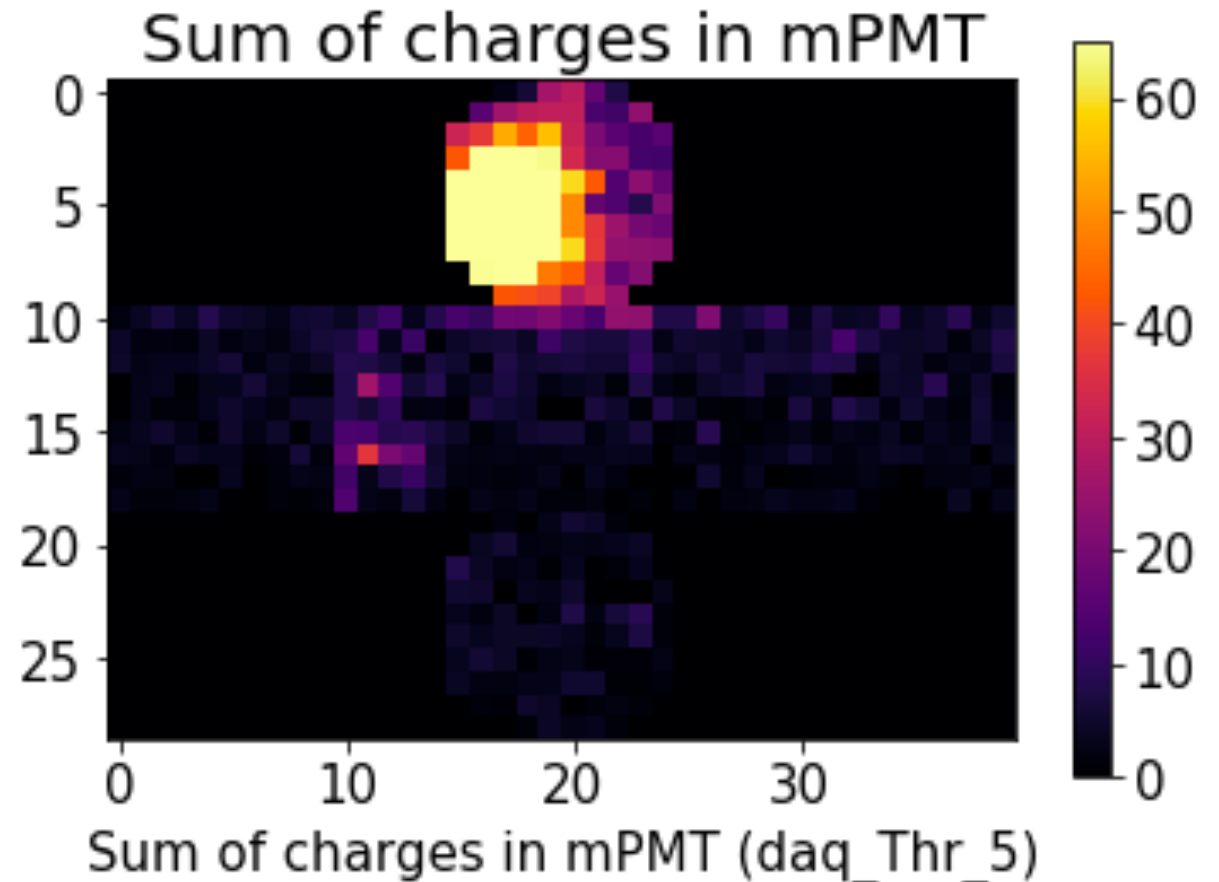
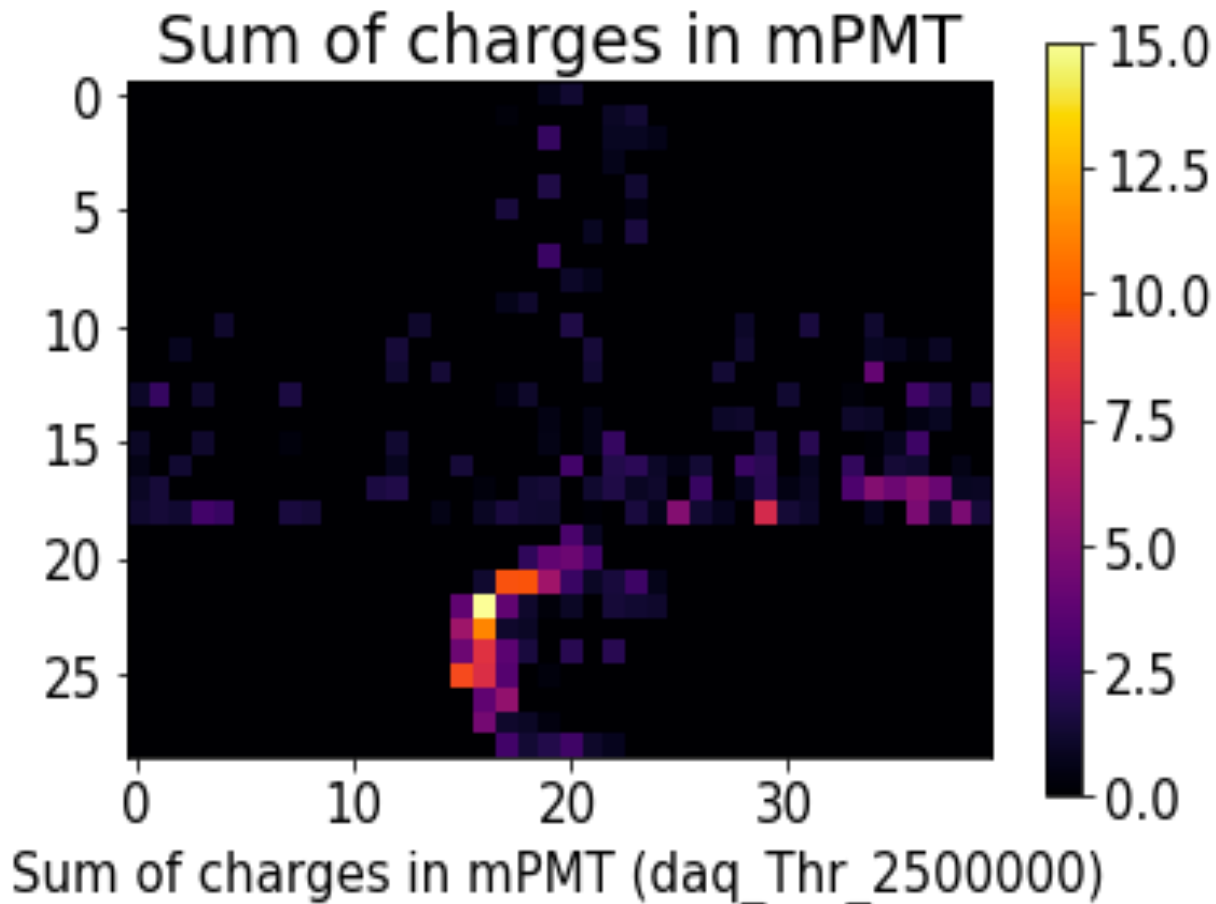


