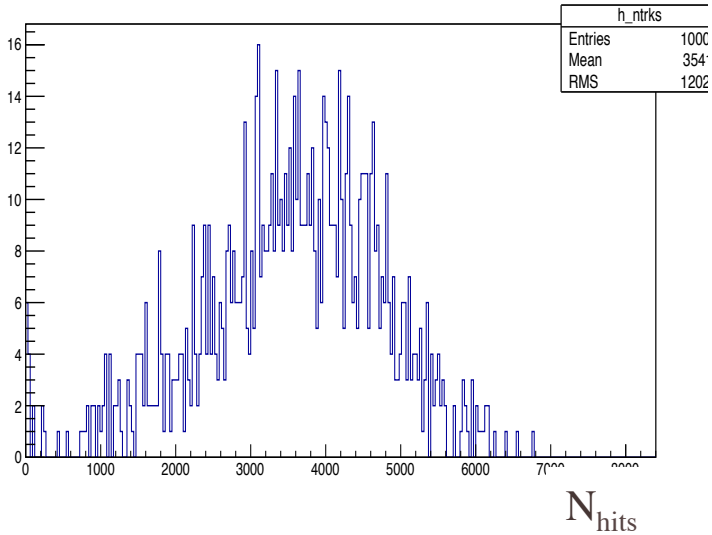
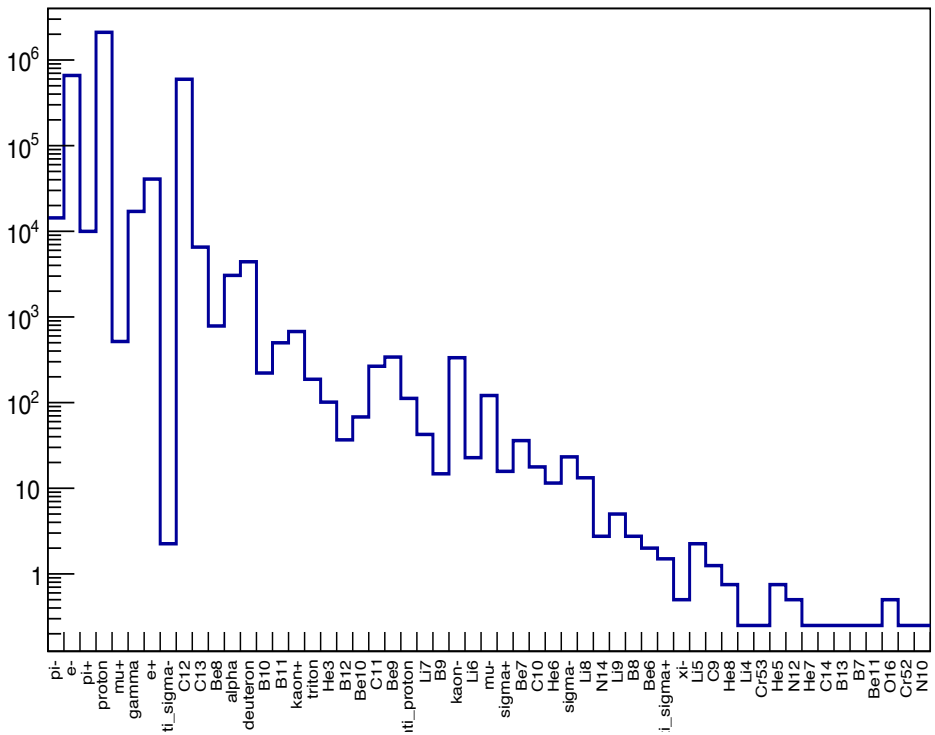
Timing structure of HCAL hits

