

Hadron Generator Comparison

Ye Tian

GENT4

1mm and 40 cm LH target, vacuum

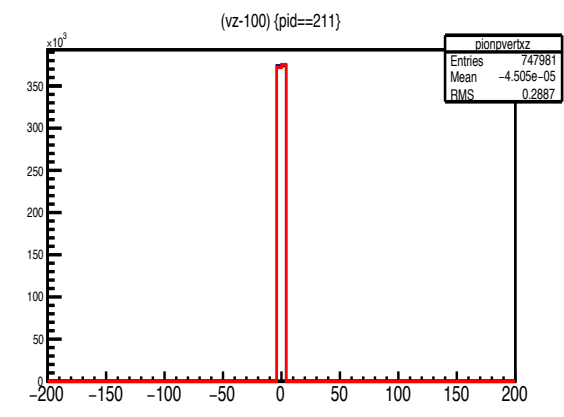
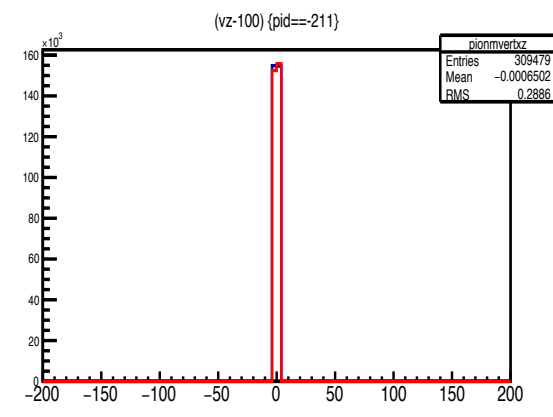
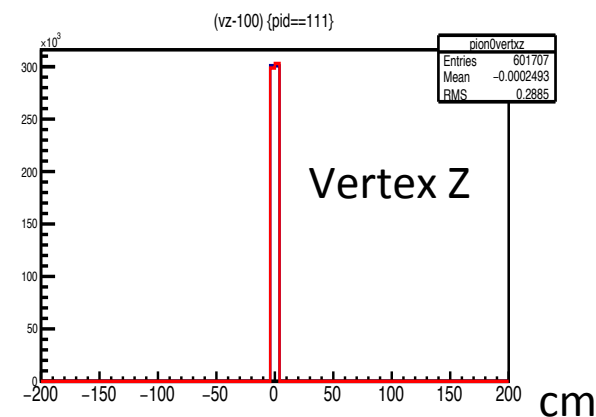
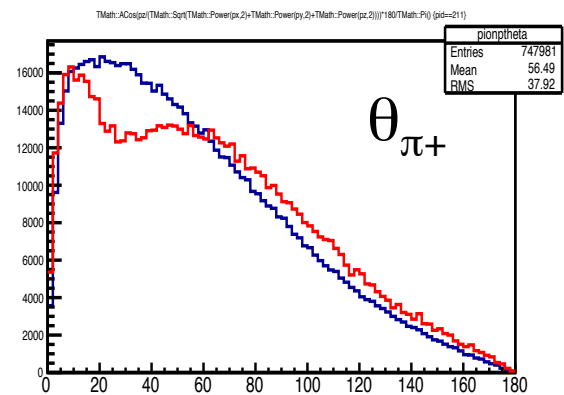
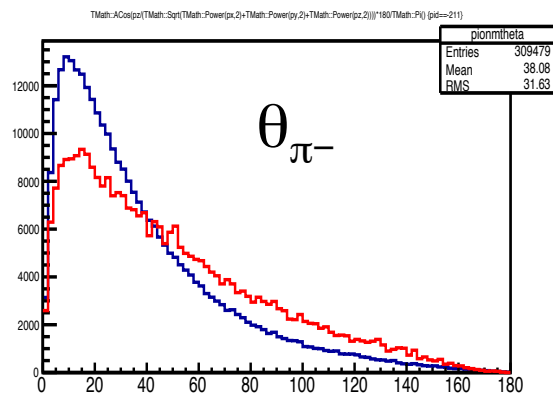
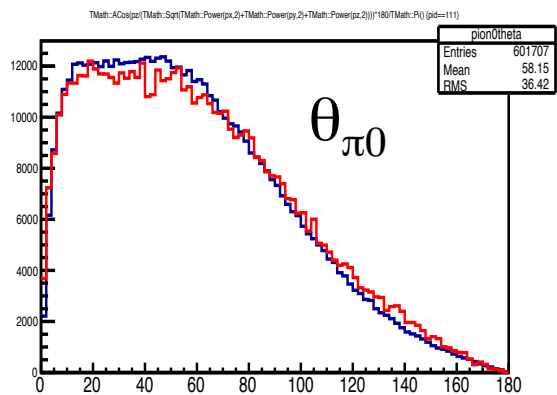
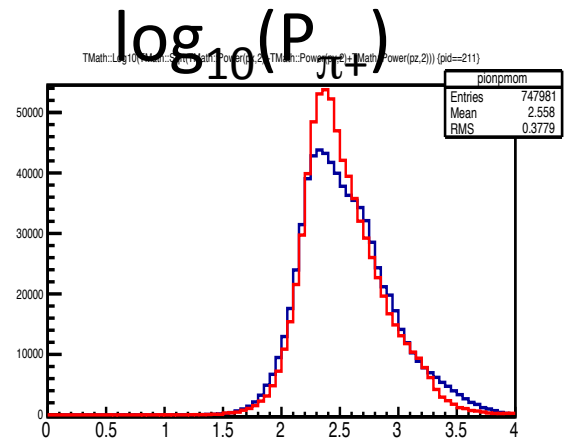
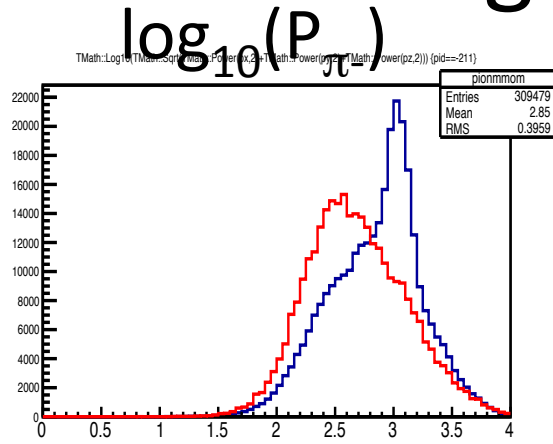