“Charge” refers to the charge of each PMT (not summed over mPMT)

PMT Time & PMT ID



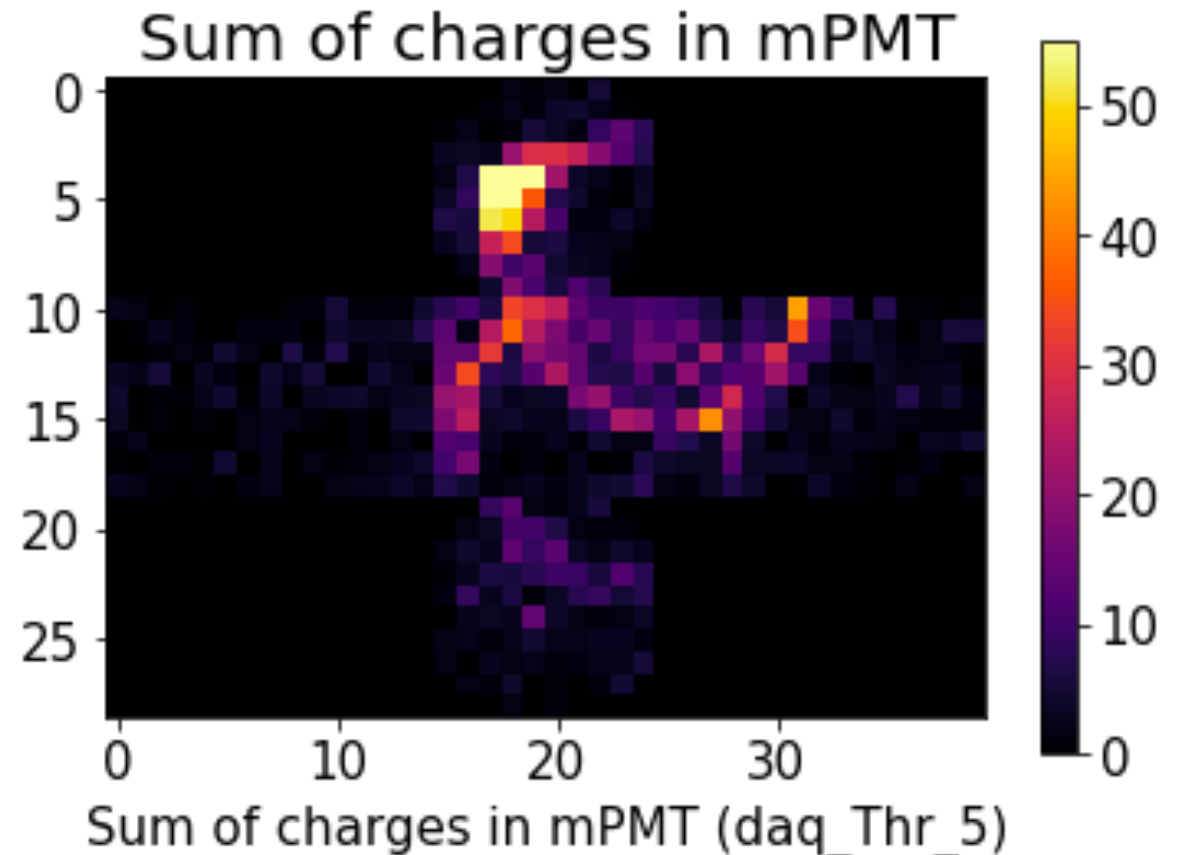
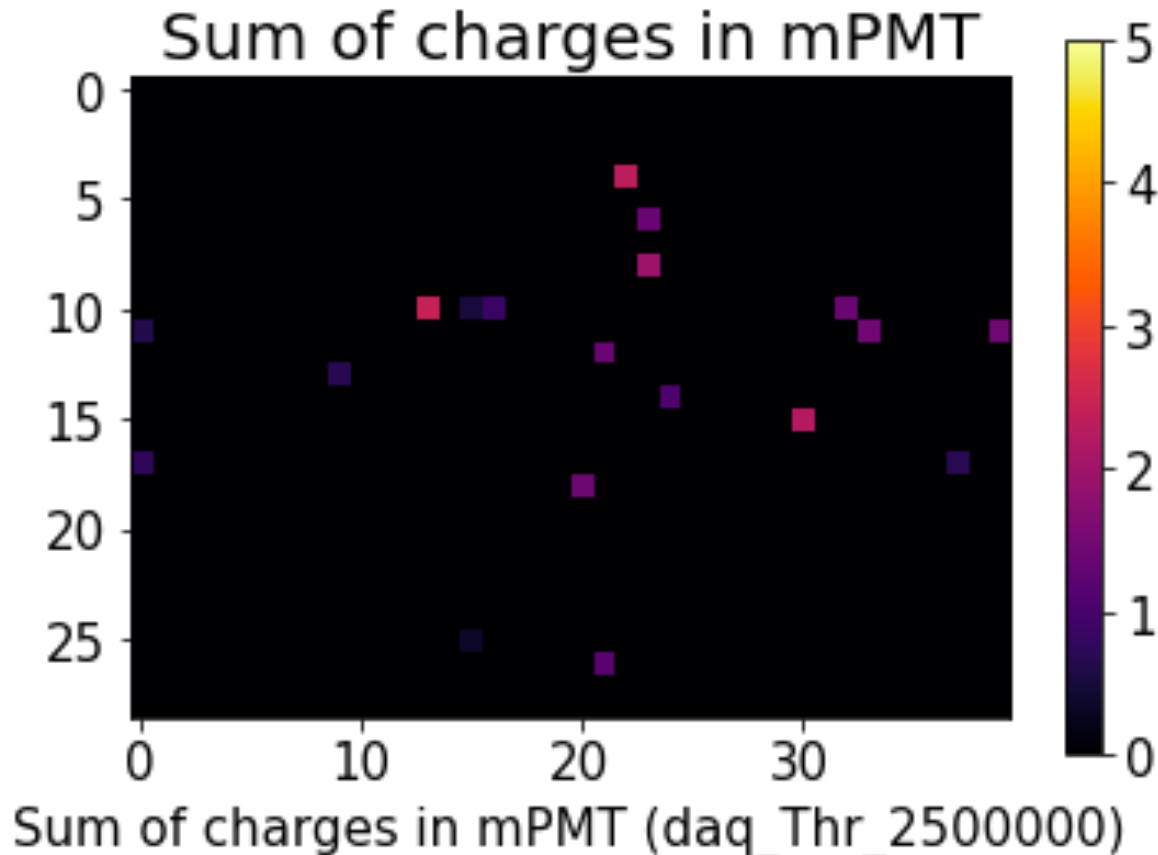
Event number 7



