

# Cluster Analysis Report

Directory: /home/virgolaema/dune/online-pointing-utils/data/prod\_es/bkgs/

**Combined analysis of 1 file(s):**

es\_valid\_bg\_tick3\_ch2\_min2\_tot1\_e0\_clusters\_0.root

## Clustering Parameters:

**Time tolerance: 3 ticks**

**Channel tolerance: 2**

**Min cluster size: 2 TPs**

**Min TOT threshold: 1 samples (time over threshold)**

## Minimum Cluster Charge:

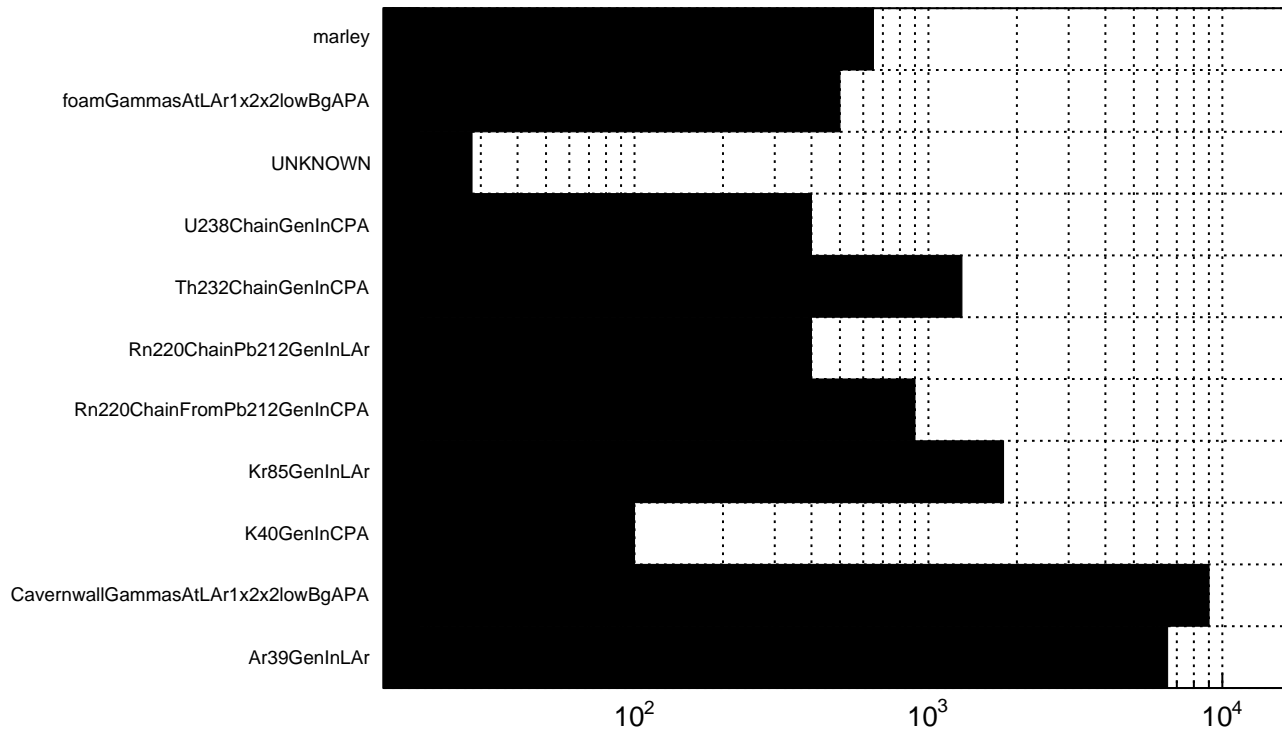
**Induction U: 292.0 ADC**

**Induction V: 292.0 ADC**

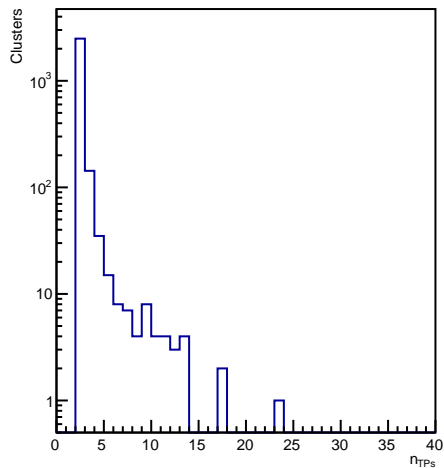
**Collection X: 254.0 ADC**  
**Collection Y: 254.0 ADC**