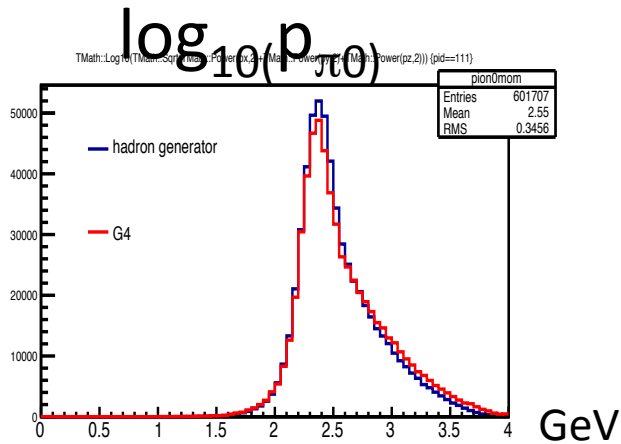
- STD: EM standard.
- QGSP_BERT_HP
- ✓ The physics list most recommended for HEP
- ✓ Used by ATLAS
- ✓ Contains standard EM processes
- ✓ Uses Bertini cascade for hadrons of energy below $\sim 10\text{GeV}$
- ✓ Uses QGC model for high energies ($>20\text{GeV}$)
- ✓ Used for neutrons below 20MeV (with high precision neutron model)
- ✓ Can be used for radiation protection and shielding applications.