f['track_pid'][7] = [-211, 13, 13]

f['track_energy'][7] = [248.35913, 218.64708, 1259.1838]

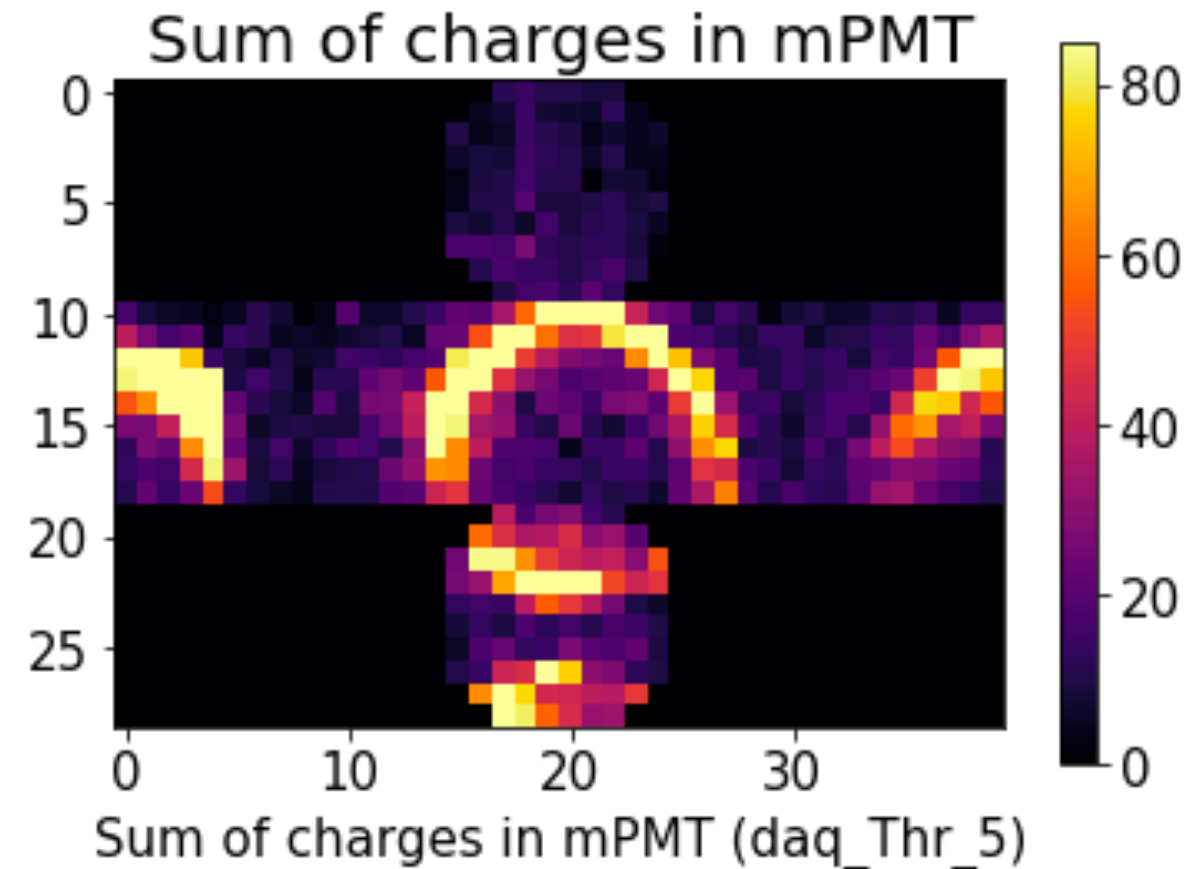
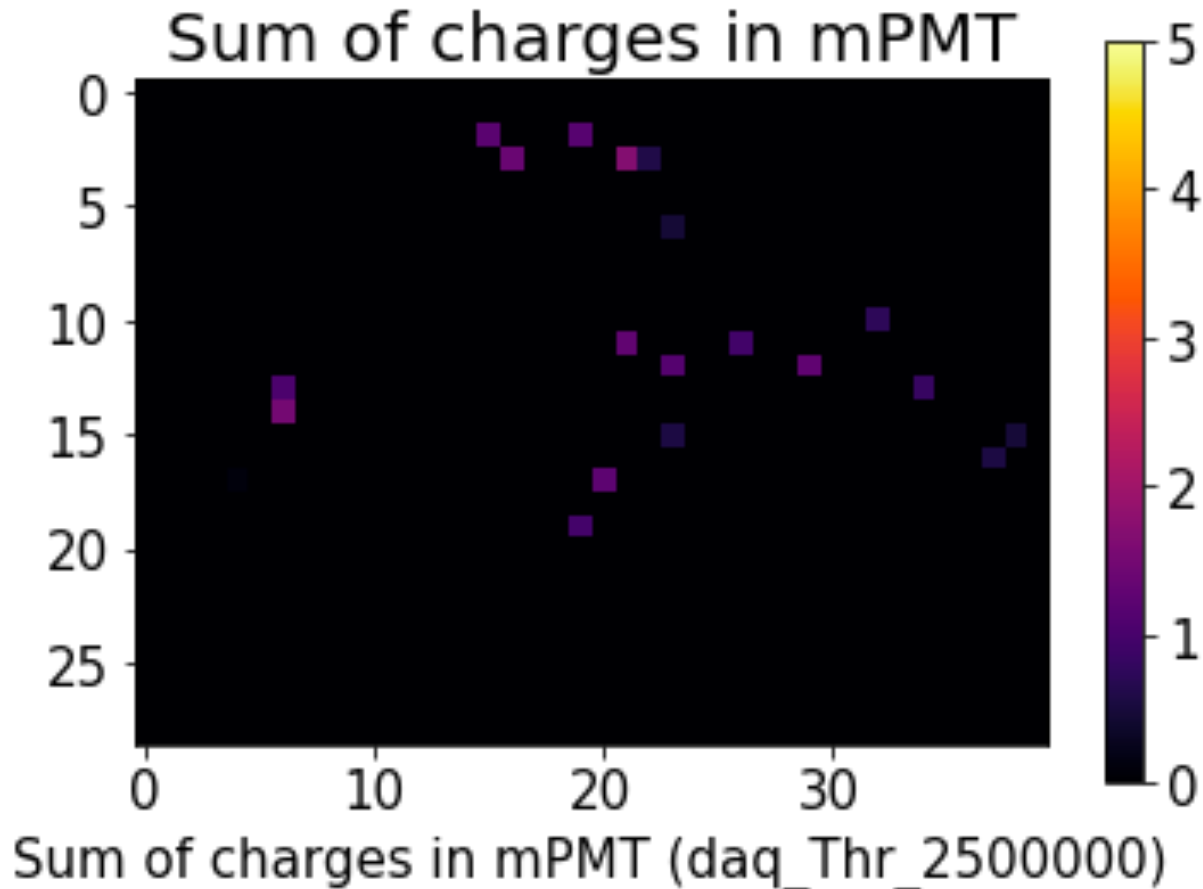
Event number 48



f['track_pid'][48] = [111, 11]

f['track_energy'][48] = [383.51065 , 15.473682]