Generated on: Dec 10, 2025

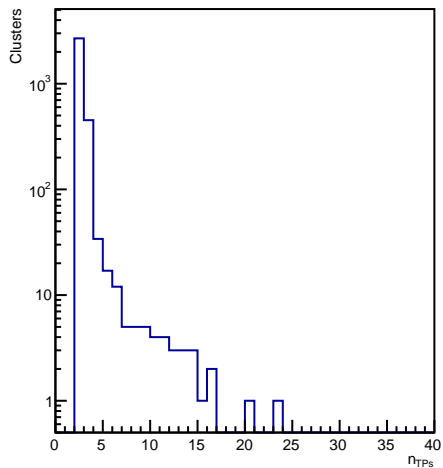
# Clusters by true label



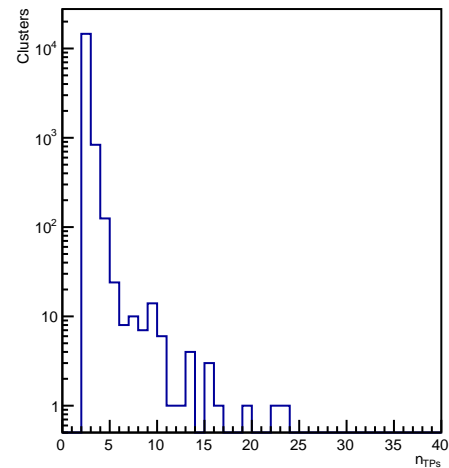
Cluster size (n\_tps) - U



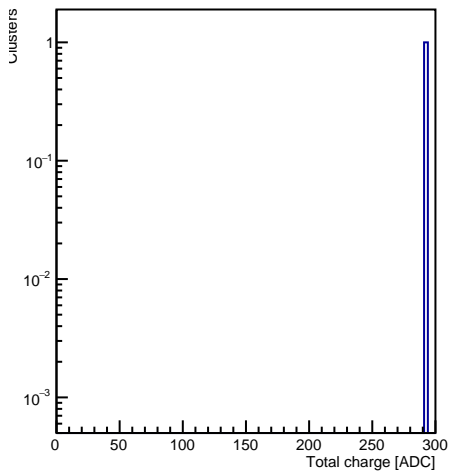
Cluster size (n\_tps) - V



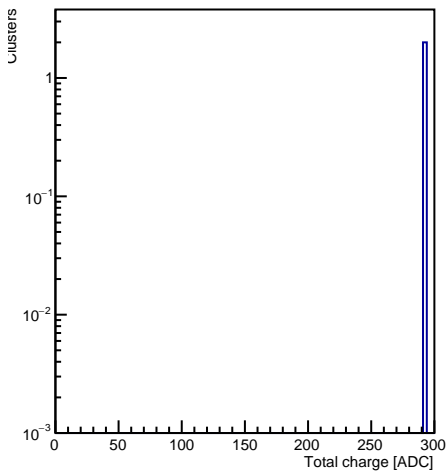
Cluster size (n\_tps) - X



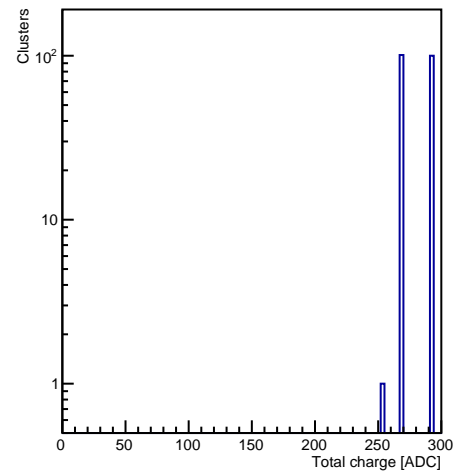
Total charge - U



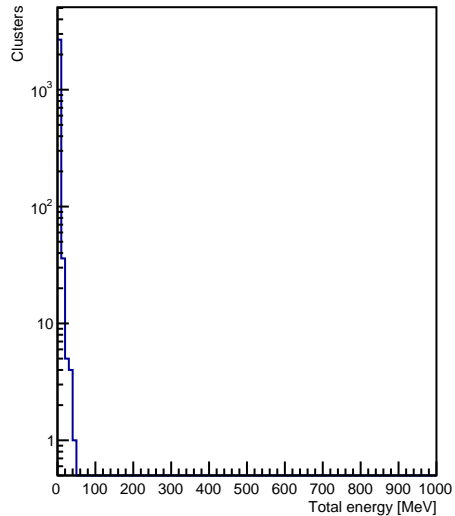
Total charge - V



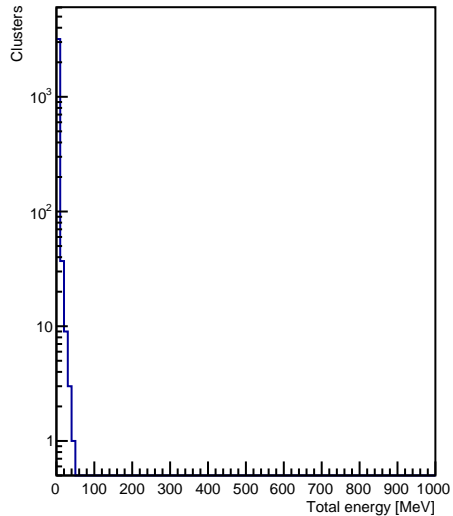
Total charge - X



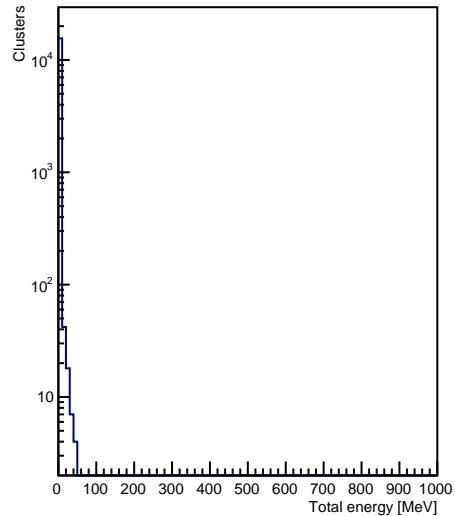