Hadron Generator

1mm and 40cmm LH target

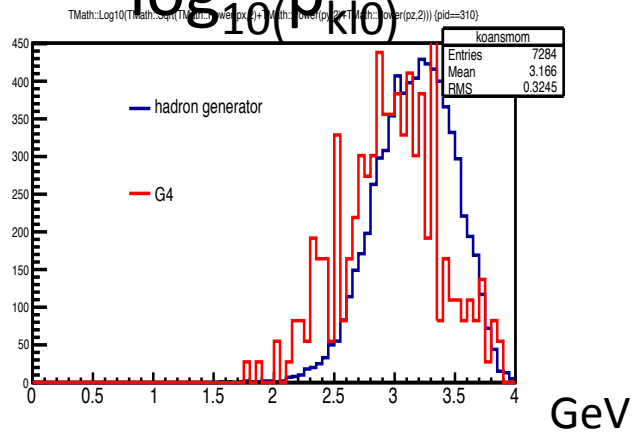
- Hadron Generator ([Bgggen_Version_1.3](#)) modified by Jixie Zhang :
 - $E > 3$ GeV: PYTHIA is used
 - $0.15 < E < 3$ GeV: a mixture of 10 dominating π exclusive processes ($\gamma + p$) is used. For the single pion production differential cross sections, the SAID code is used.
 - [Adding Z dependence \(loop Z and \$E_\gamma\$ \)](#).