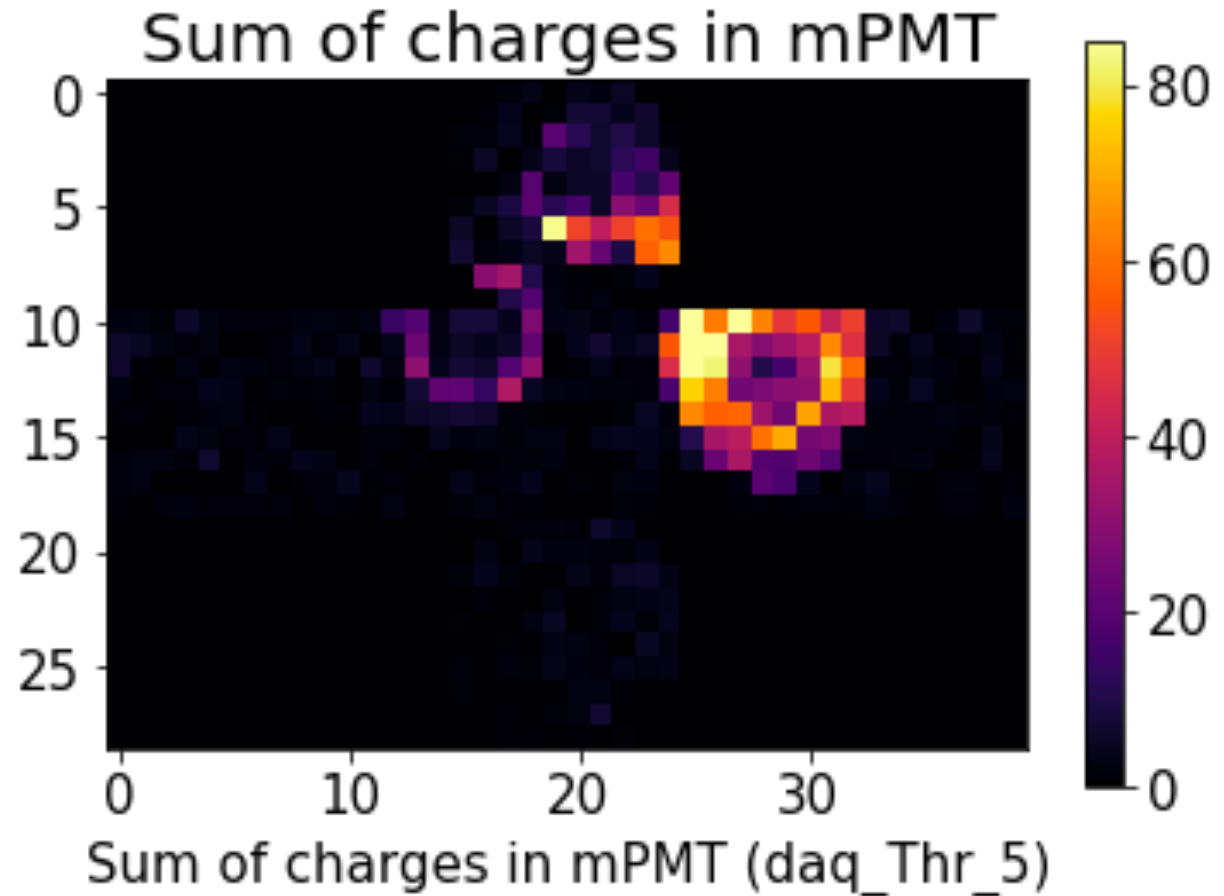
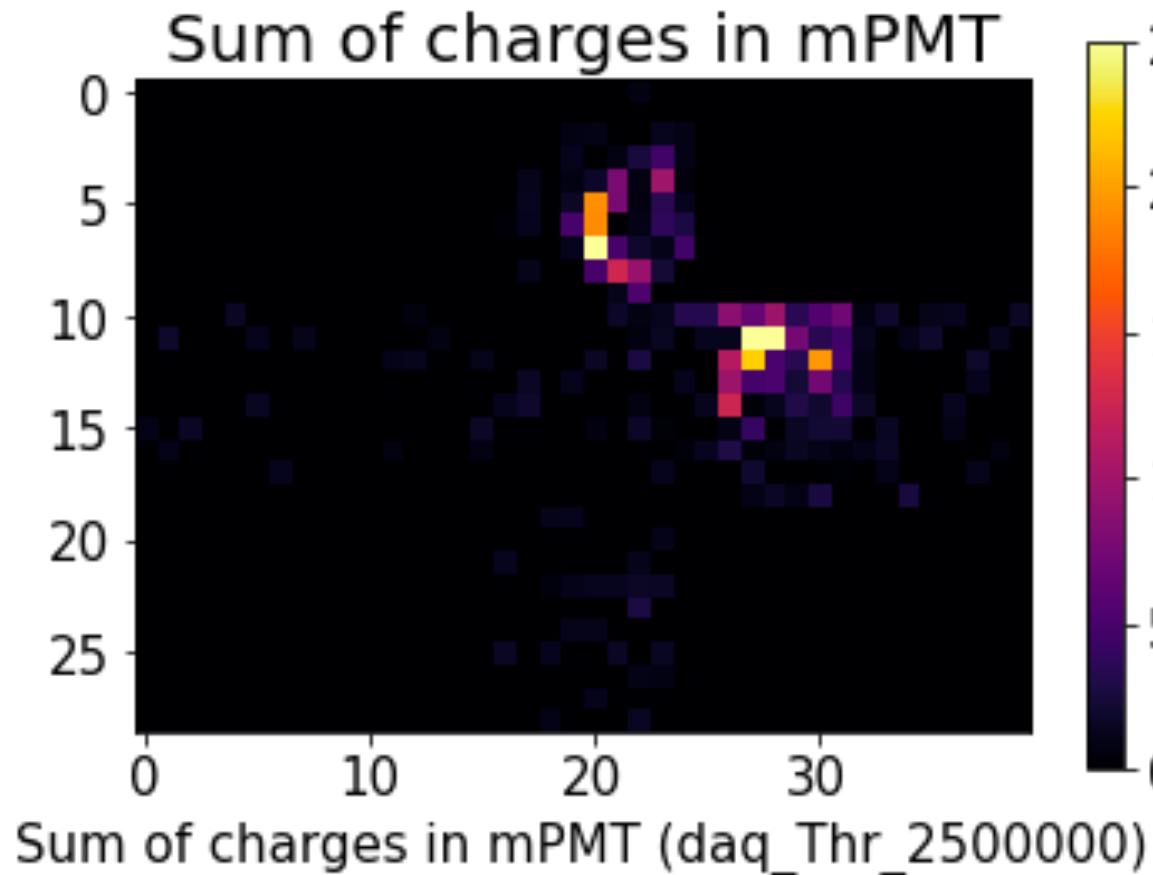
Event number 62



f['track_pid'][62] =[11, 11]

f['track_energy'][62] =[1104.8282, 839.5155]

