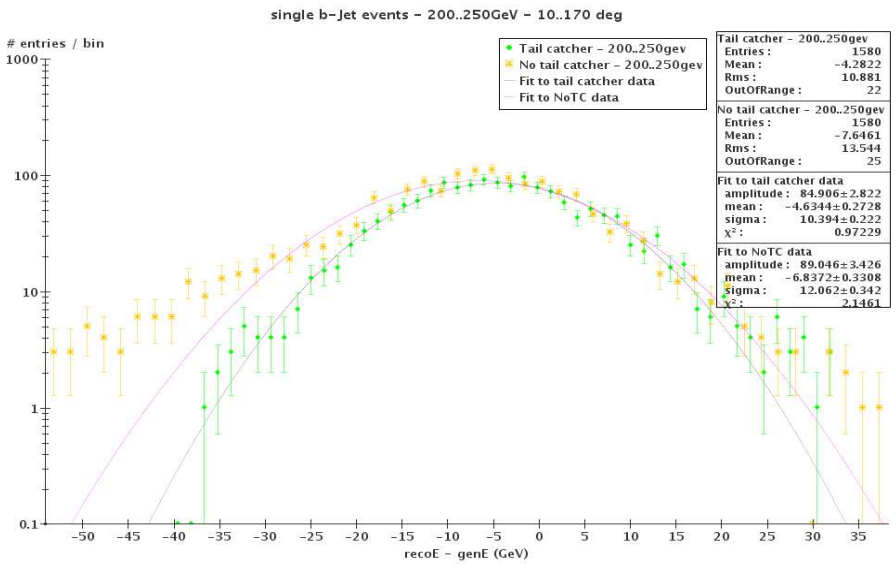
Looking at the tail catcher in a full-detector model

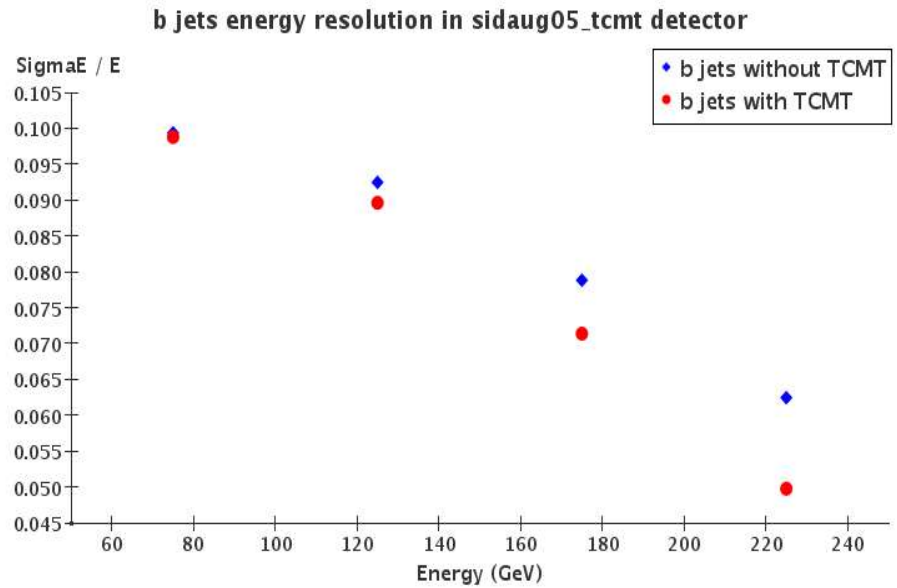
- Goal: justify the need for a tail catcher
- Effects of including TCMT for energy reconstruction
  - Single particles (hadrons)
  - Single jets

Simulating the tail catcher on a full detetor model

- New detector model: sidaug05_tcmt
  - sidaug05: projective SiW ECal, SS/RPC HCal and muon system.
    Muon layers are 5cm Fe + 0.64cm RPC + 0.86cm air
  - sidaug05_tcmt: non-projective 0.5x0.5(cm^2) Ecal, 1x1 SS/Scint Hcal and 3x3 SS/Scint TCMT
    tail catcher layers are 2cm SS + 0.5cm scint + 0.3cm air
  - Several single-particle samples simulated
    muons, photons, charged pions, neutrons, Klongs (perpendicular to beam)
    b- and c-jets : energy = 1 . . 250GeV, theta = 1 . . 179 deg