1mm LH target

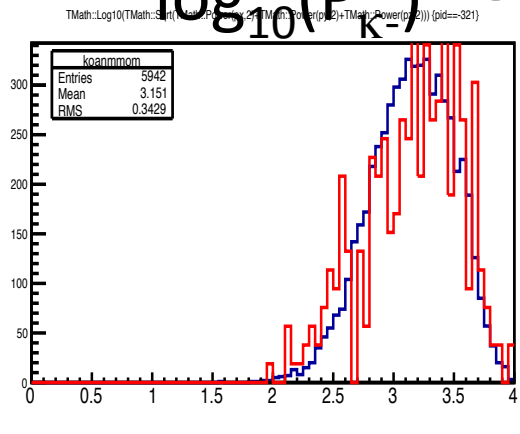


1mm LH target

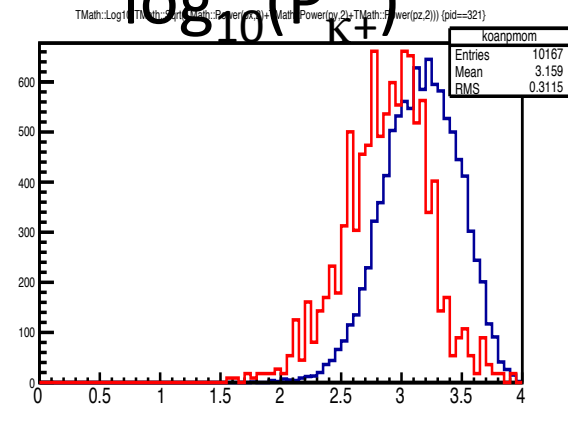
$\log_{10}(P_{K^0})$



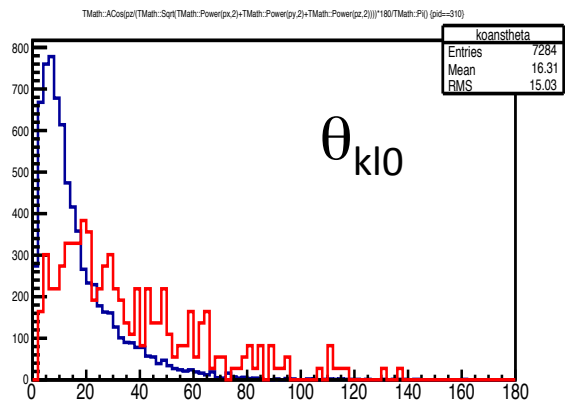
$\log_{10}(P_{K^-})$



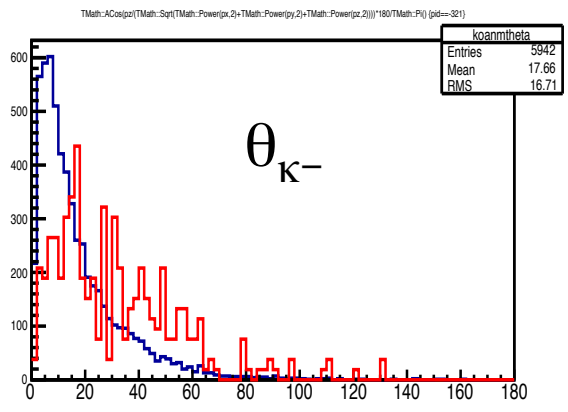
$\log_{10}(P_{K^+})$



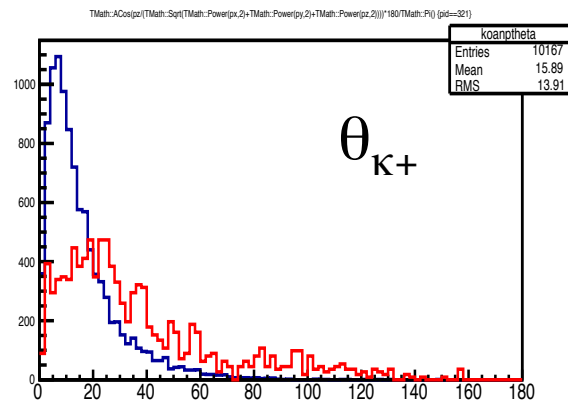
