

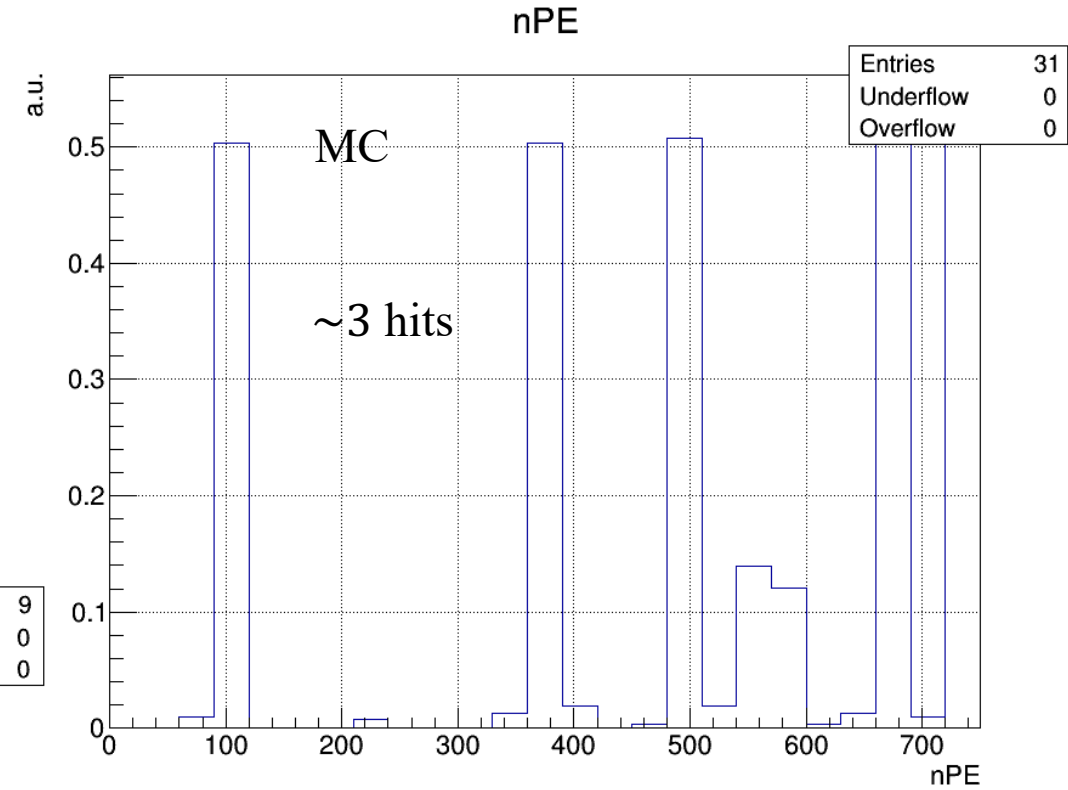
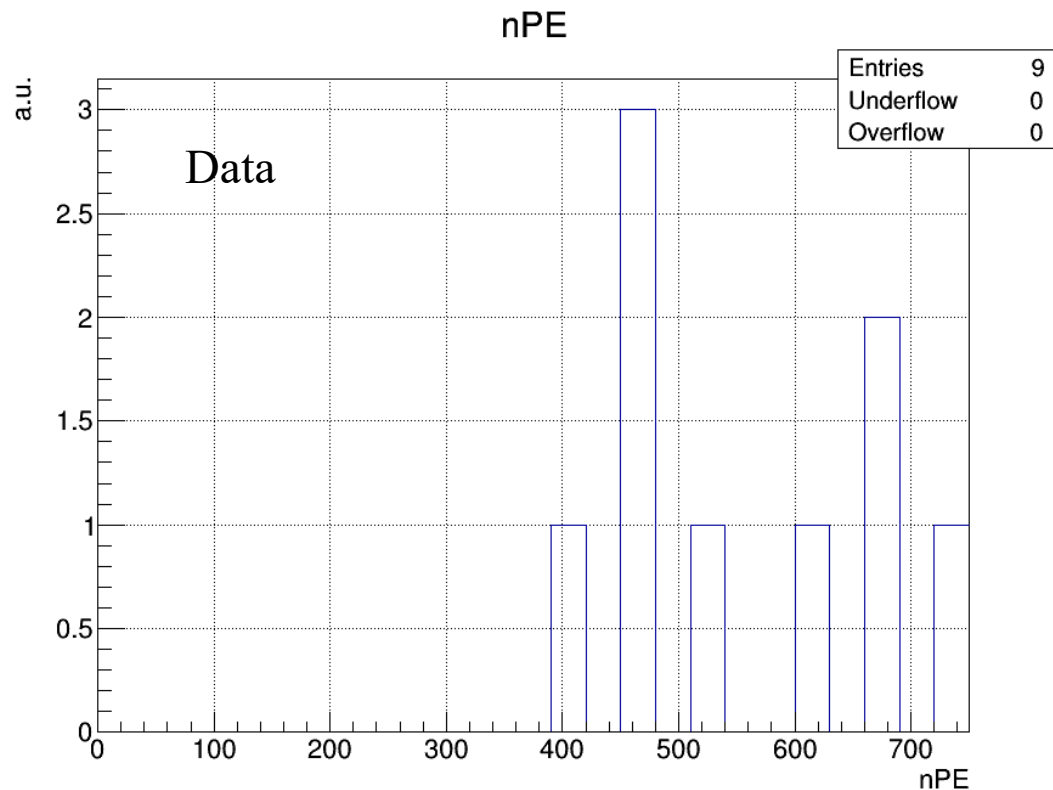
Simulation-Data Comparison

