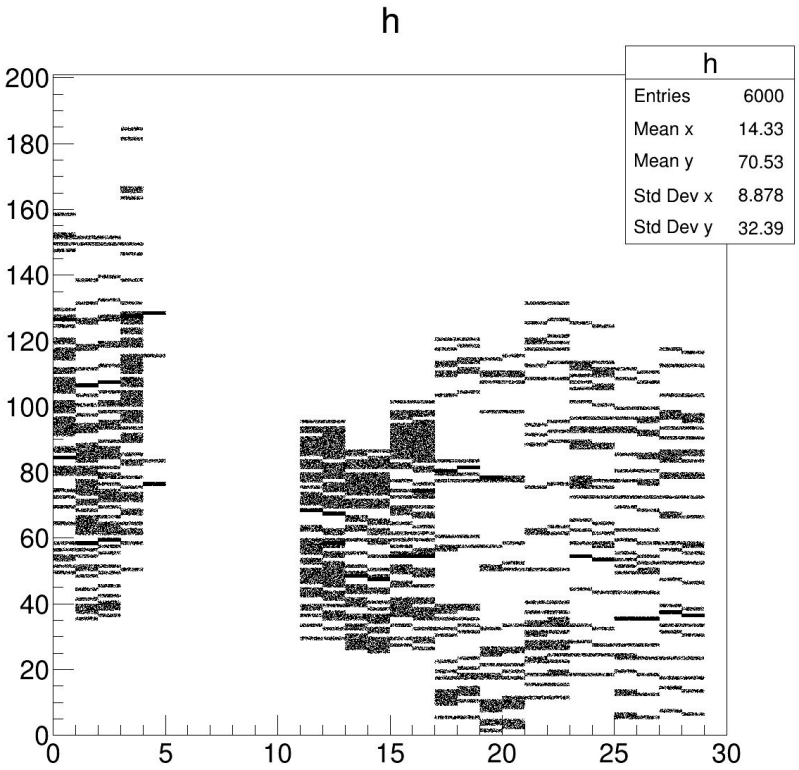
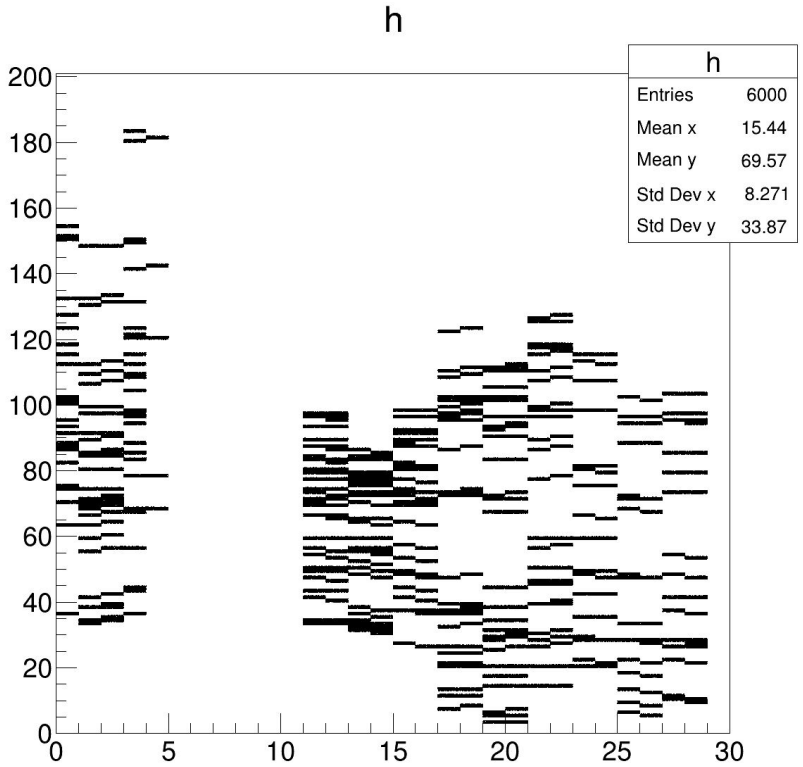
QTracker Filtering Update