θ_{K^0}



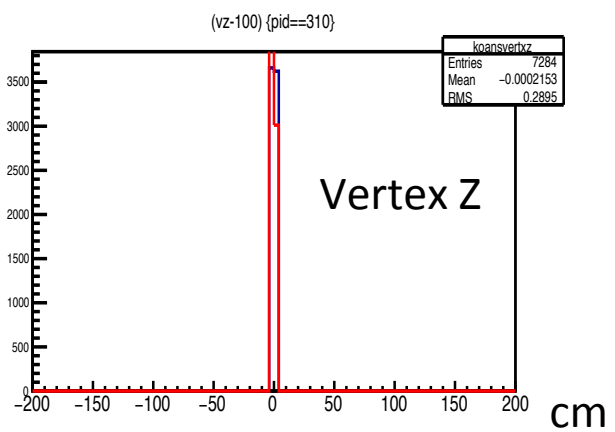
θ_{K^-}



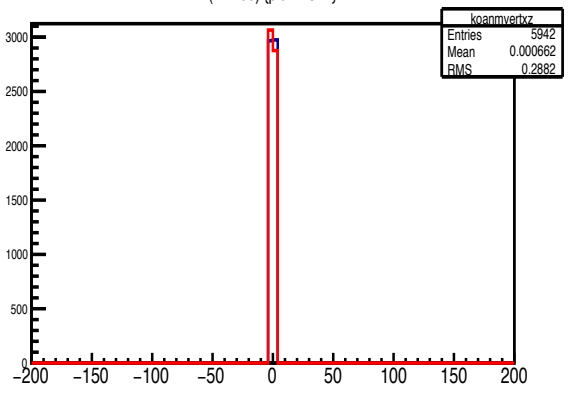
θ_{K^+}



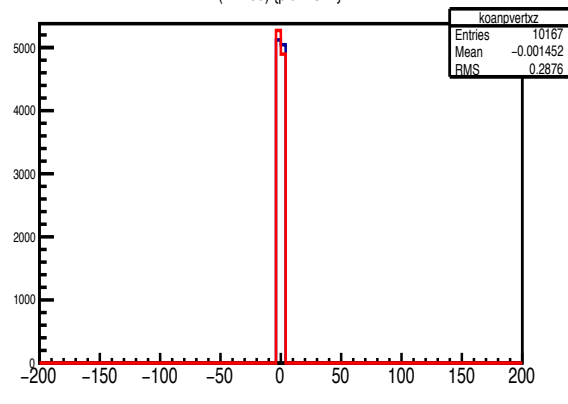
Vertex Z



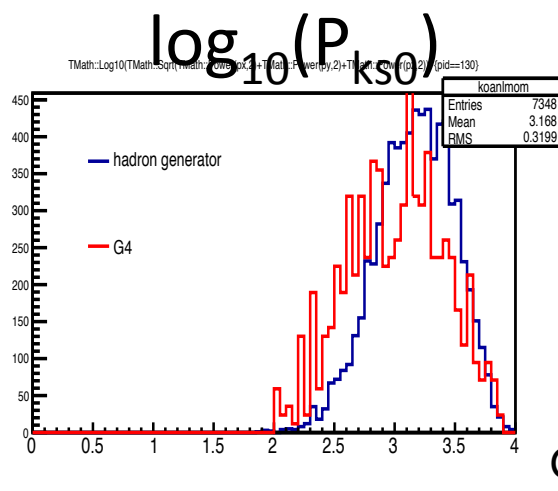
(vz-100) {pid==321}



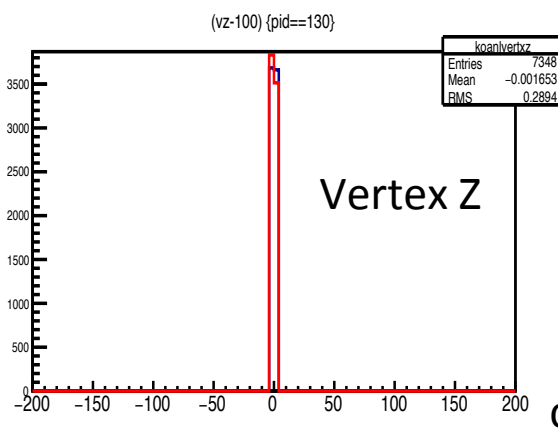
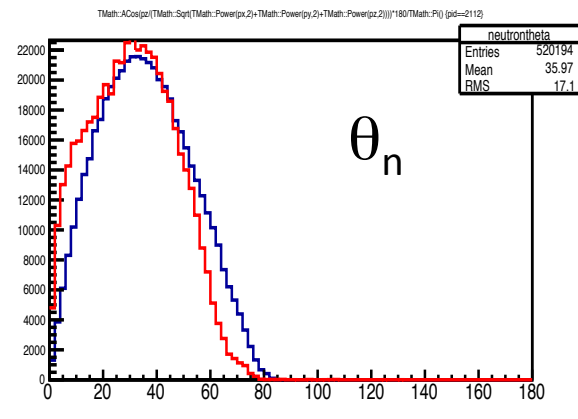