Total energy - U



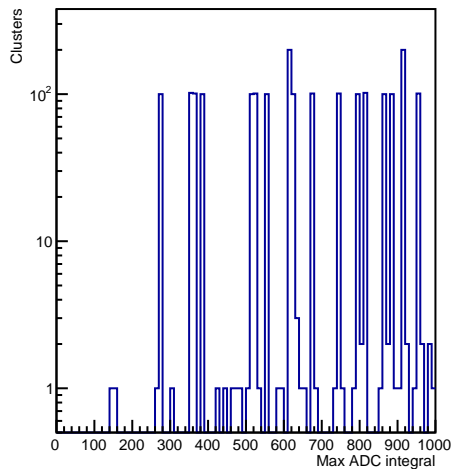
Total energy - V



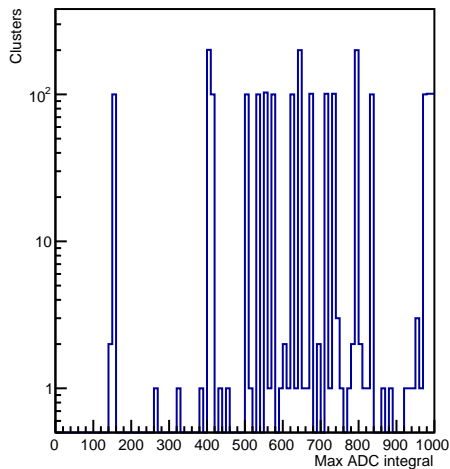
Total energy - X



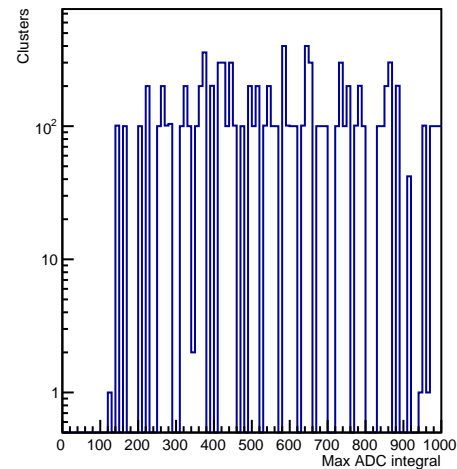
Max TP adc\_integral - U



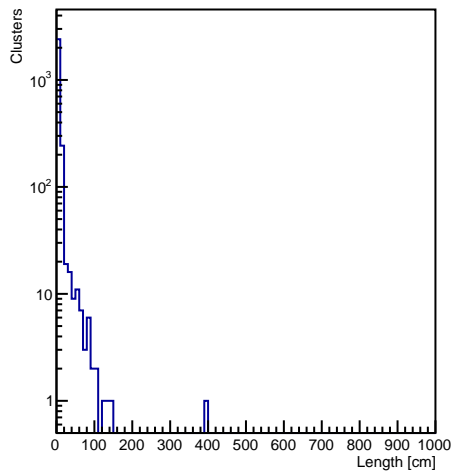
Max TP adc\_integral - V



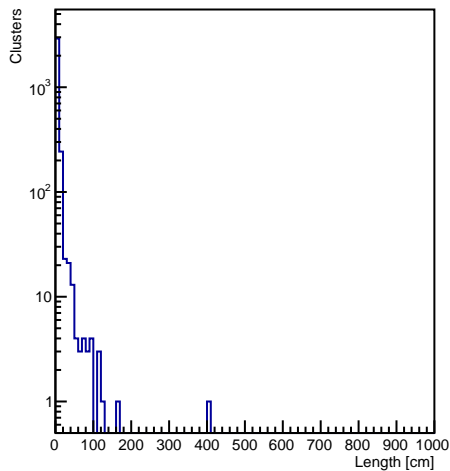
Max TP adc\_integral - X



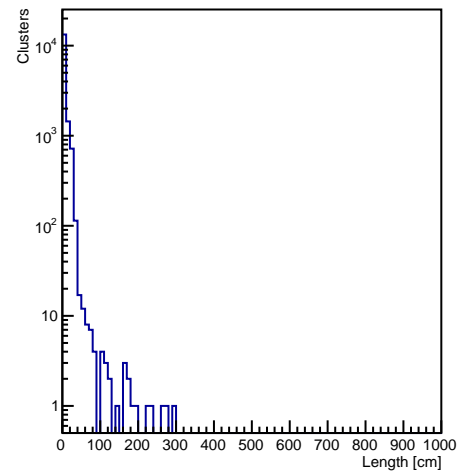
Total length (cm) - U

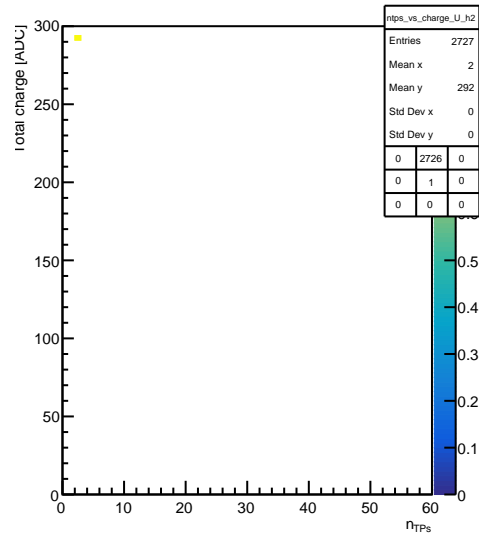
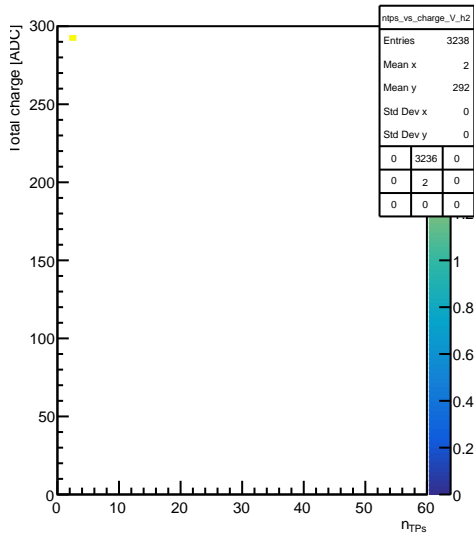
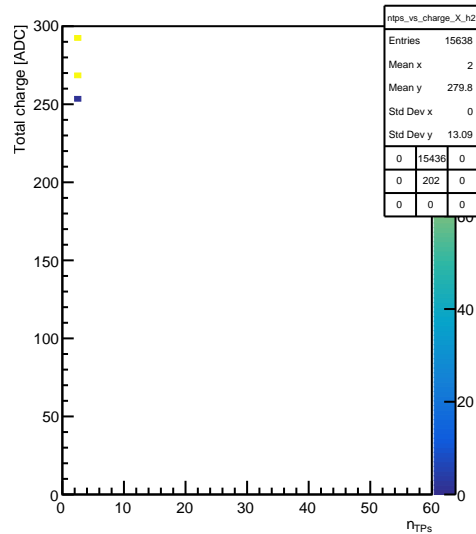