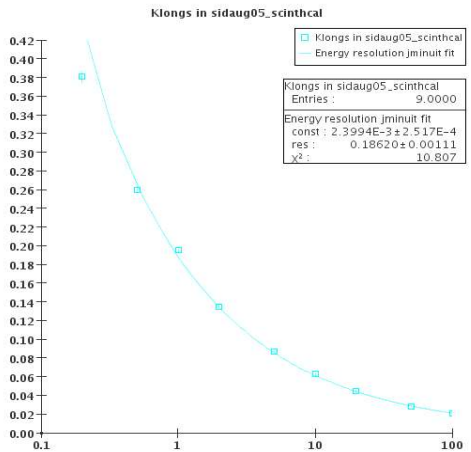
TCMT effect on high energy jets (no PFA)

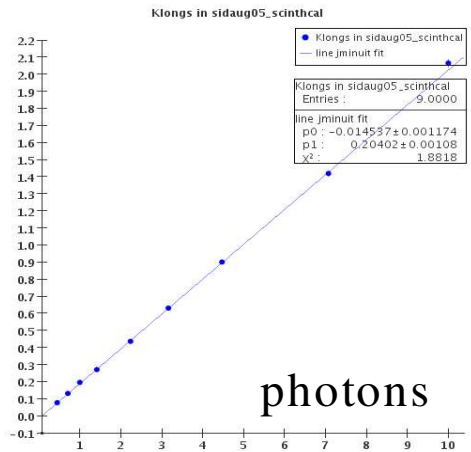




Energy reconstruction using calorimeter information only (no PFA).

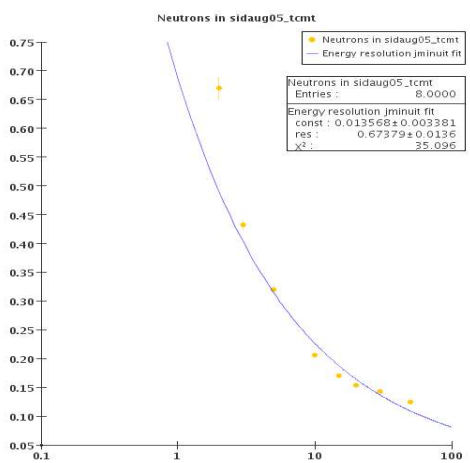
Problems with single particle resolution