Abhisek Sen

24 GeV Pi-



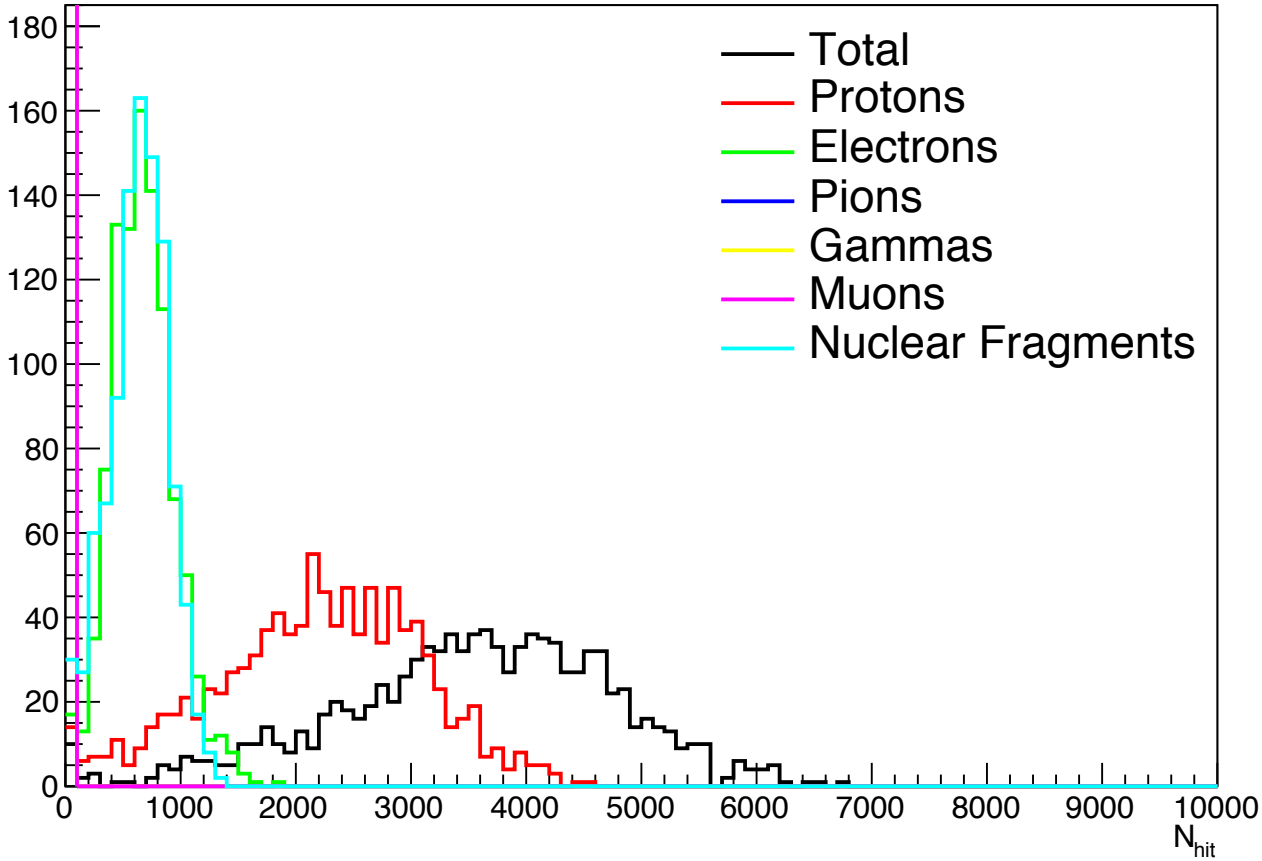
Number of hits produced per event in a shower in inner and outer HCAL.



Relative abundance of the shower particles.