Total length (cm) - V

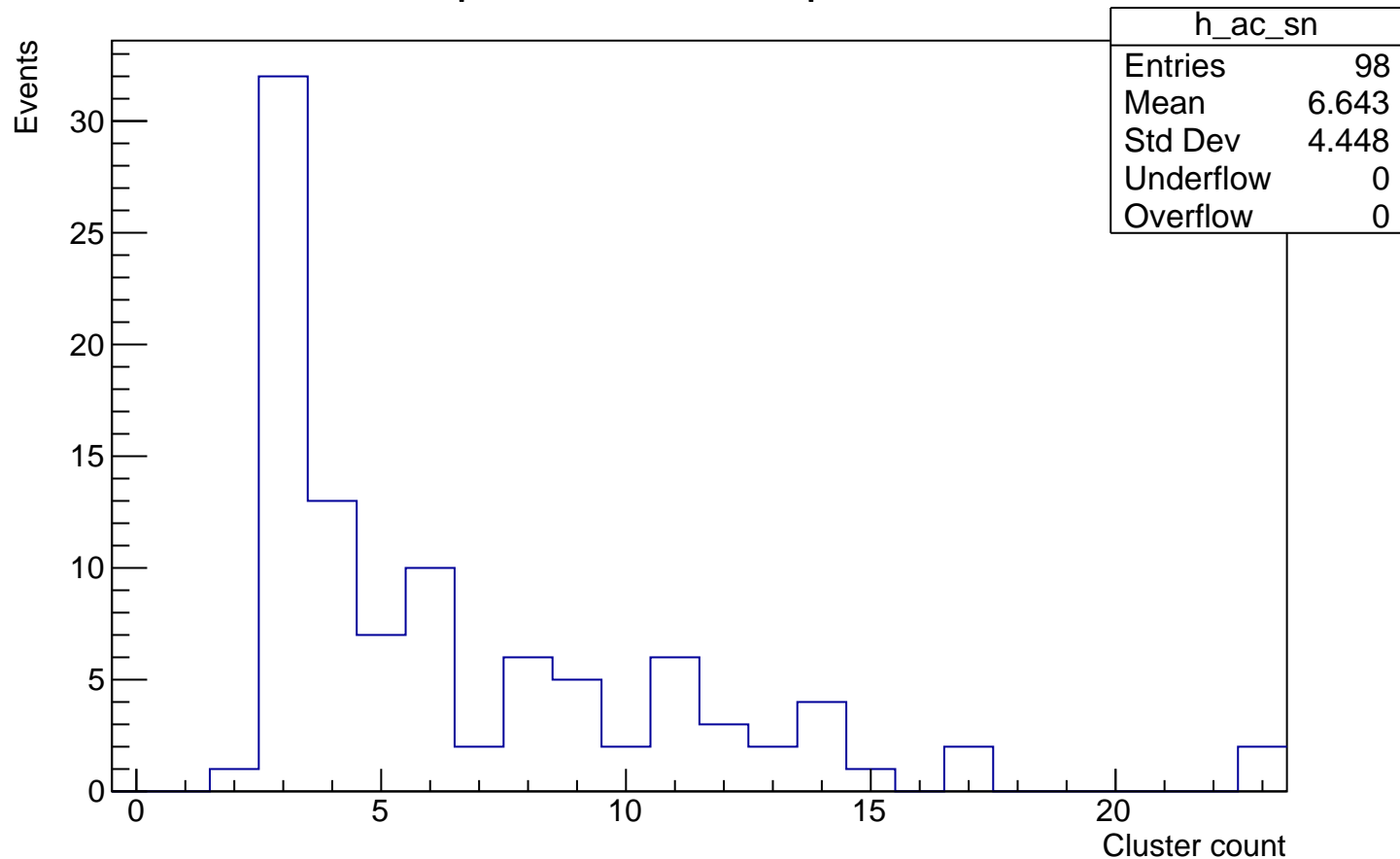


Total length (cm) - X

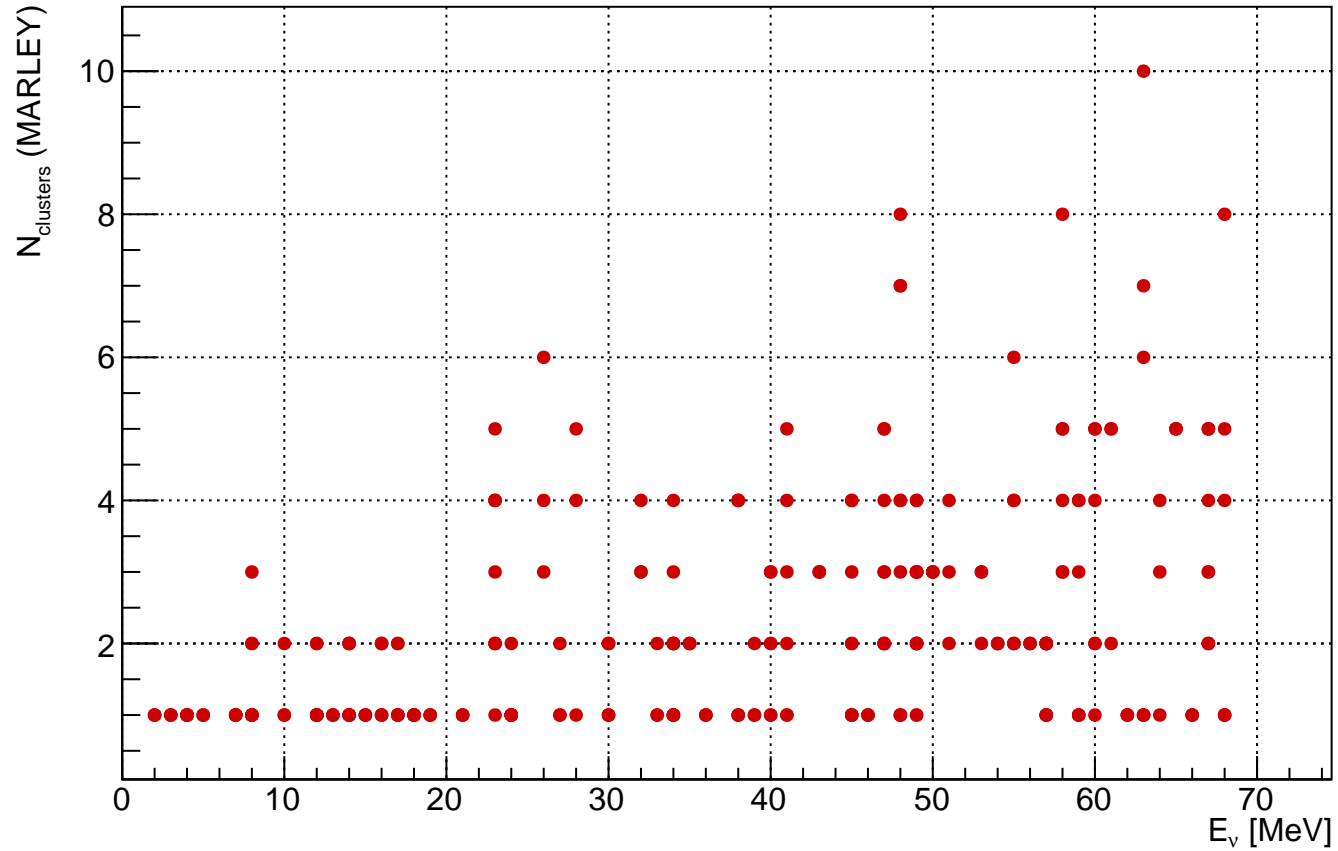


$n_{\text{TPs}}$  vs total charge - U $n_{\text{TPs}}$  vs total charge - V $n_{\text{TPs}}$  vs total charge - X