Francesco Setti

Signal-like Events (beam muons):

3 hits in straight line

- 4 slab hits, no muon hits in bars
- 3 hits in straight line
- No veto on other pulses in layer

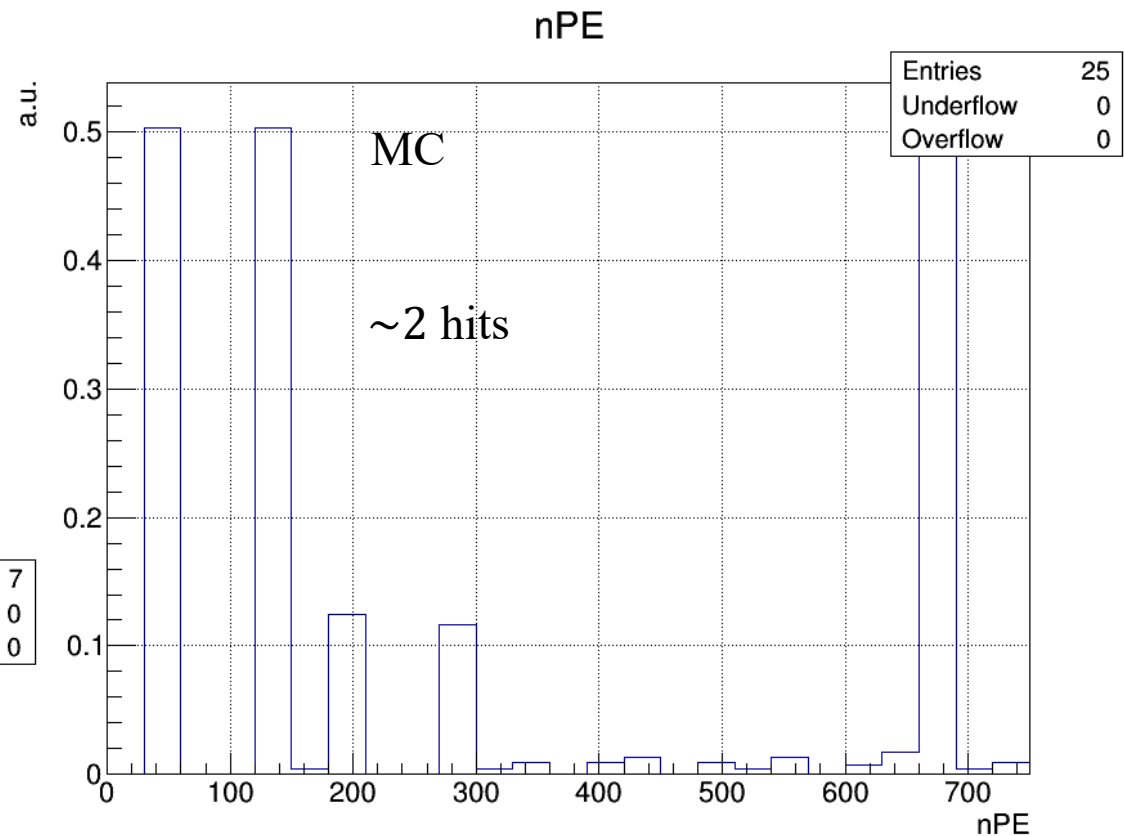
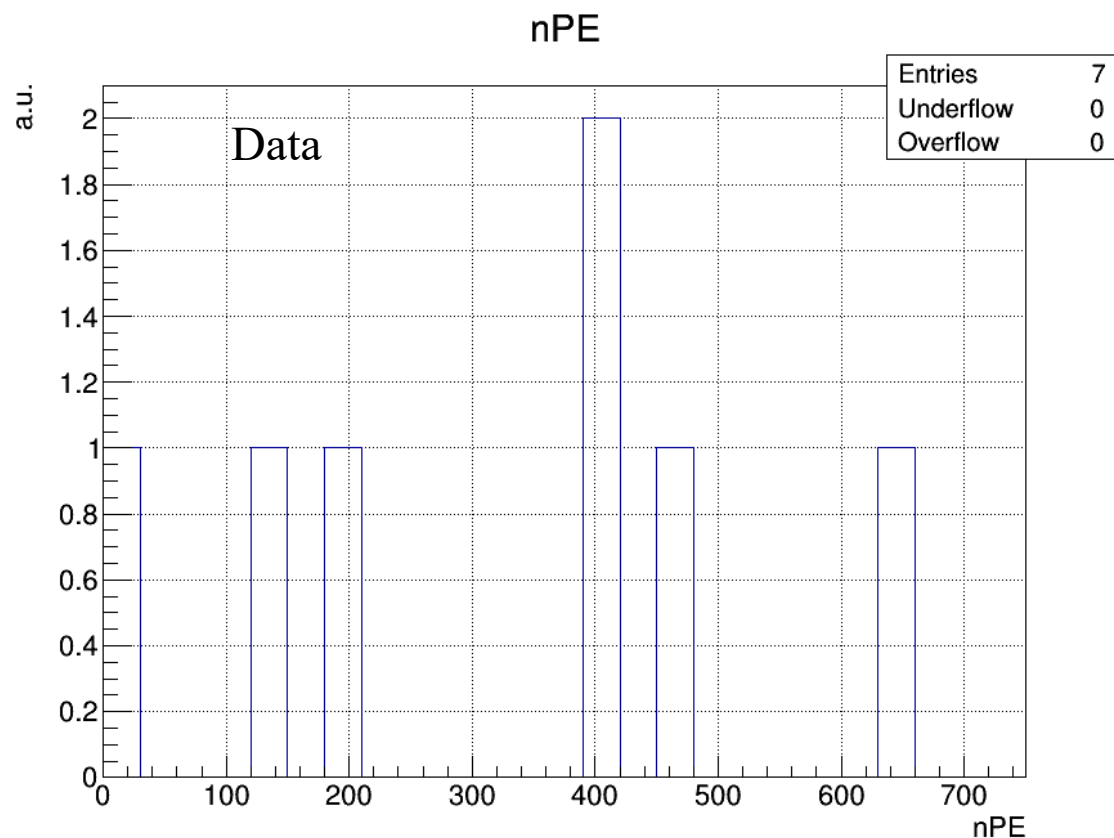