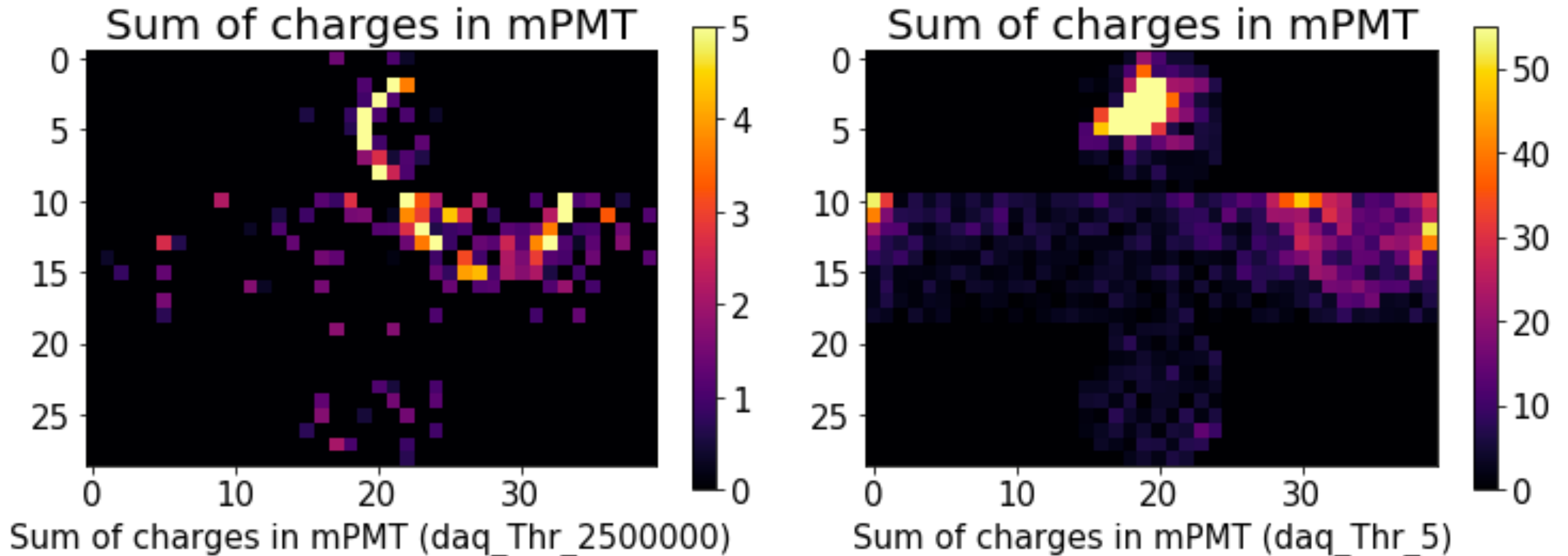
Event number 63



f['track_pid'][63] =[111, -211, -211]

f['track_energy'][63] =[165.21713, 231.10646, 921.66315]

Event number 71

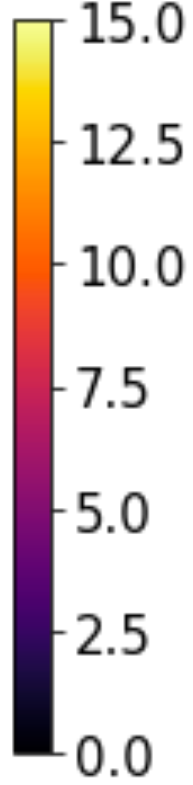
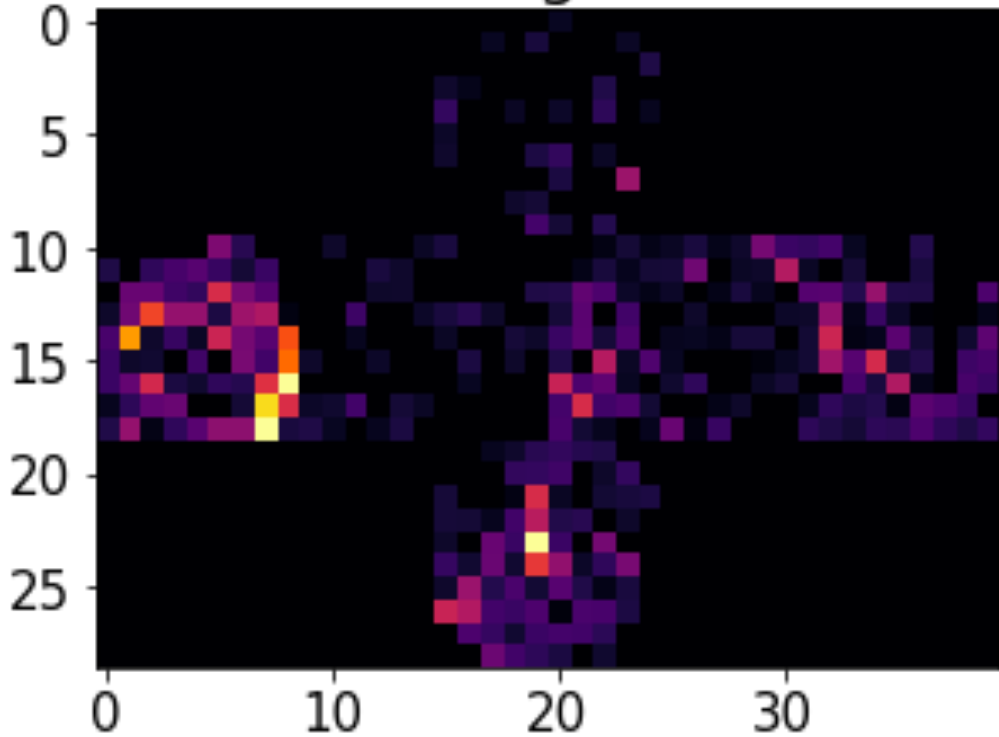


f['track_pid'][71]=[13, -211, 11, 11, -211]