## Supernova clusters per event

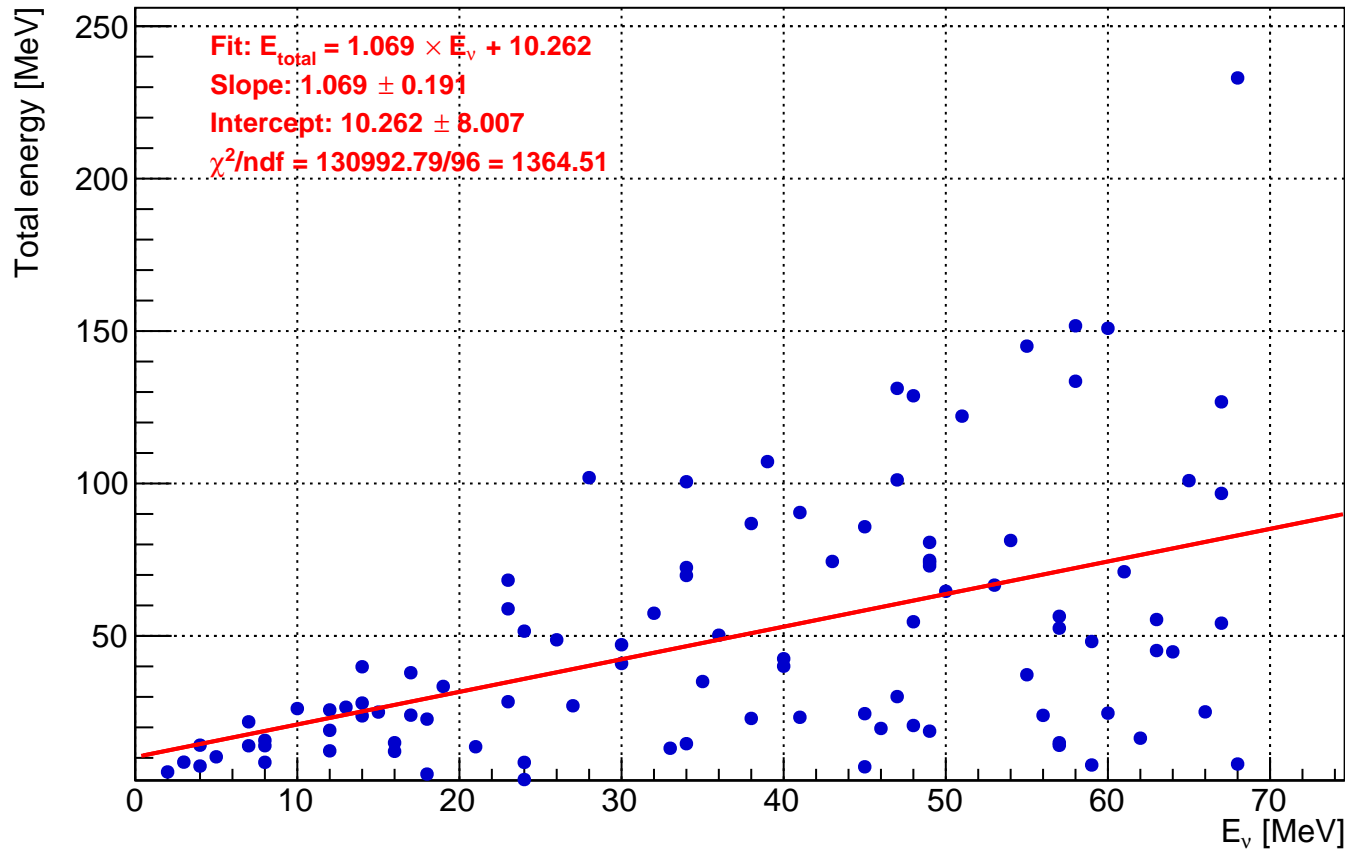


# MARLEY clusters vs $E_\nu$

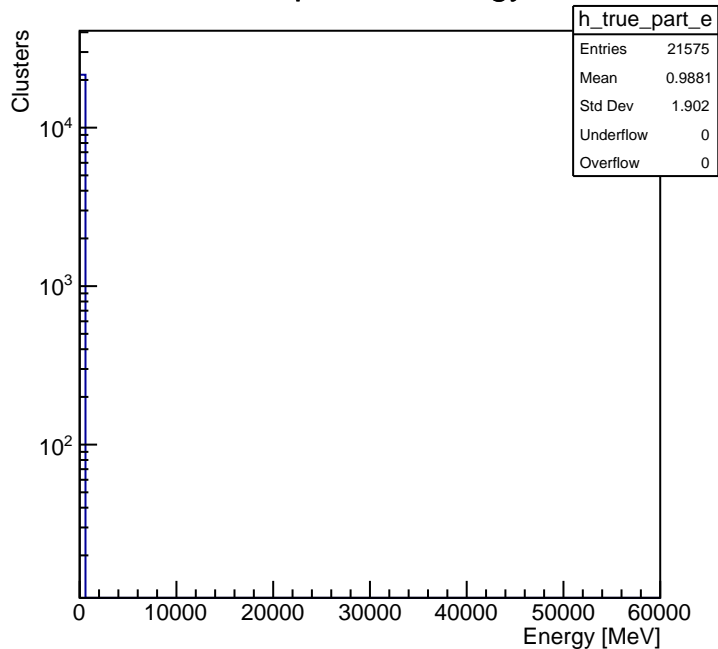




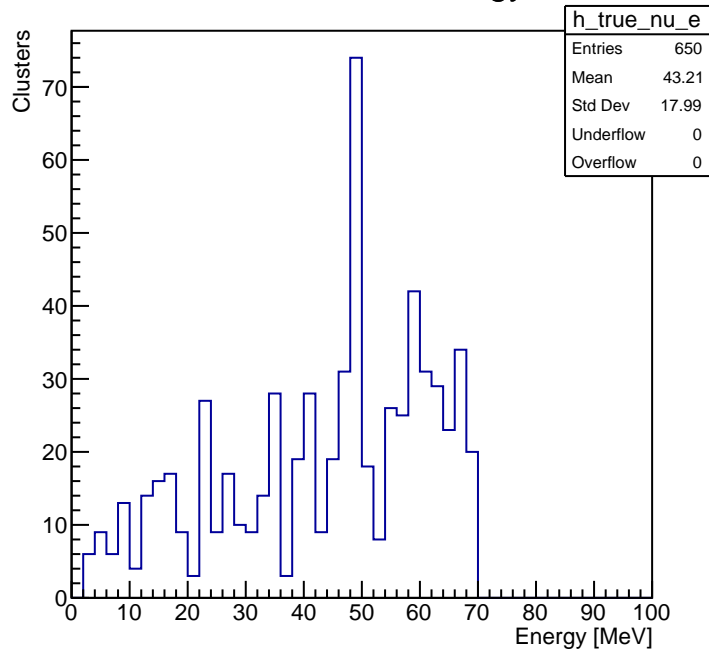
# Total energy of MARLEY clusters vs $E_v$