Plots of max nPE for three hits in a straight line when muons were vetoed in bars.

Signal-like Events (beam muons):

one hits per layer

- 4 slab hits, no muon hits in bars
- Exactly one hit in each layer
- No difference if afterpulses are vetoed



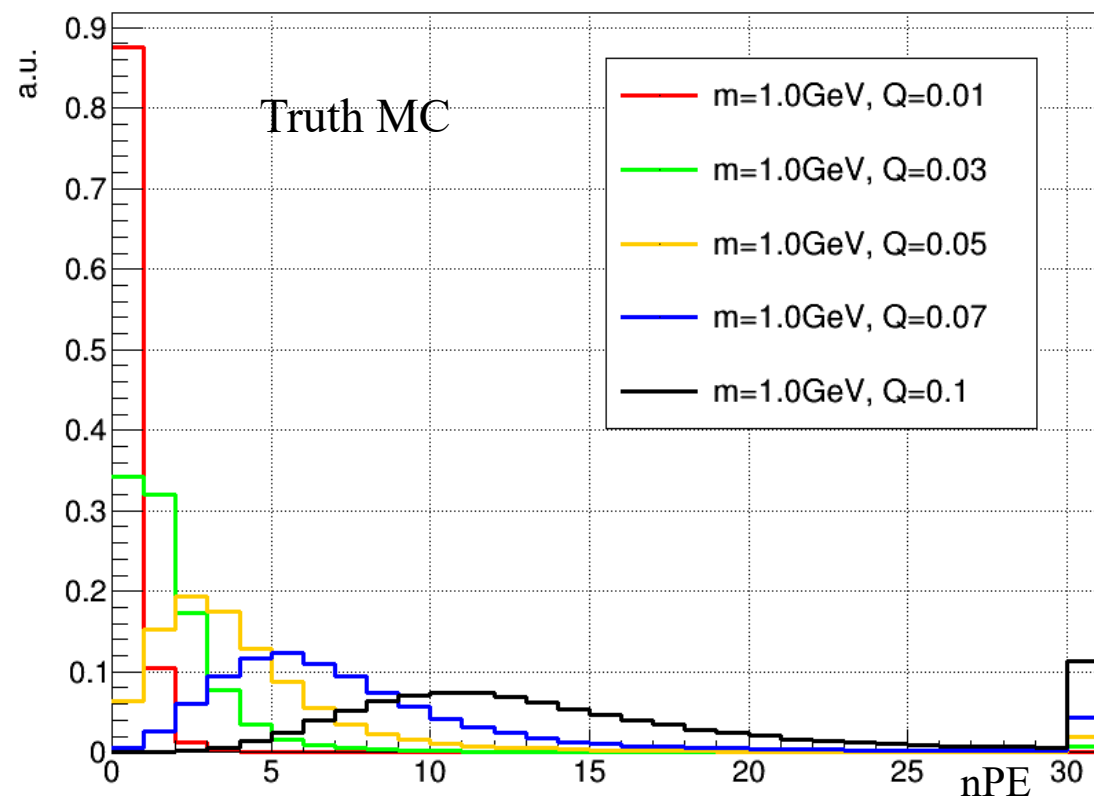
Plots of max nPE for exactly one hit in each layer when muons were vetoed in bars.