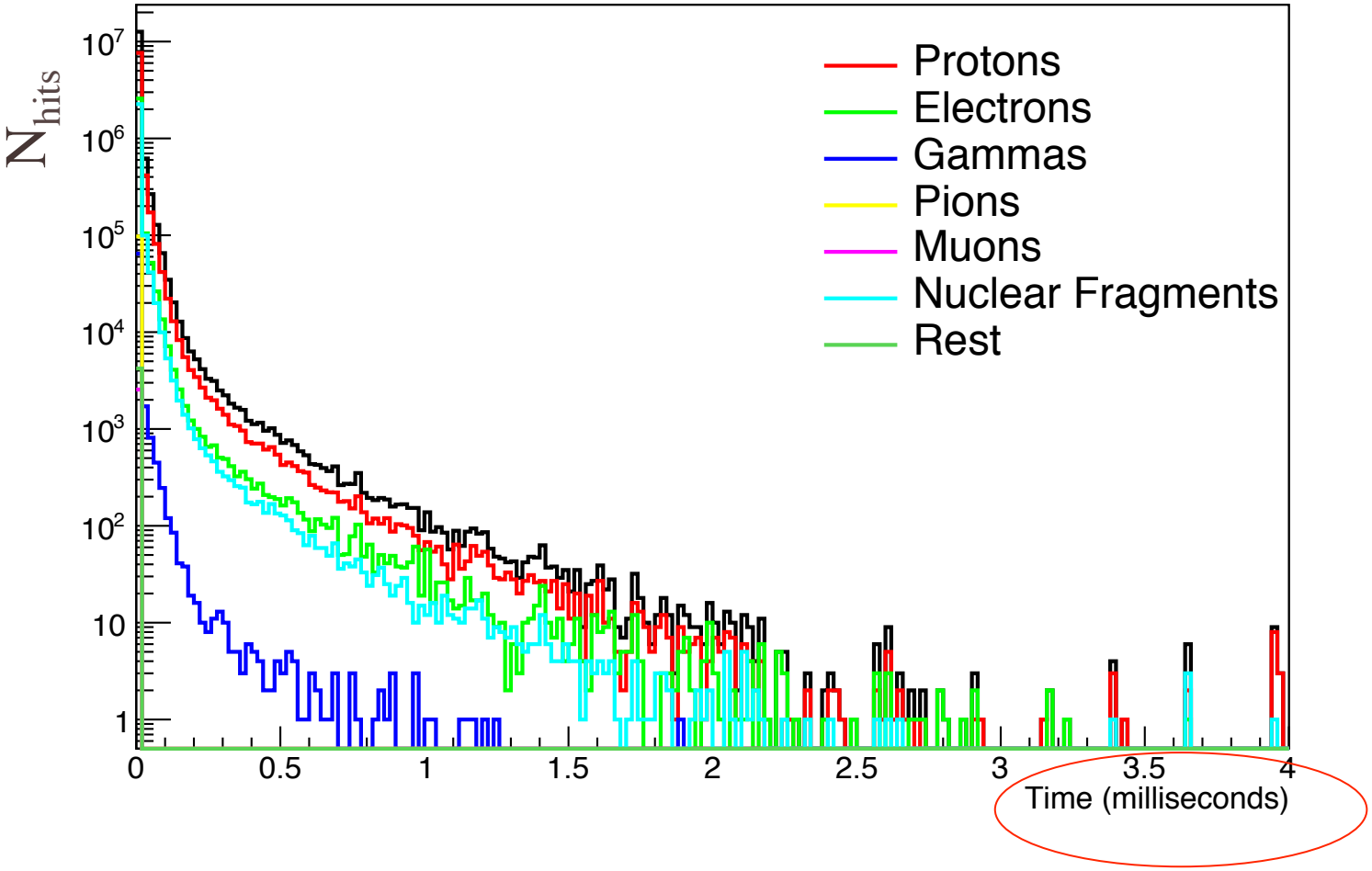
24 GeV pi- single particle simulation

Shower composition (per event)