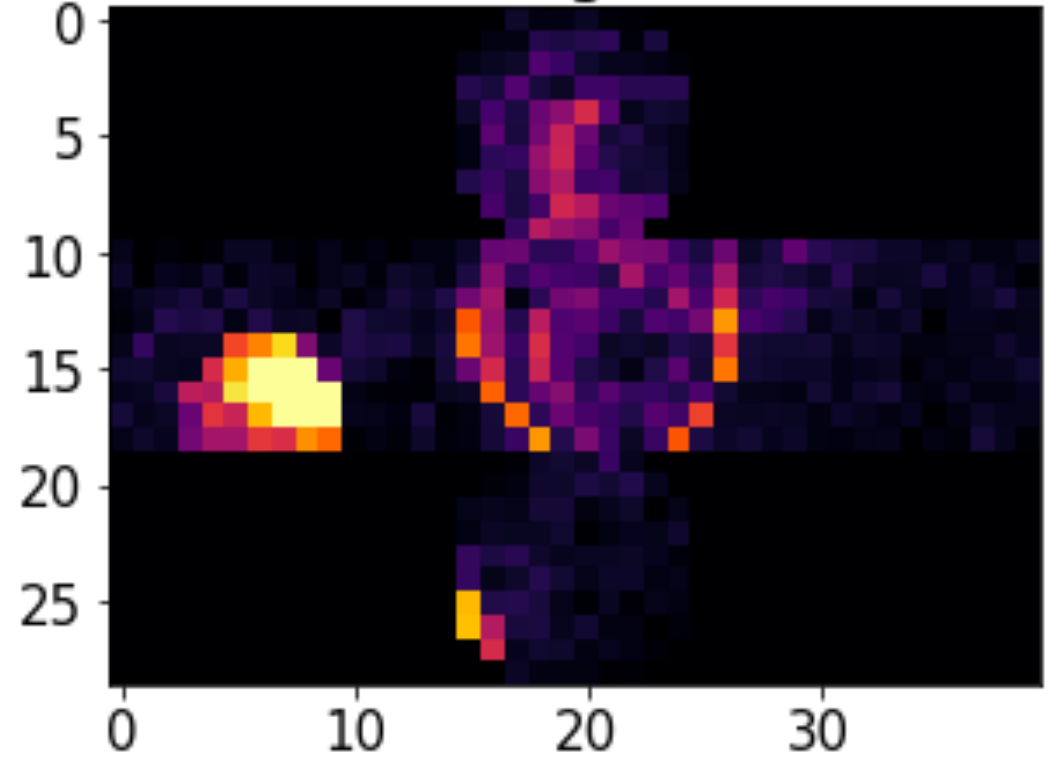
f['track_energy'][71]=[168.45276, 352.30667, 339.55054, 405.1178, 563.4869]