Signal Simulation:

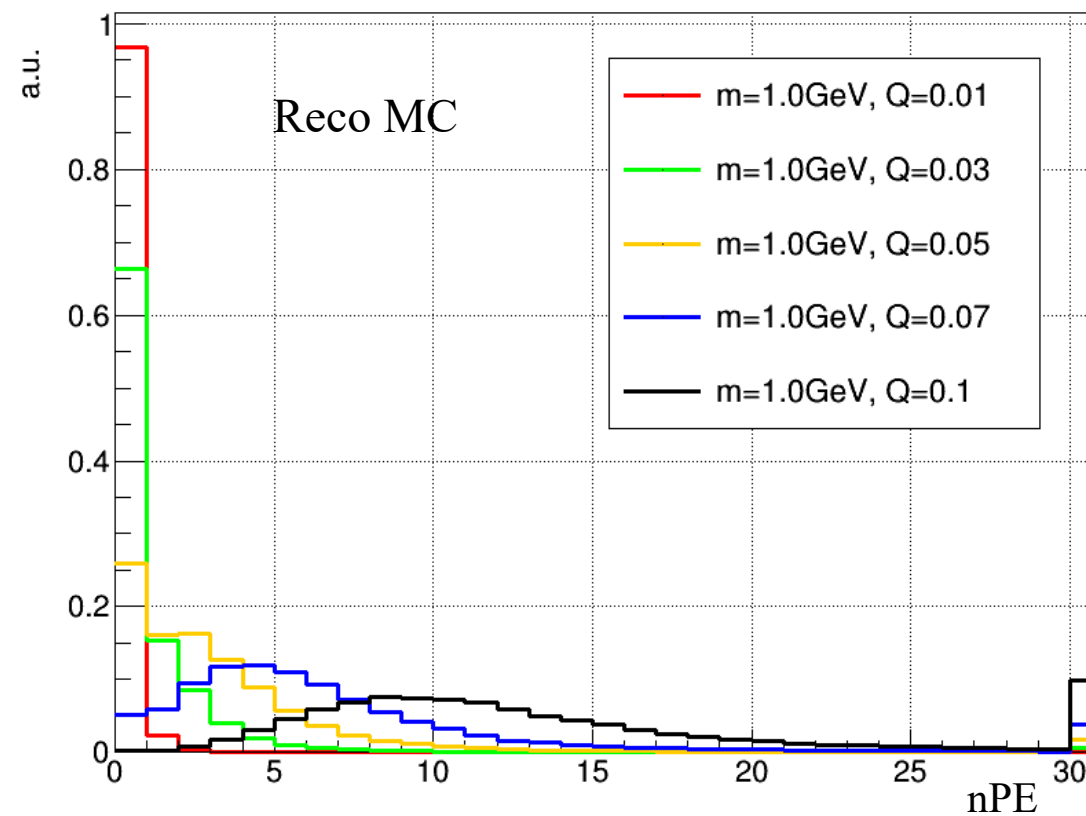
nPE in slabs

- nPE distribution for mCPs in