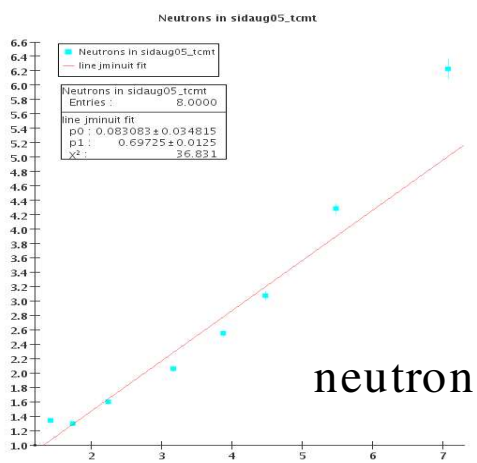




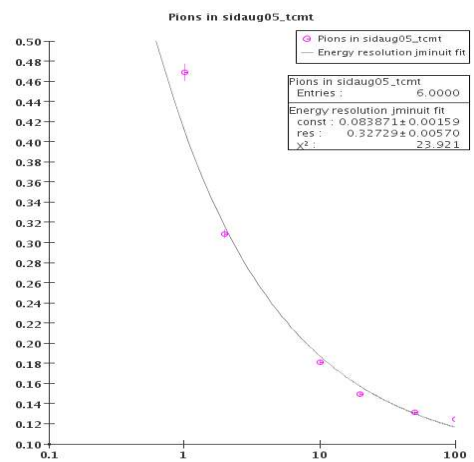
photons

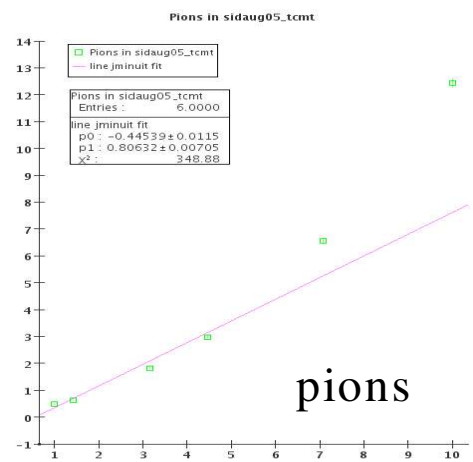
Photon energy resolution looks nice, but the hadrons don't seem to follow the expected behavior