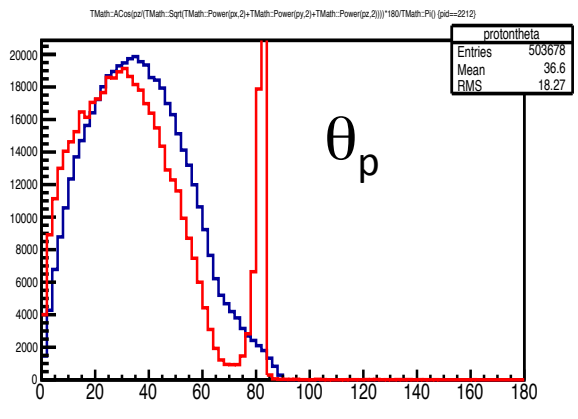
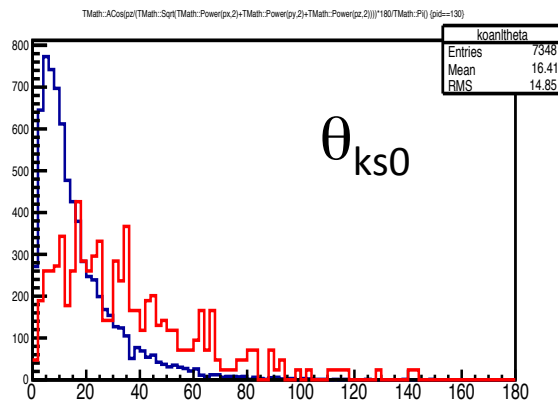
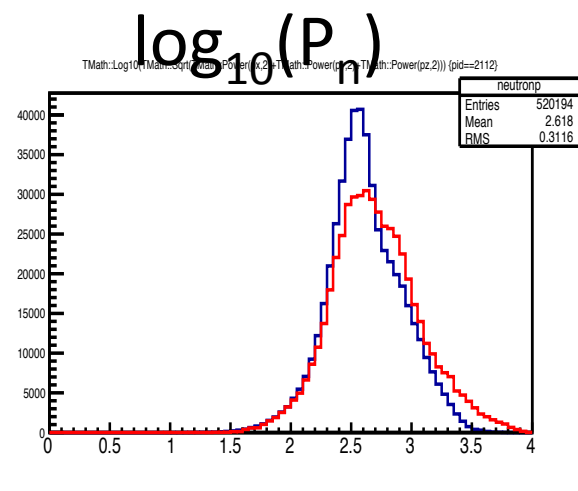
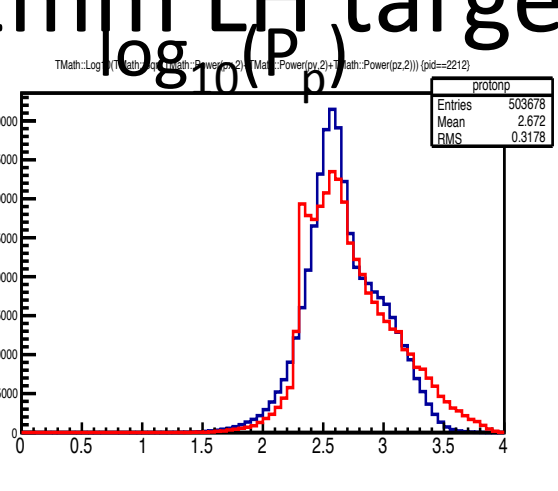
(vz-100) {pid==321}



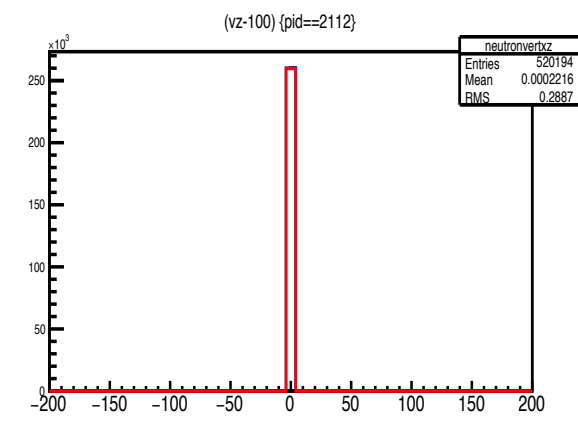
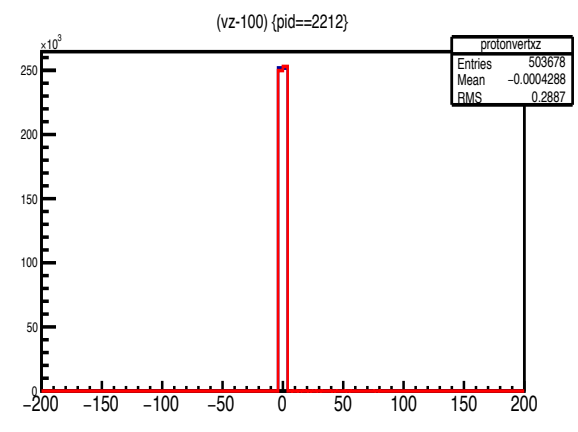
1mm LH target