slabs, $m=1\text{GeV}$

nPE



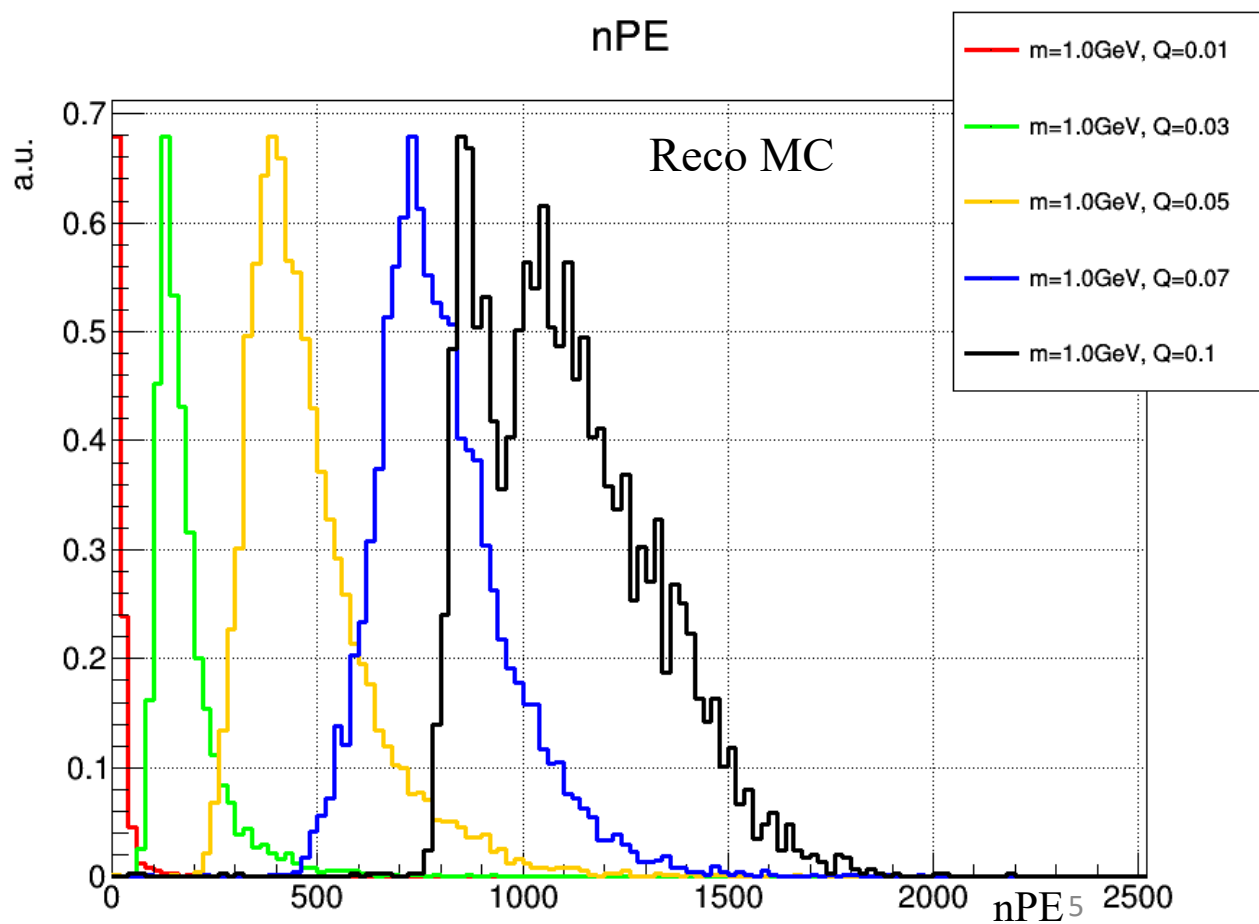
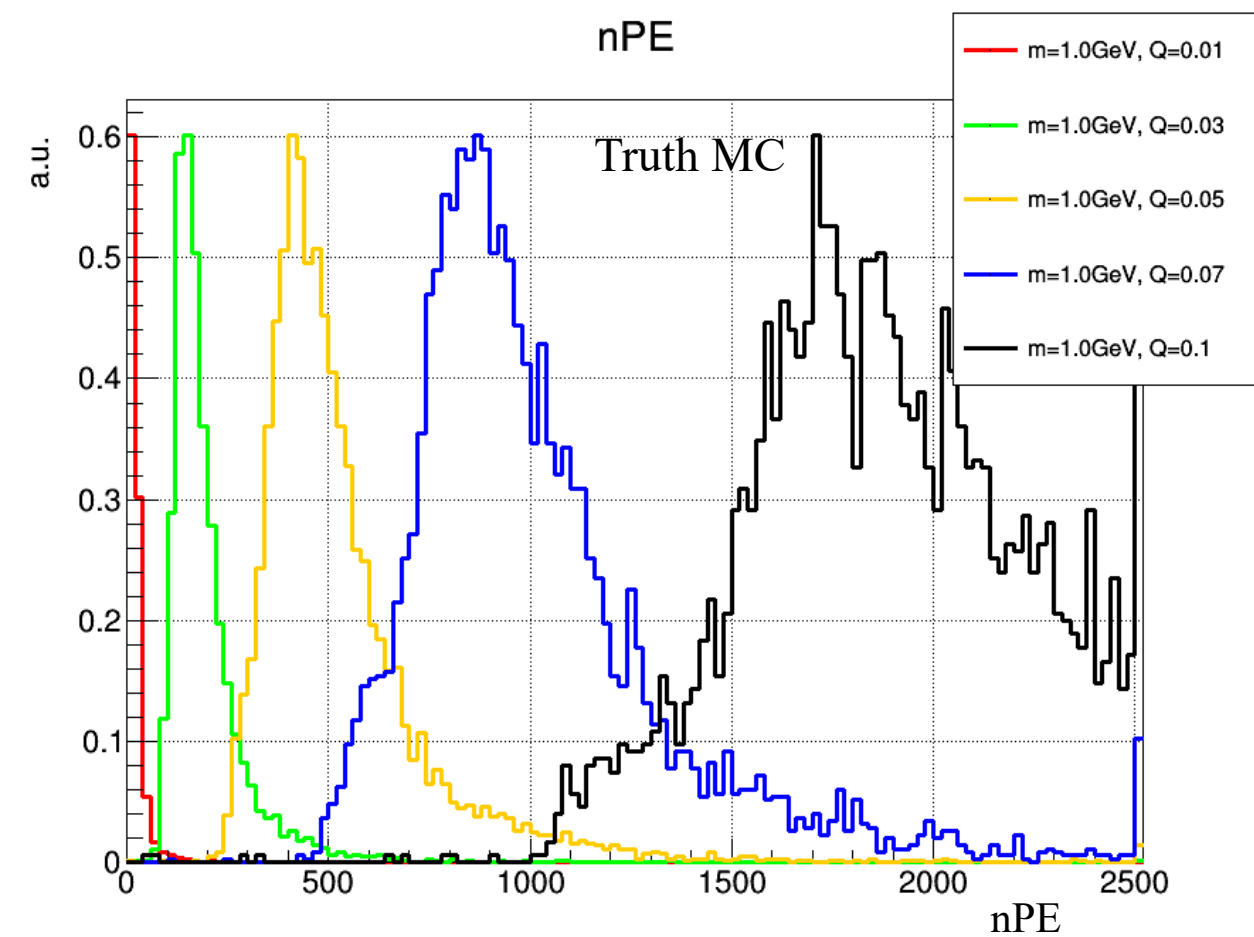
nPE