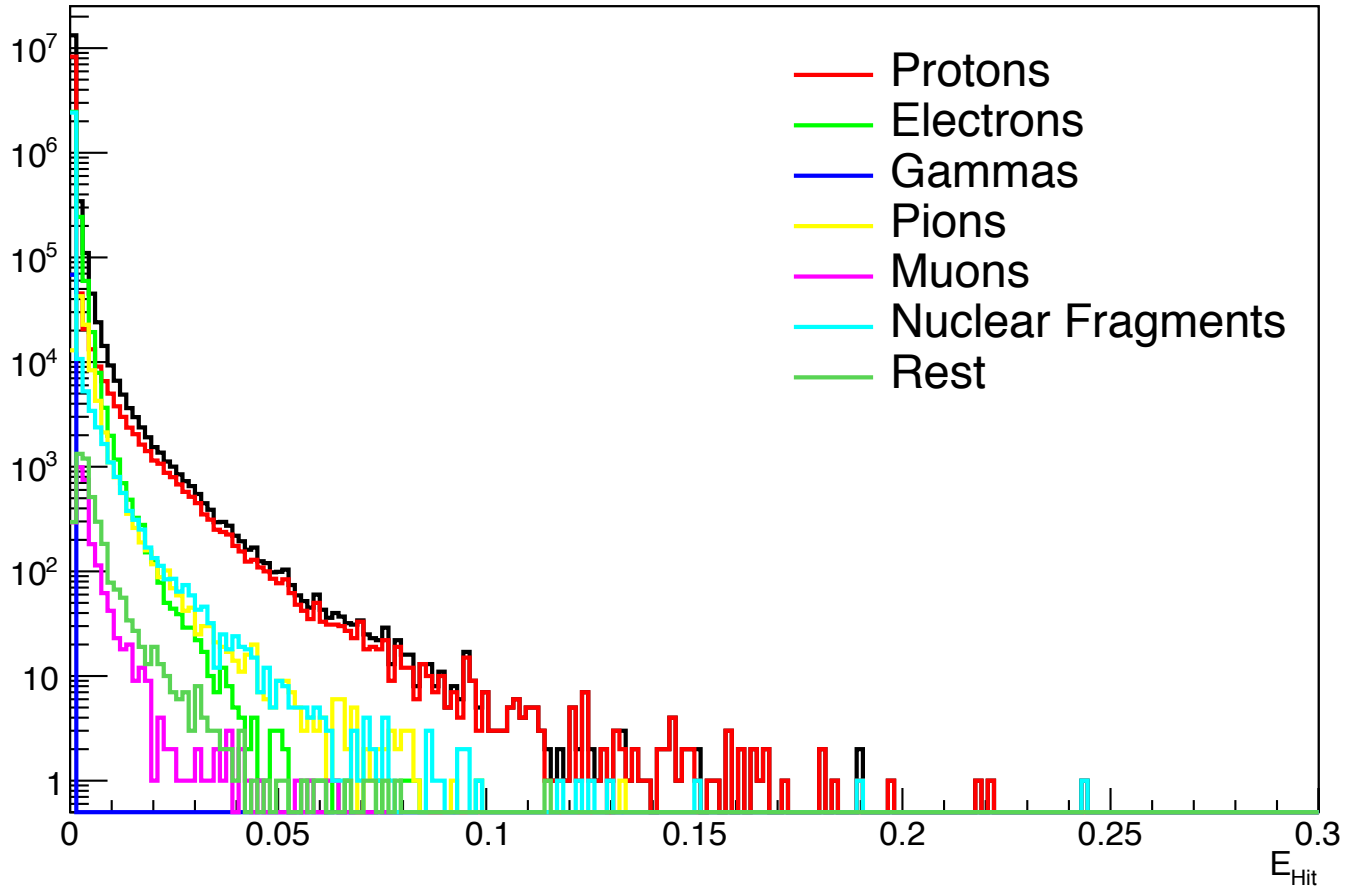
24 GeV pi- single particle simulation

Timings of the shower components



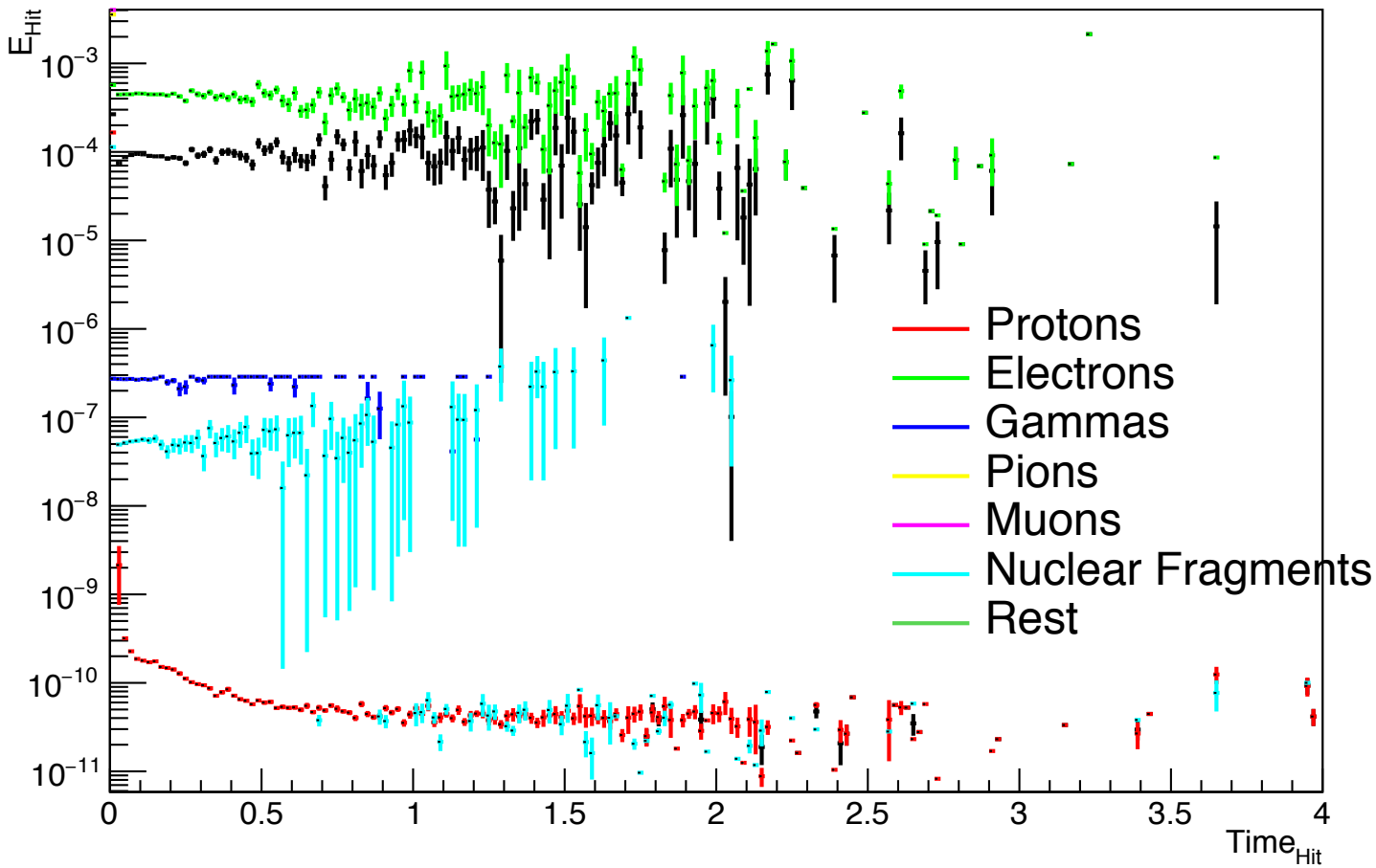
24 GeV pi- single particle simulation