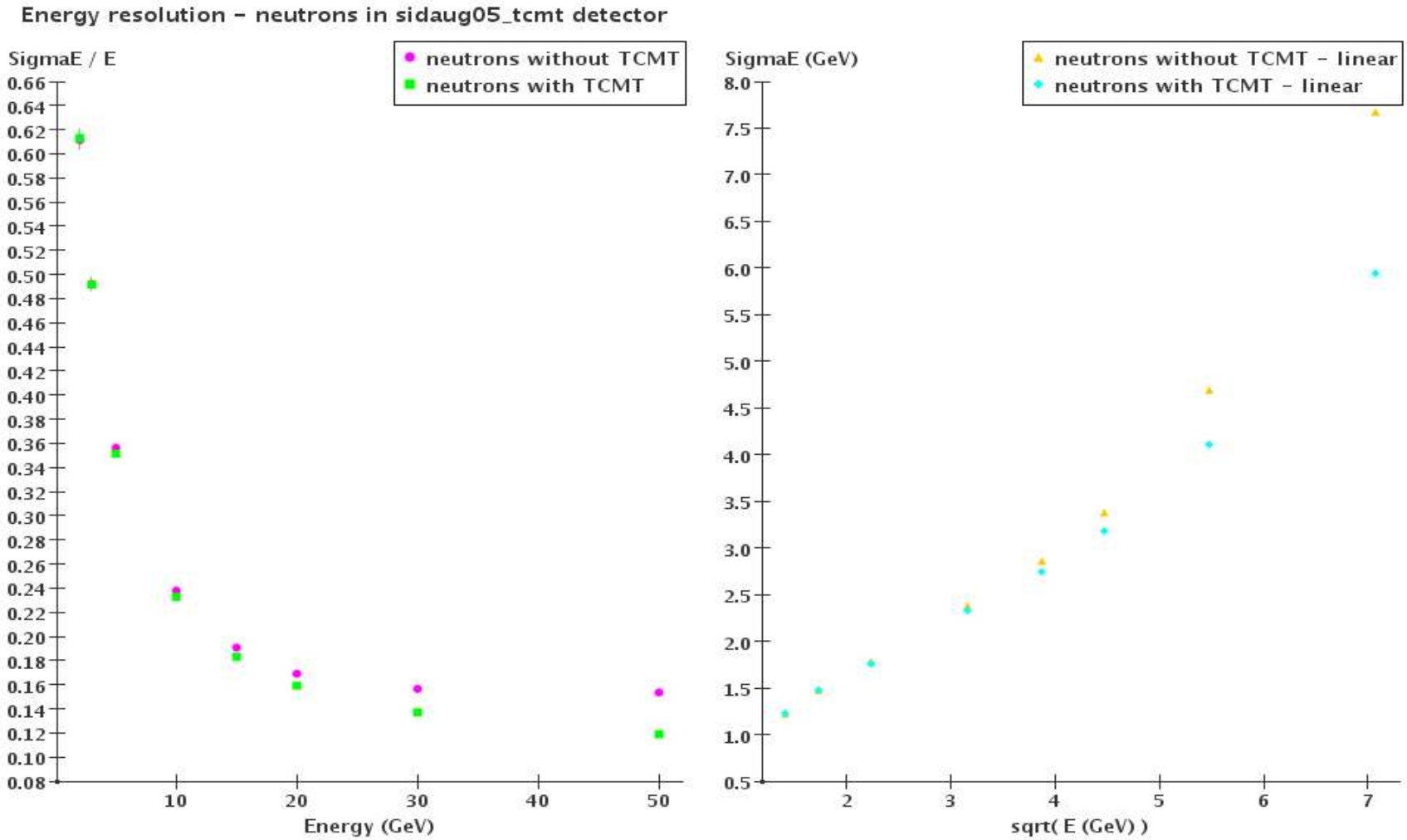
neutrons



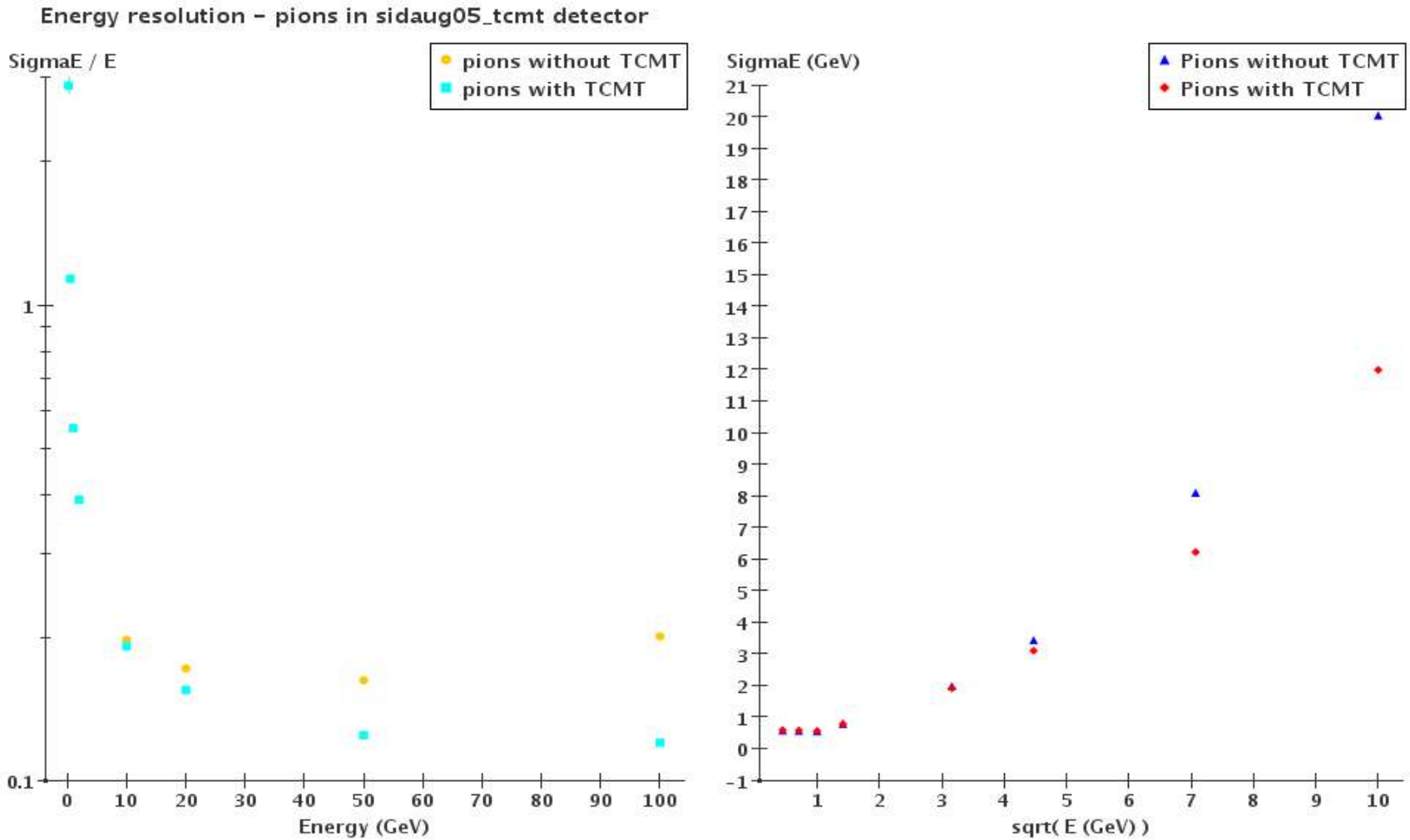


pions

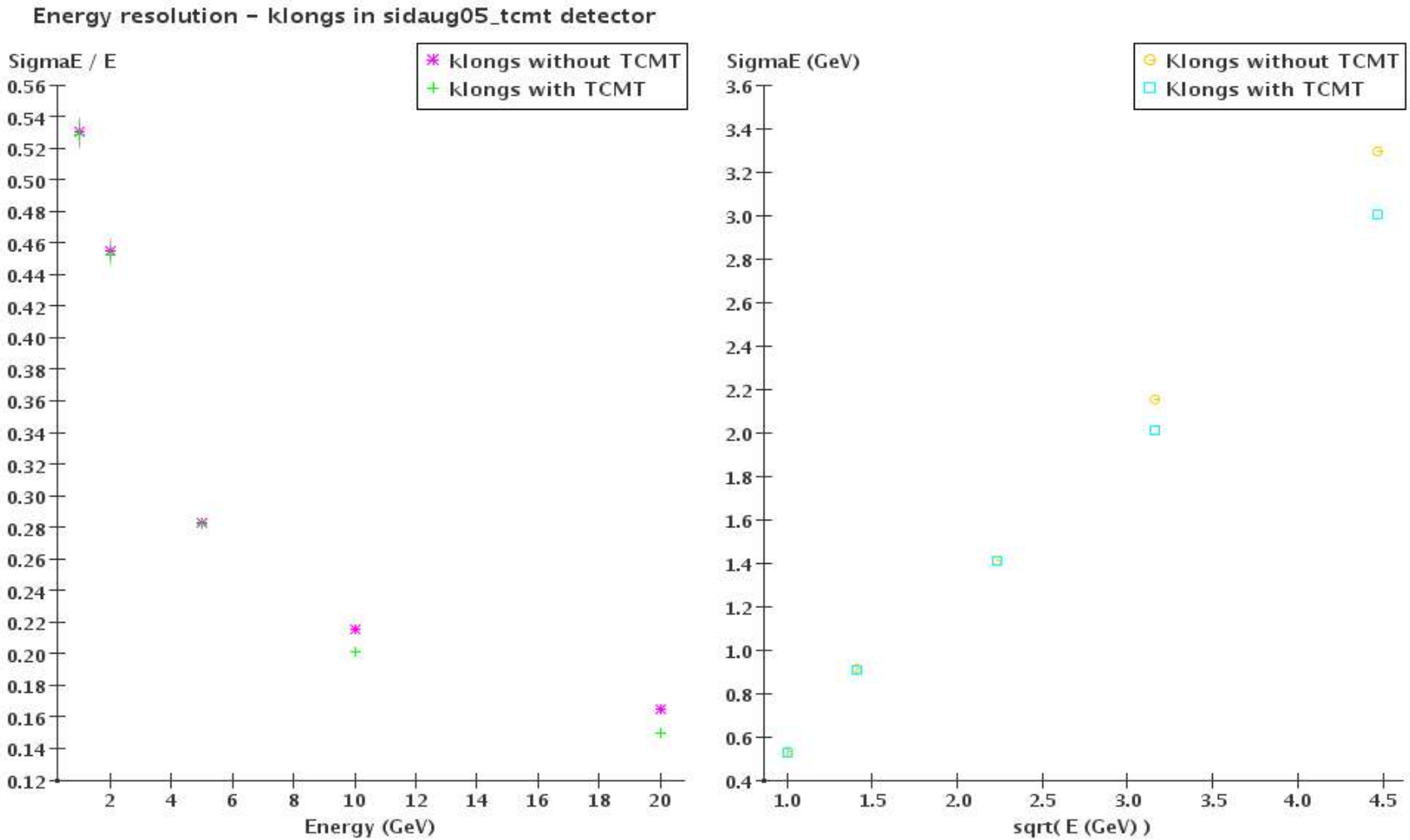
Neutron energy resolution



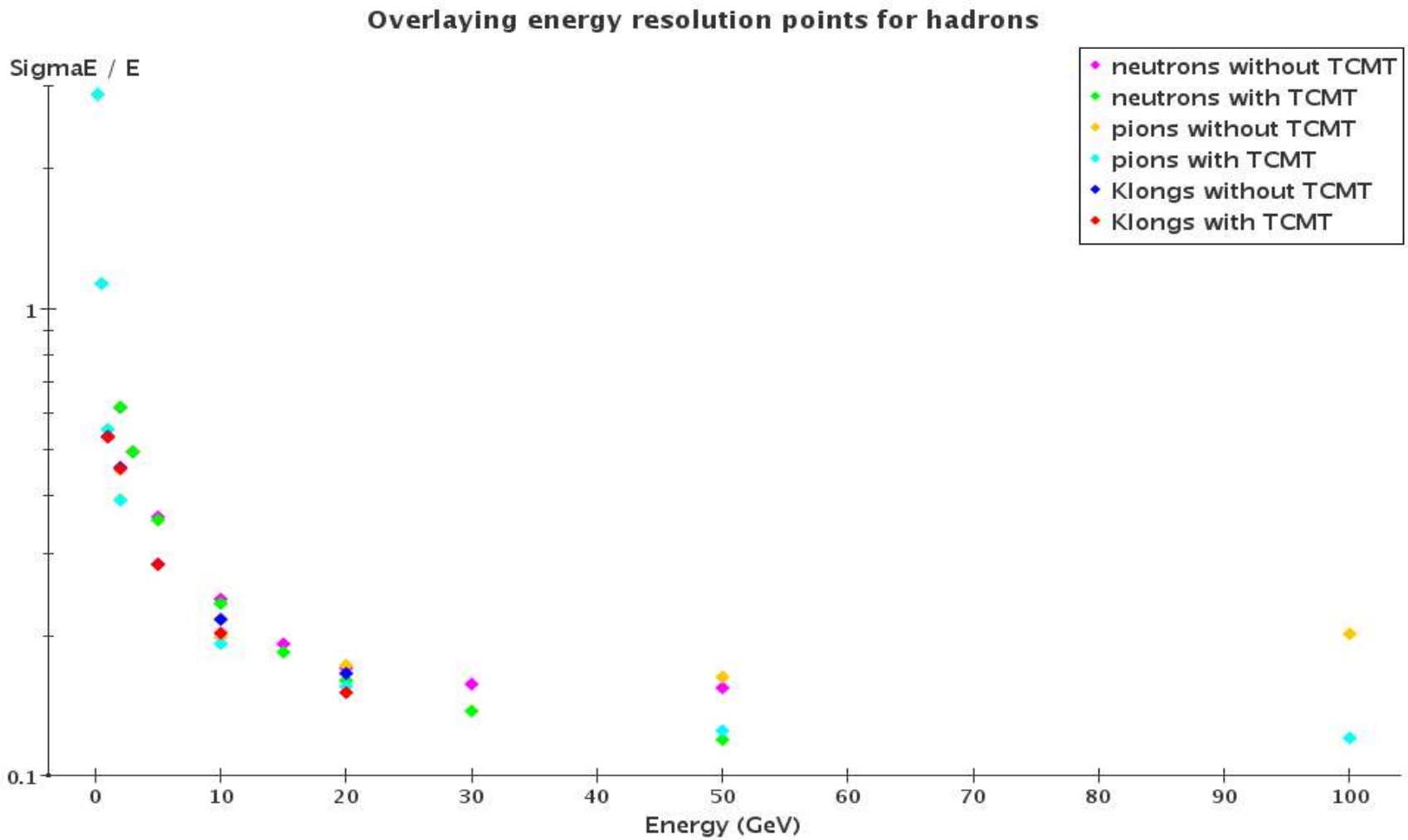
Pion energy resolution



Klong energy resolution



Comparing hadron energy resolutions



Summary

- Significant improvement in energy resolution distributions for single hadrons (perpendicular incidence), due to using histogram variances instead of gaussian fit parameters
- Still to look into kinetic energy (next step), as these may bring the E resolution points from different particle types closer at any given energy