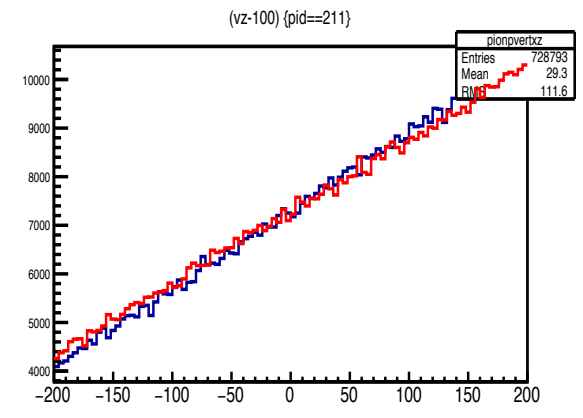
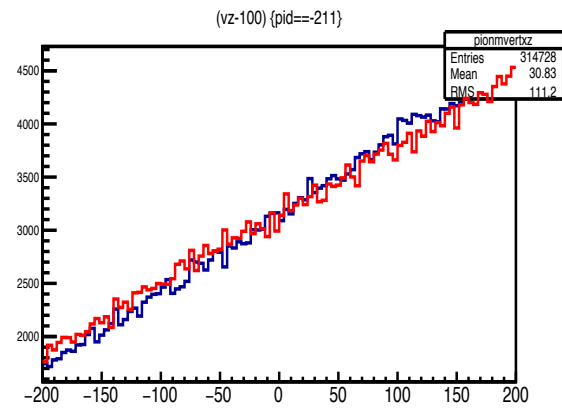
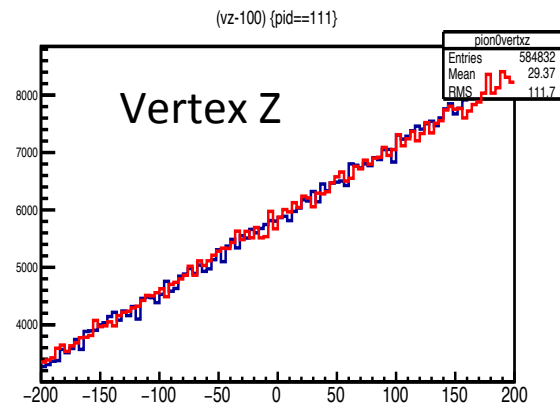
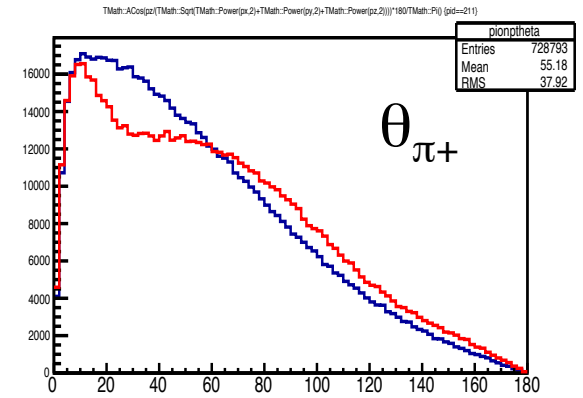
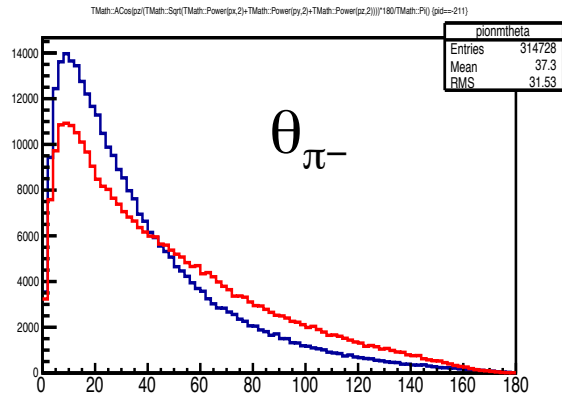
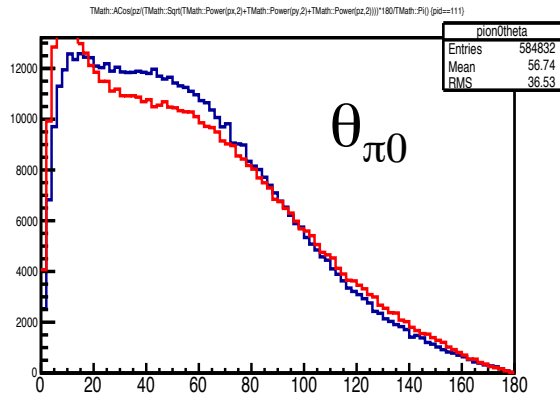
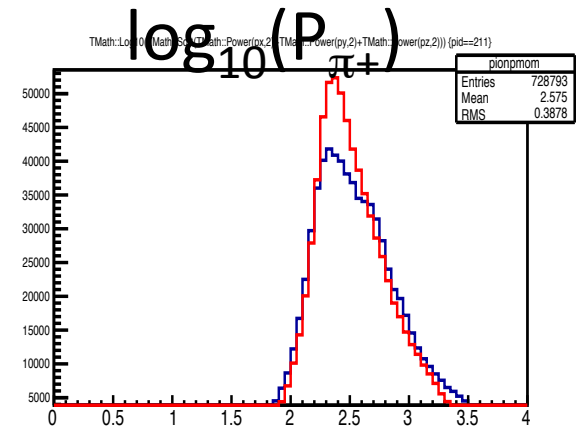
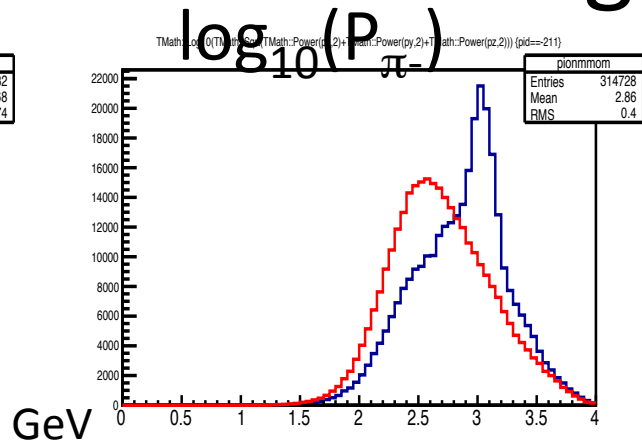
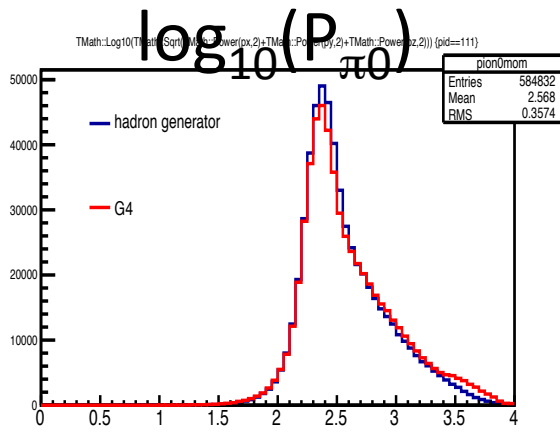
GeV