Energy deposit by shower components



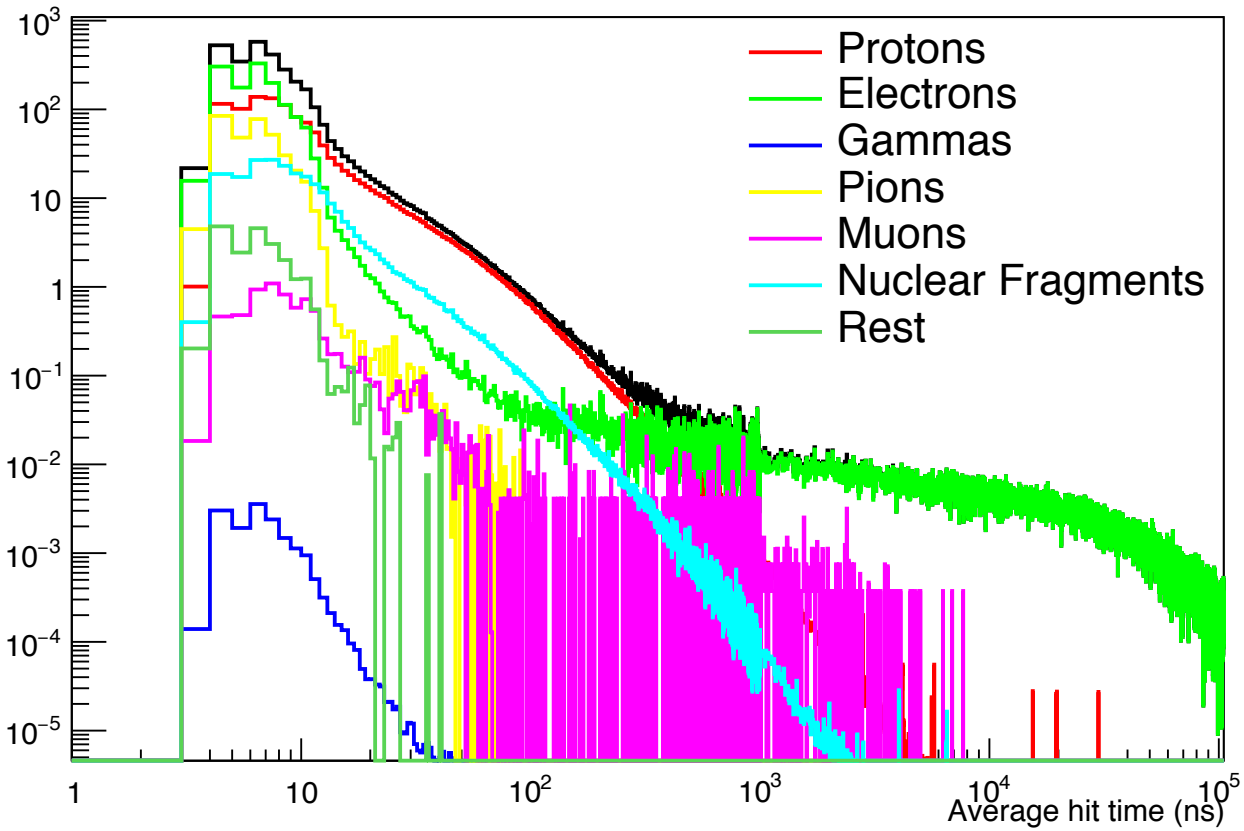
24 GeV pi- single particle simulation

Profile: E_hit vs t_hit



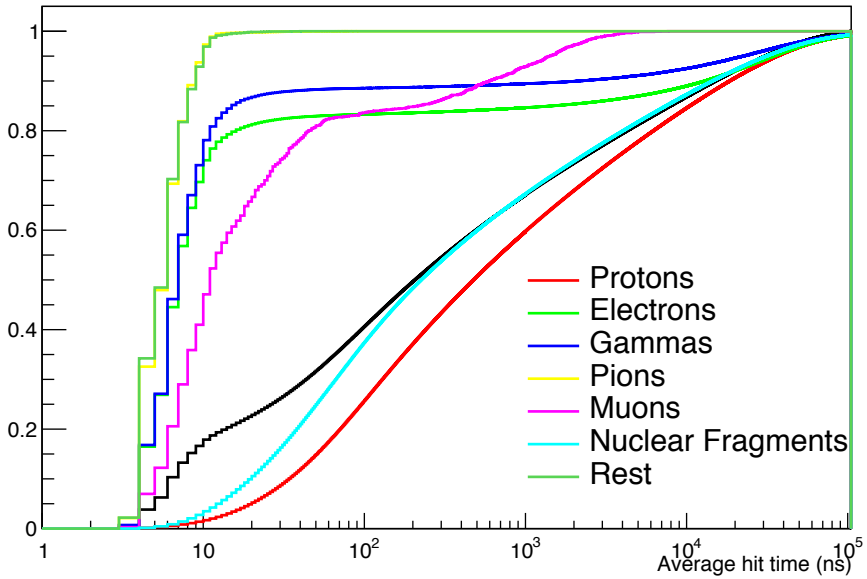