Signal Simulation:

nPE in bars

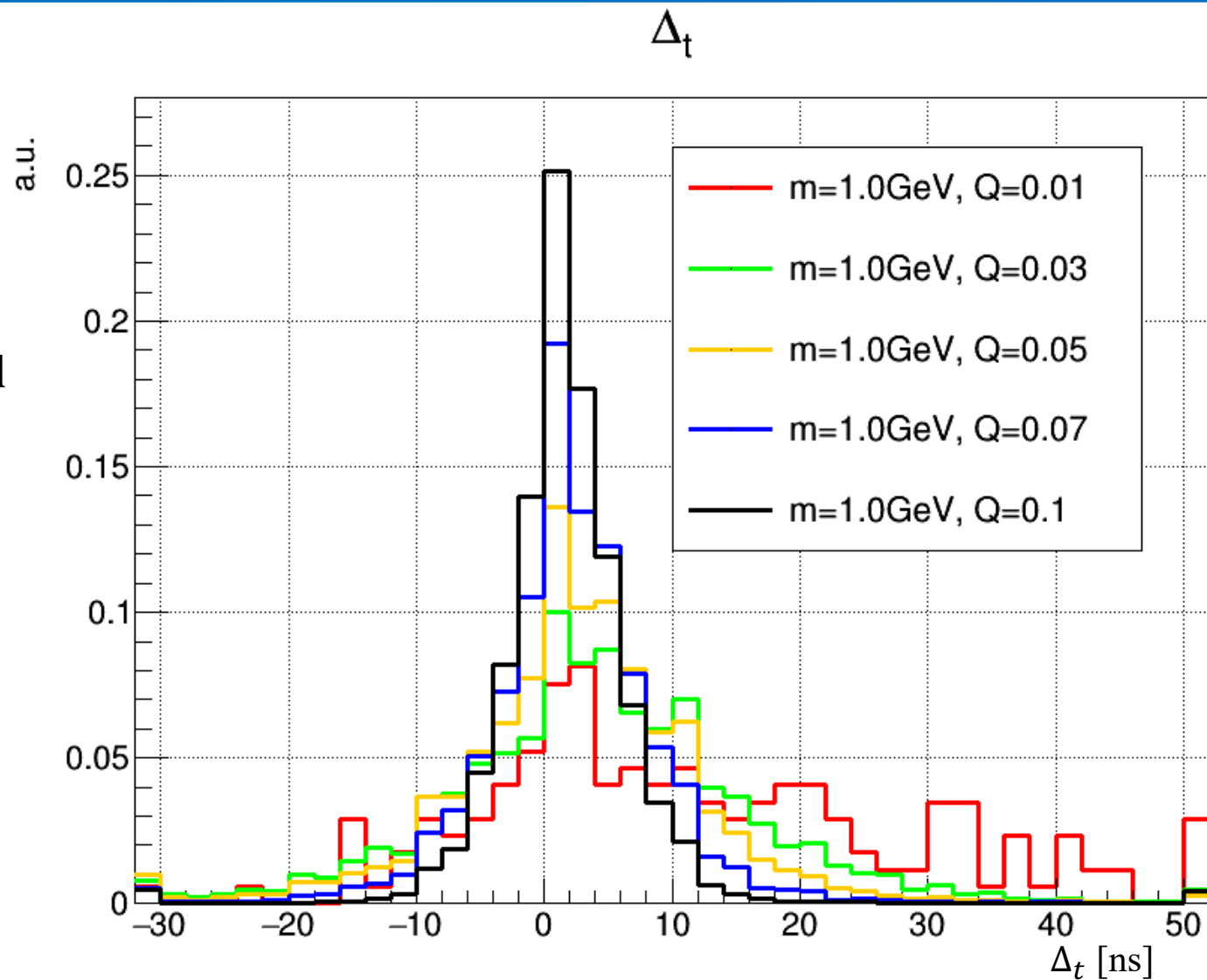
- nPE distribution for mCPs in bars, $m=1\text{GeV}$
- Plot of middle layer bars to avoid glancing hits (require 3 bars in a line)



Signal Simulation:

Slab Δ_t for mCP hits

- Require four slab hits at MC truth level
- Δ_t of mCP hits in slabs (last – first slab)