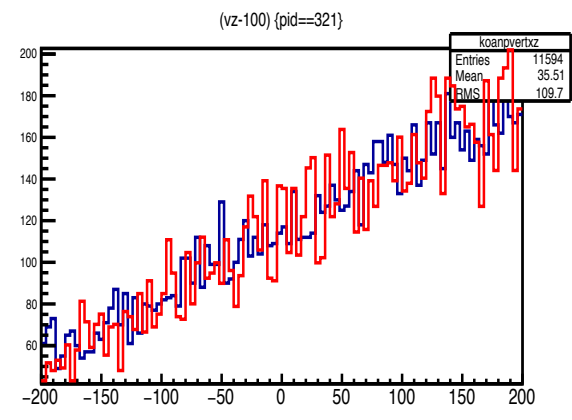
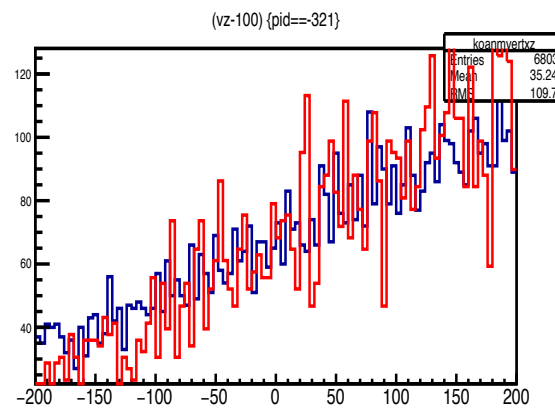
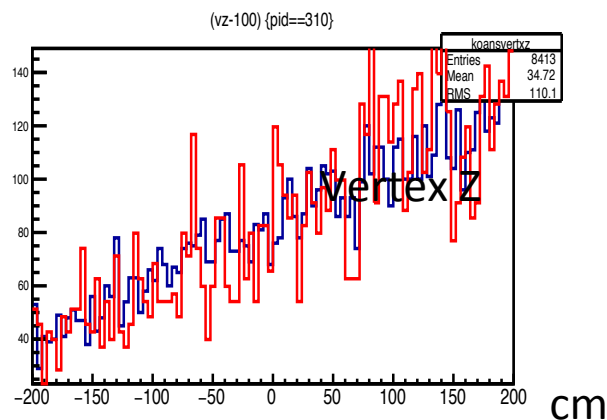
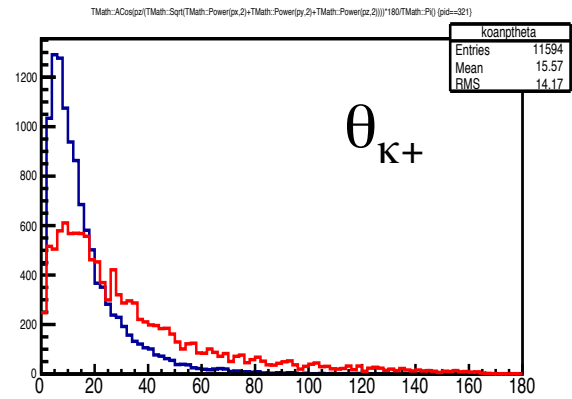
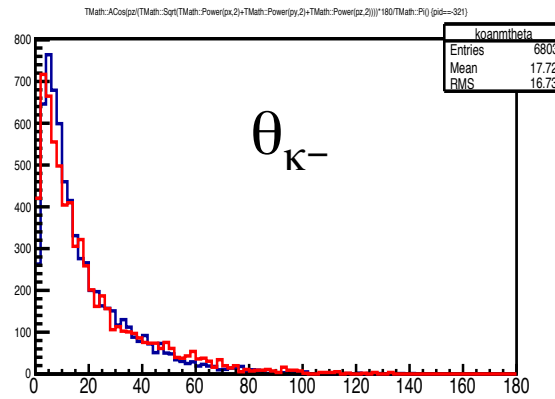
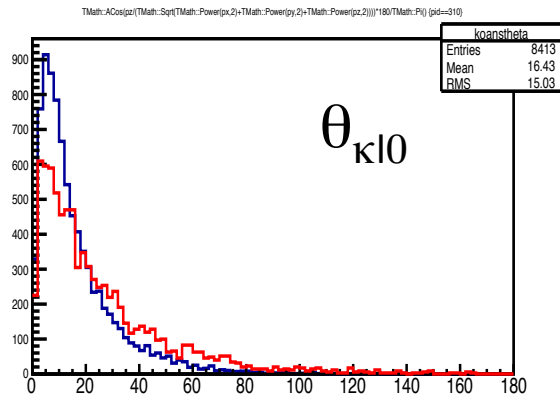
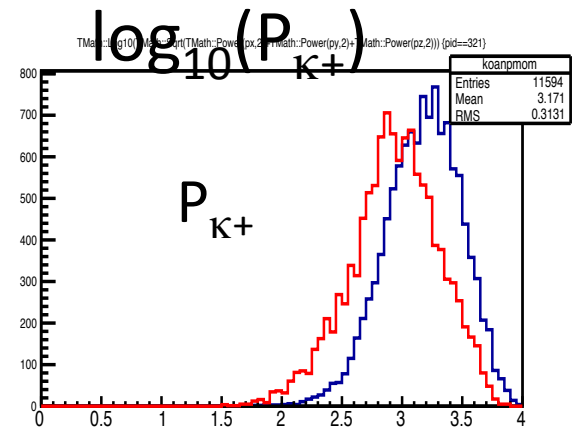
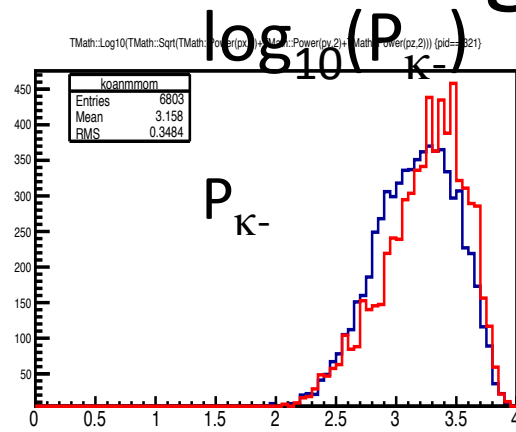
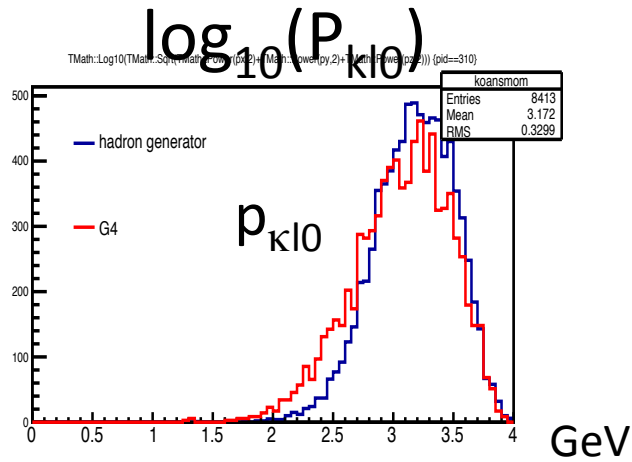
cm



40cm LH target



40cm LH target



40cm LH target