Protons deposit most of the energy in early times.

Timings weighted by energy

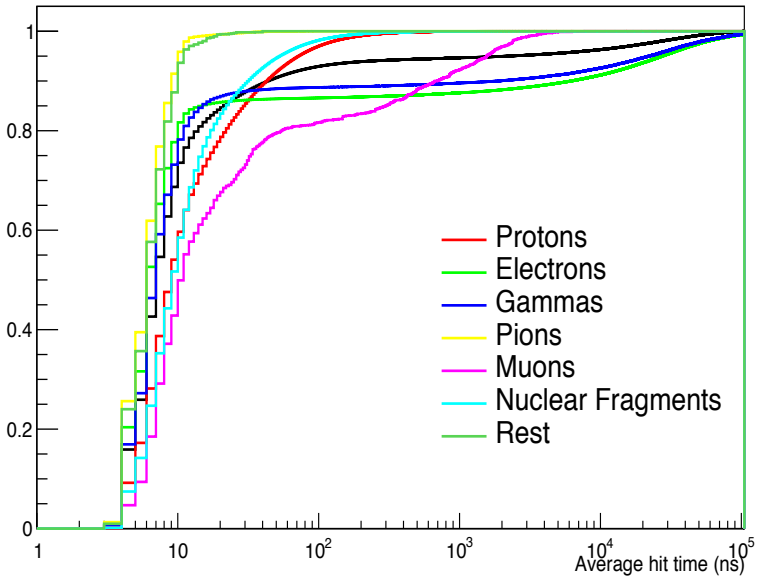


Most of the energy deposited in early time.