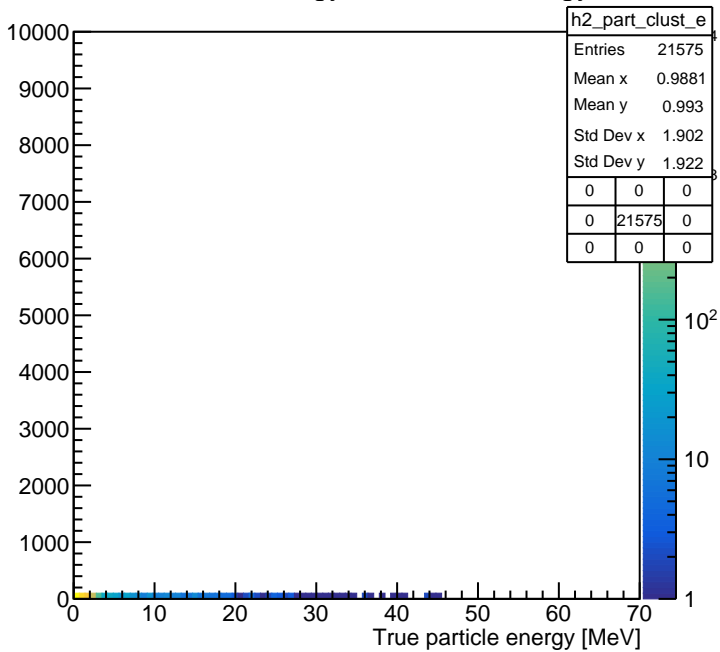
## True particle energy



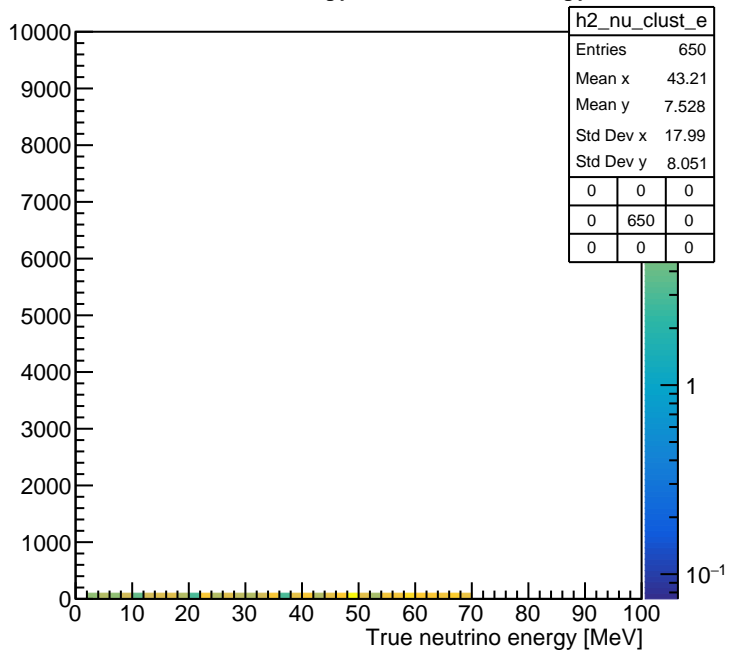
## True neutrino energy



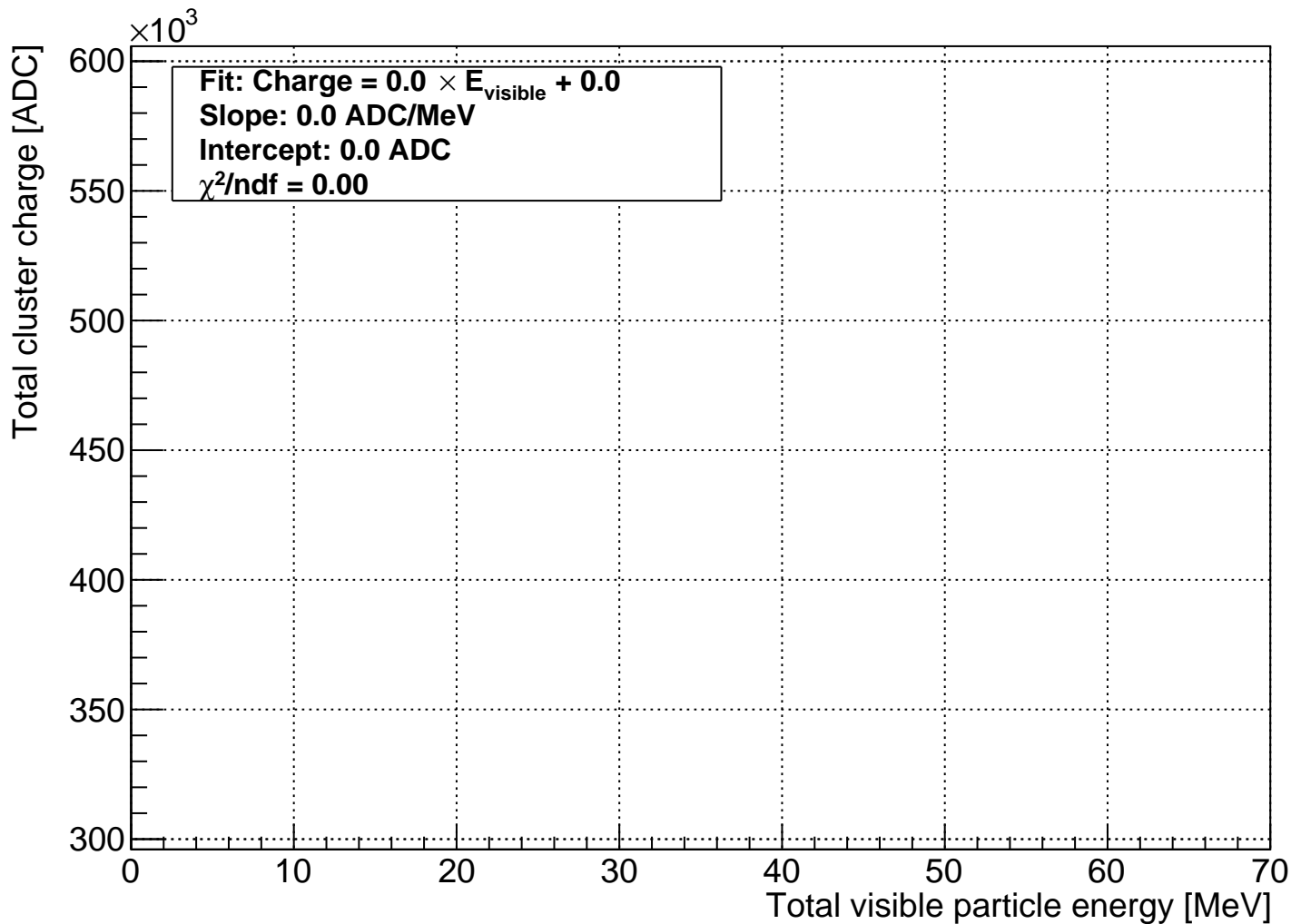