2/9/22

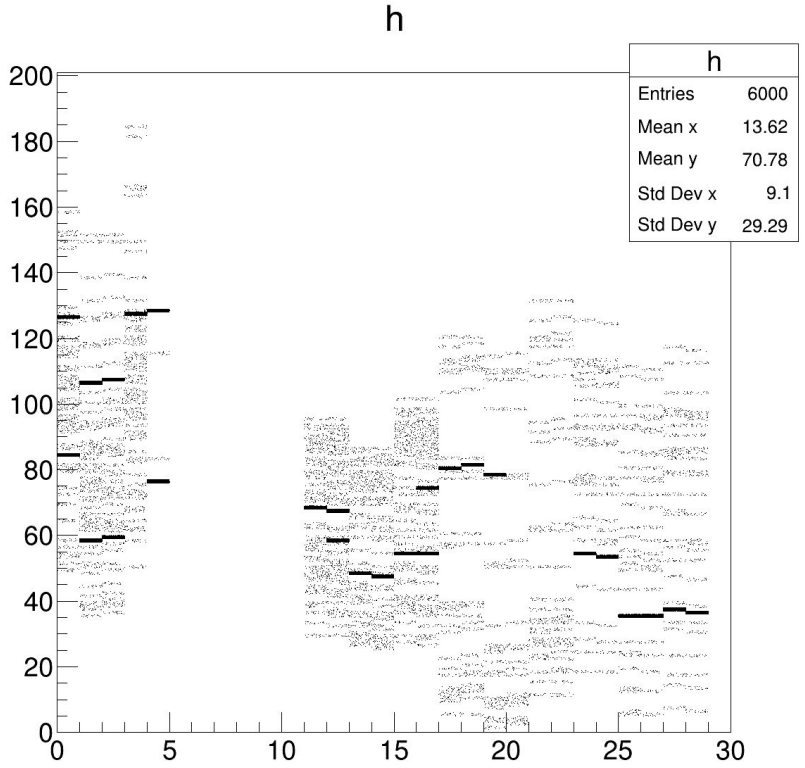
Process

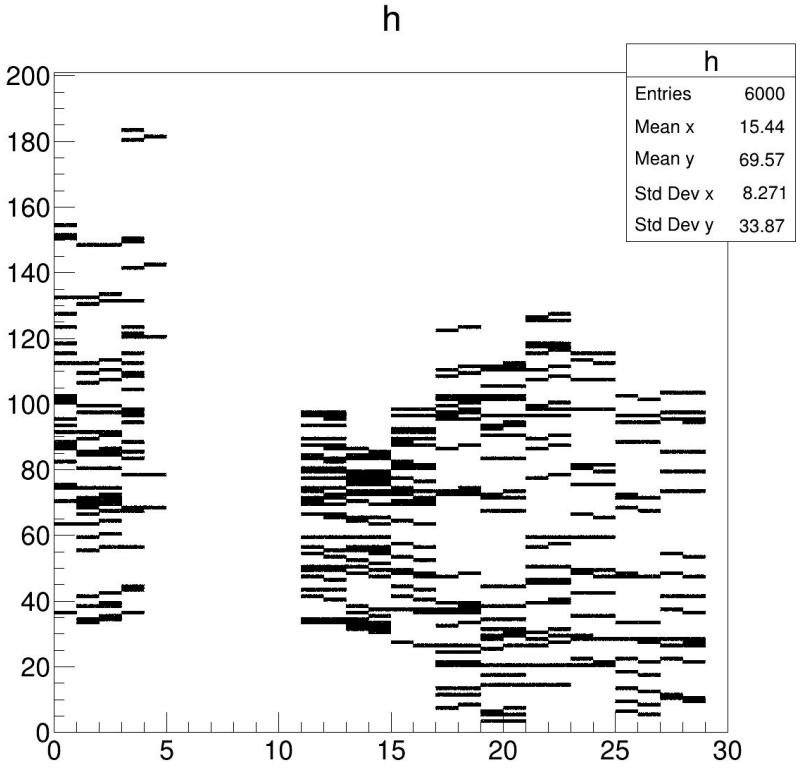
- Take Monte Carlo simulated particle tracks and combine them into more complicated events
  - Random number of full tracks (Poisson distribution with mean 2)
  - Possibly add dimuon track from target (probability 25%)
  - Add single station tracklets to event to make data noisy
  - Add random noise
- Using these events, train a neural network to differentiate between events with dimuon pair and without.
- Evaluate performance, including false positive and false negative rate, and improvement of signal to noise ratio.





One of these has a dimuon, one doesn’t.





This is the signal we're trying to detect