Cumulative distribution



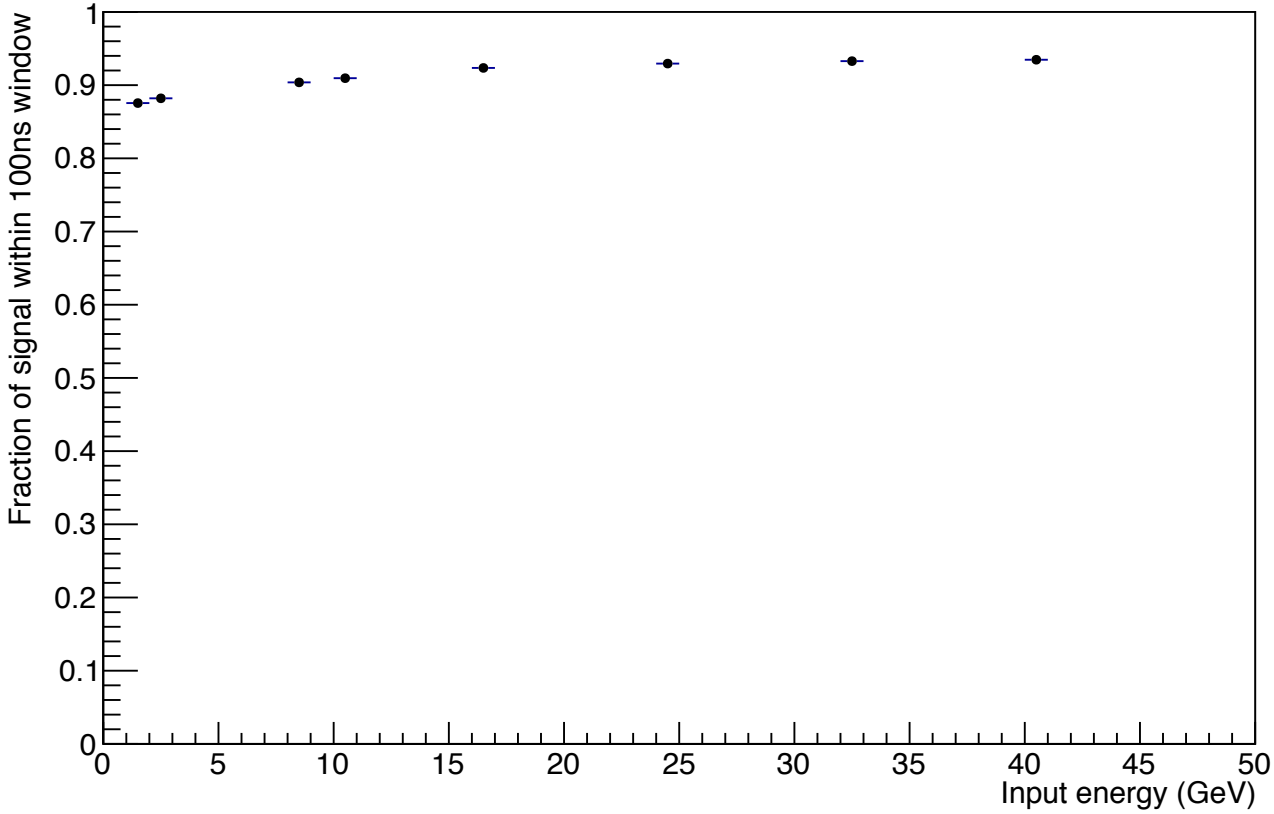
Weighted by energy



Cumulative distribution of number of hits vs time.

Accumulates ~93% of the energy within 0-100 ns window.

Energy dependence (pi-)



Summary

- Almost 90% of energy deposited within 0-100ns window.
- Look into the impact on energy resolution next.