### Particle energy vs cluster energy

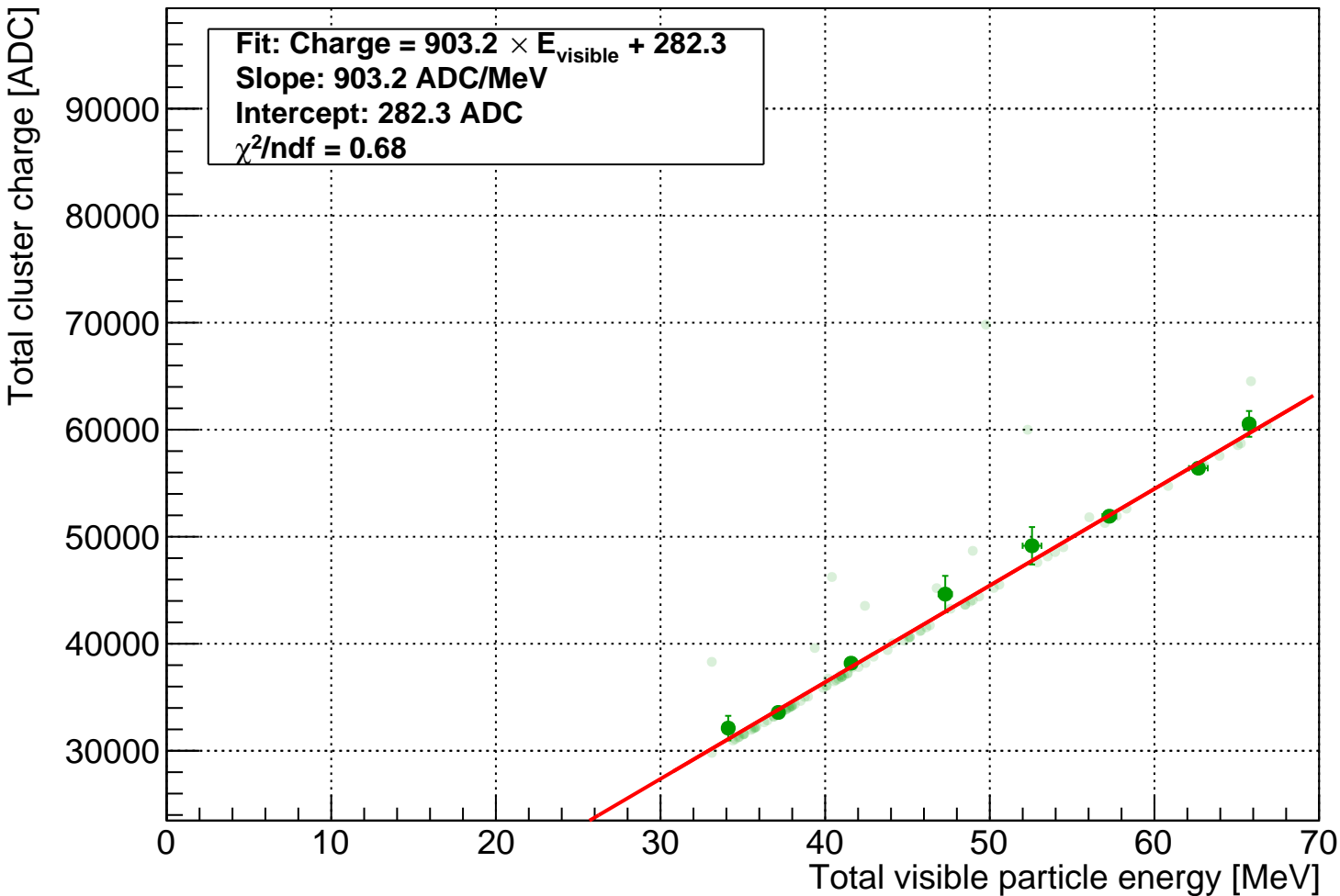


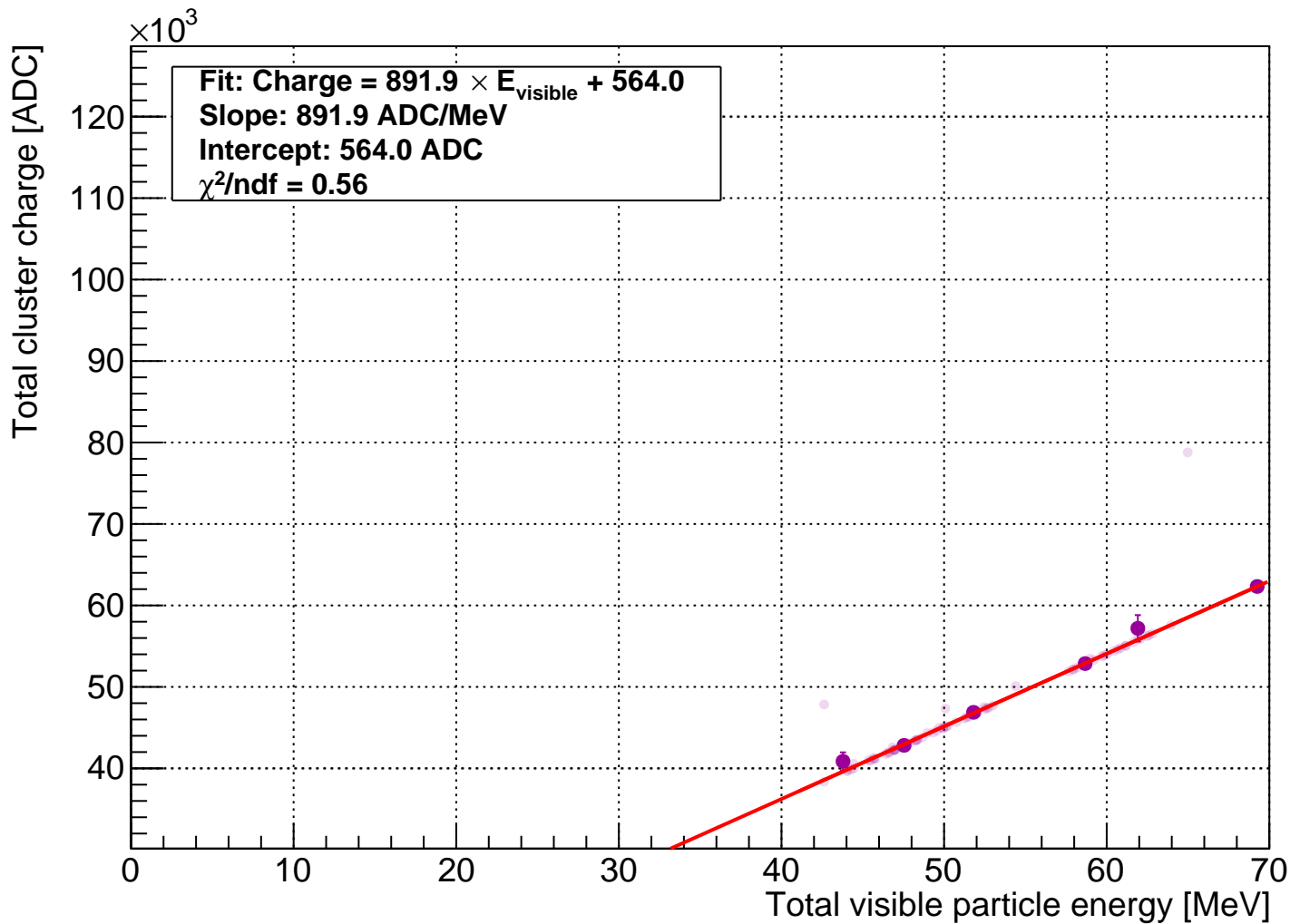
### Neutrino energy vs cluster energy



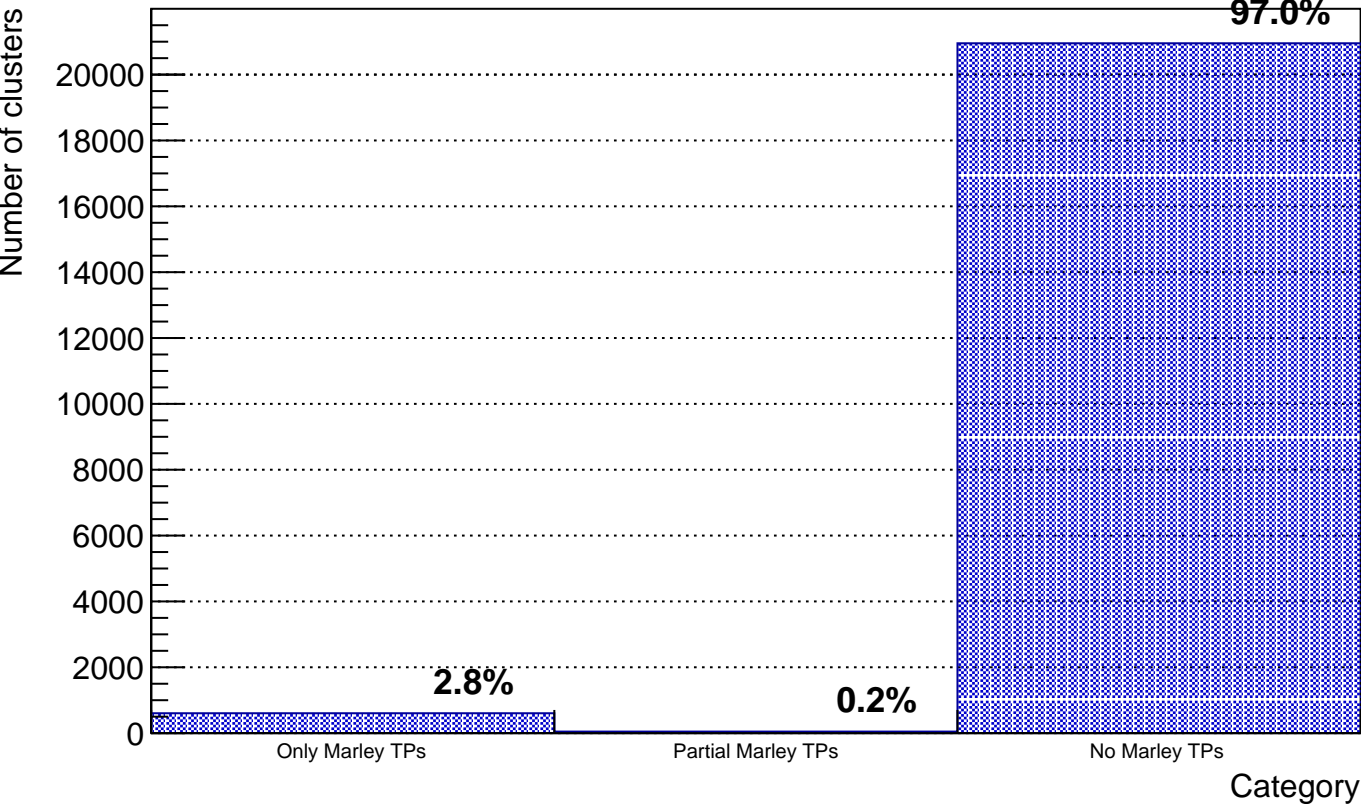