Event number 103

Sum of charges in mPMT



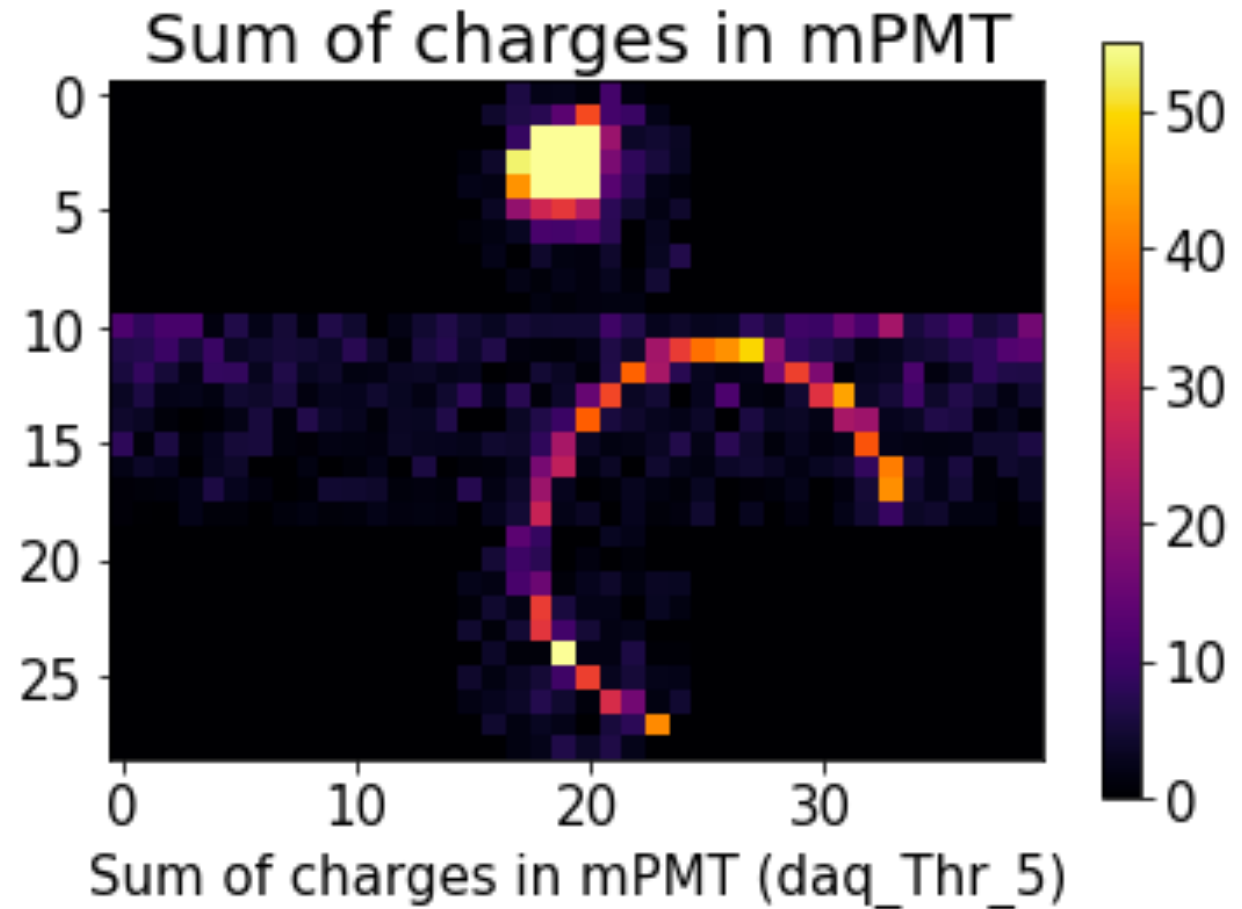
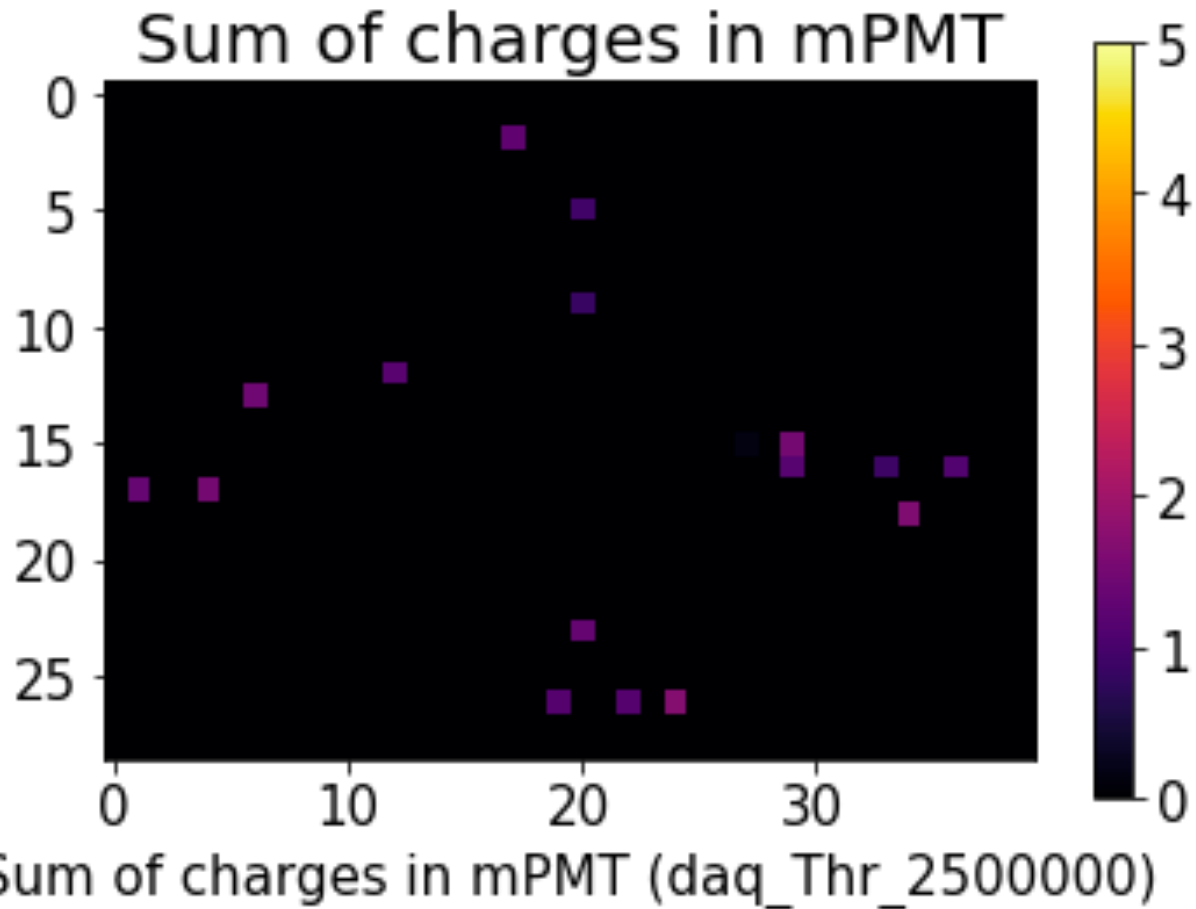
Sum of charges in mPMT



f['track_pid'][103] =[13, 13, 11, 11, 13]

f['track_energy'][103] =[160.92865, 195.35995, 224.50856, 363.12924, 609.53186]

Event number 115



f['track_pid'][115] =[111, -211]

f['track_energy'][115] =[1018.9548, 827.0346]