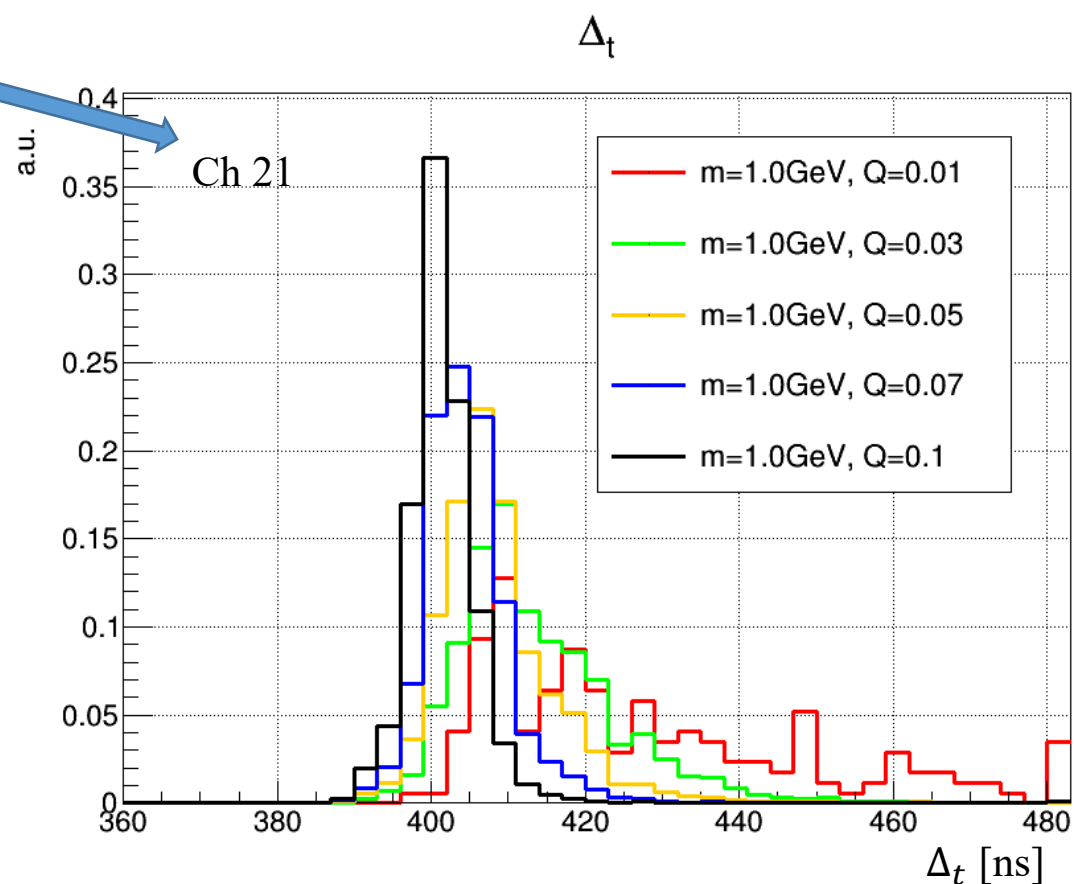
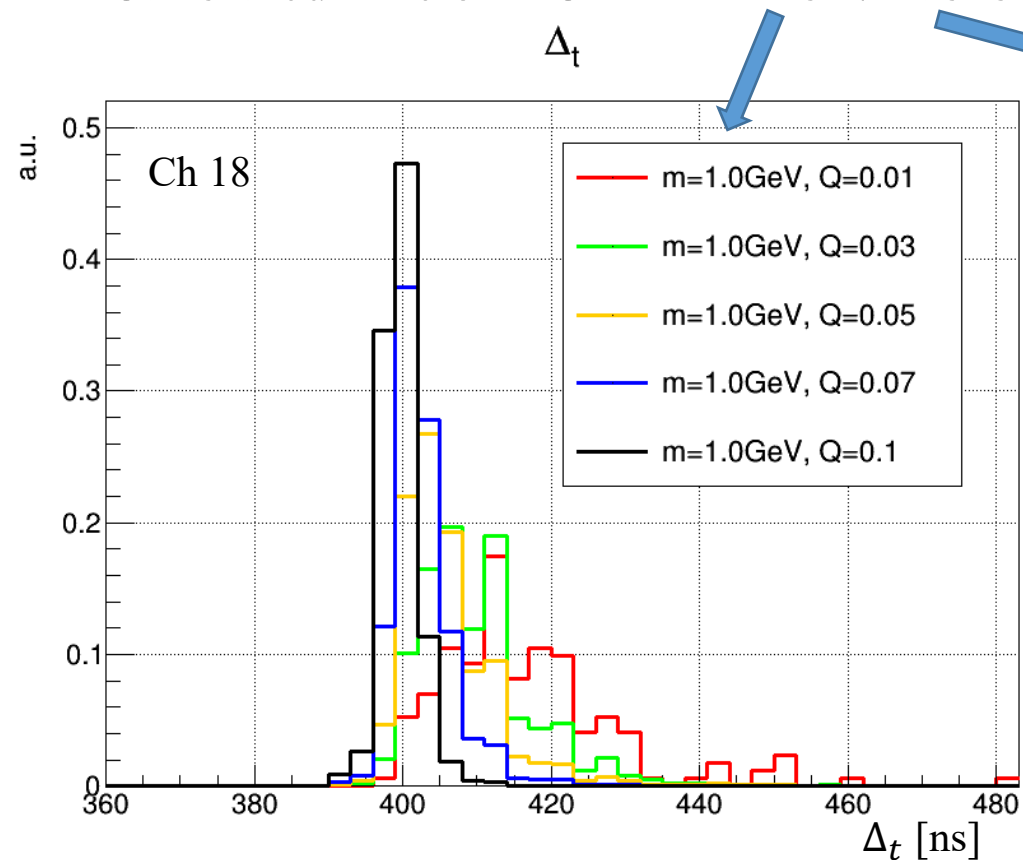


Time difference between mCP hits in last and first slab for events with mCPs travelling through all four slabs at gen level. Different mass/charge ratios are considered.

Signal Simulation:

Slab Δ_t for mCP hits

- Require four slab hits at MC truth level
- Calibrated time of mCP hit in first / last slab



Signal Simulation:

Slab Δ_t for mCP hits

- Δ_t of mCP hits in slabs (last – first slab)
- Compare bars with mCP hits vs mCP missing bars scenarios (hit at MCtruth level)