Total visible energy vs total cluster charge per event (Collection Plane X)



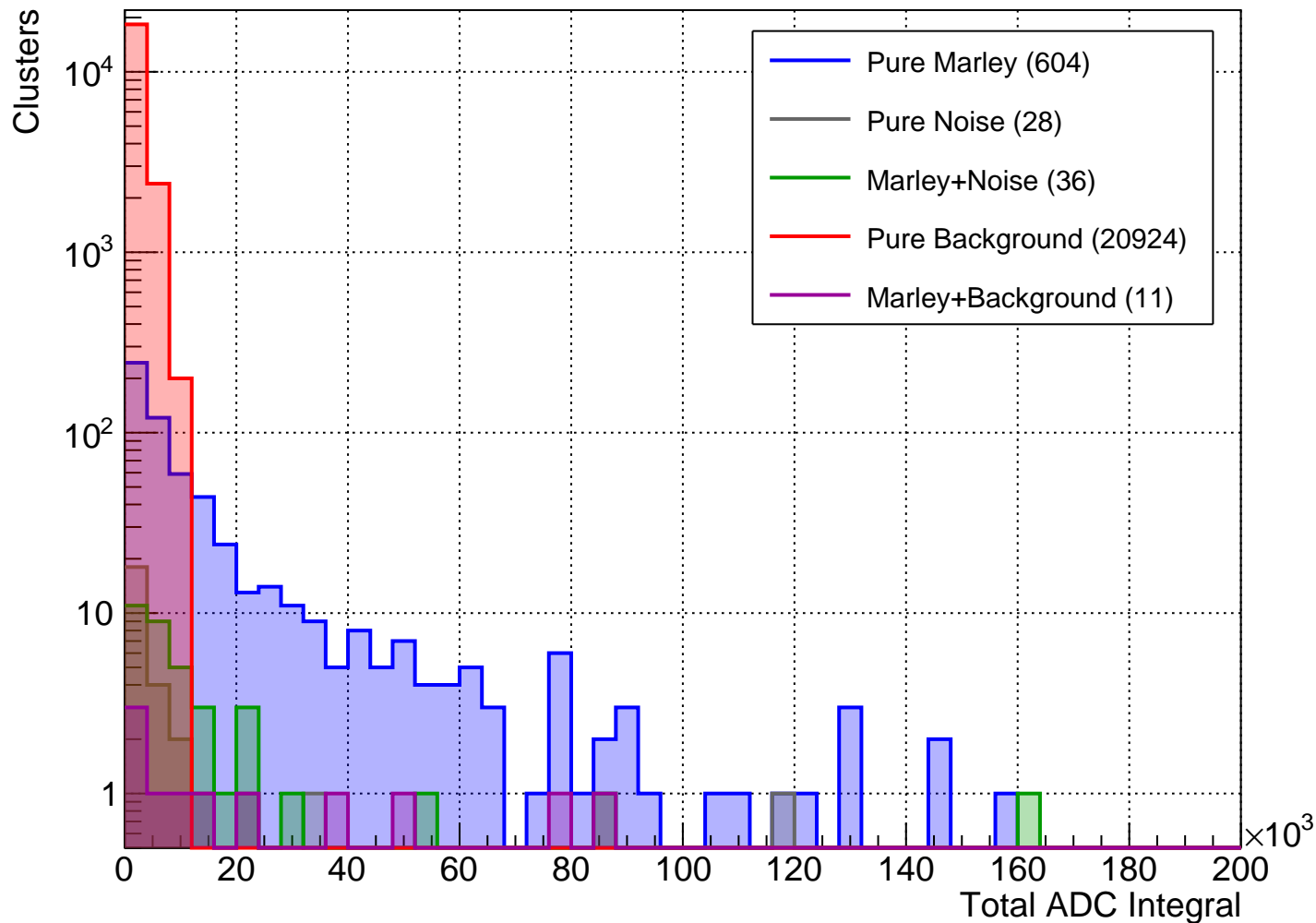




# Clusters by Marley TP content



# Total ADC Integral by Cluster Family





# Total Energy by Cluster Family

