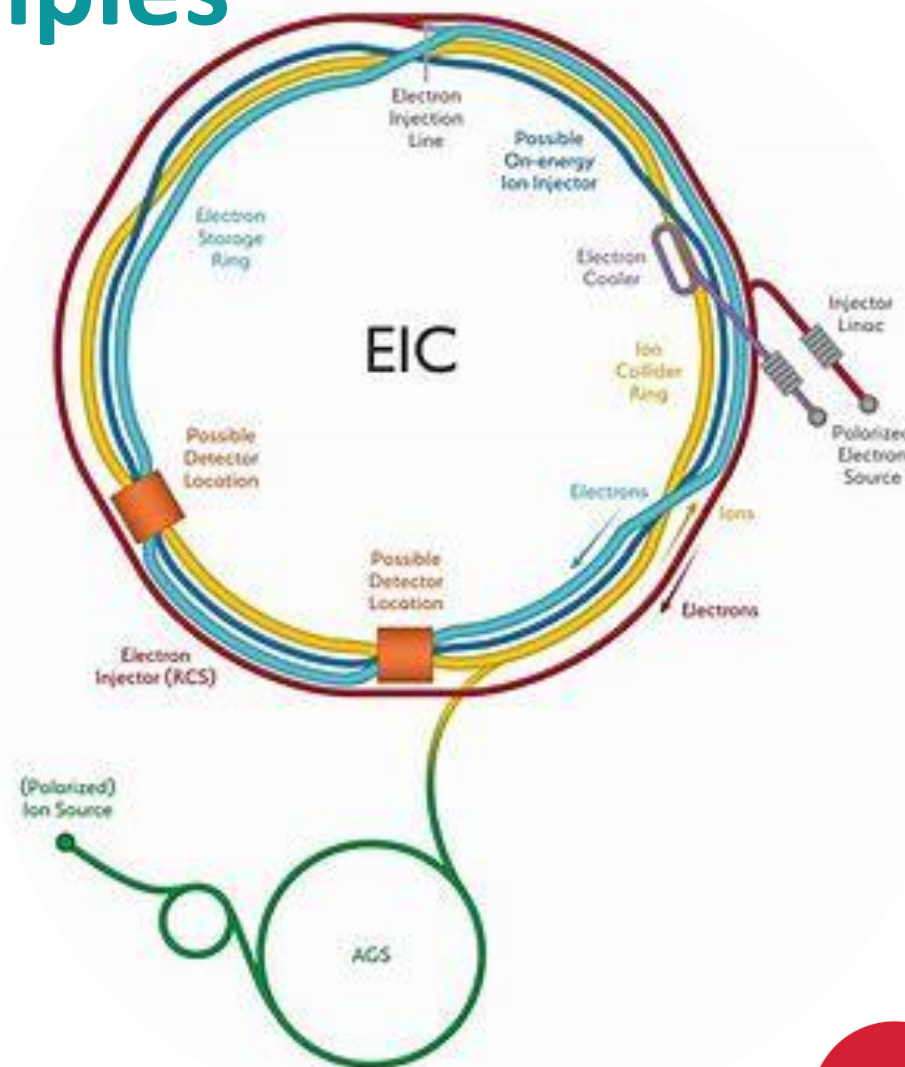


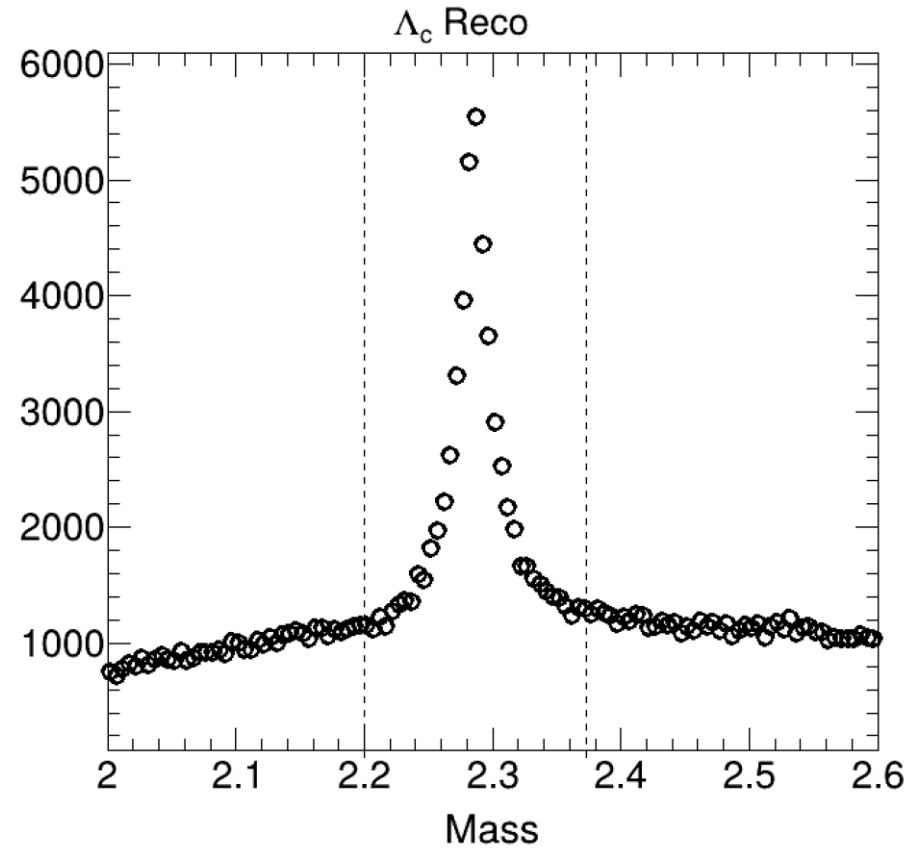
Data Samples

Lambda reconstruction efficiency study:

- ep Pythia simulation 10x100
- Event filter applied to keep only events with Λ_c that decay into a pion, proton and kaon
- Full detector simulation
- Only primary vertex included/ no explicit secondary vertex reconstruction
- One Λ_c found every 70 000 events
- 100 000 Λ_c are produced for a total of 6 943 676 080 events in about 2 weeks
- Under the supervision of Dr. Olga Evdokimov

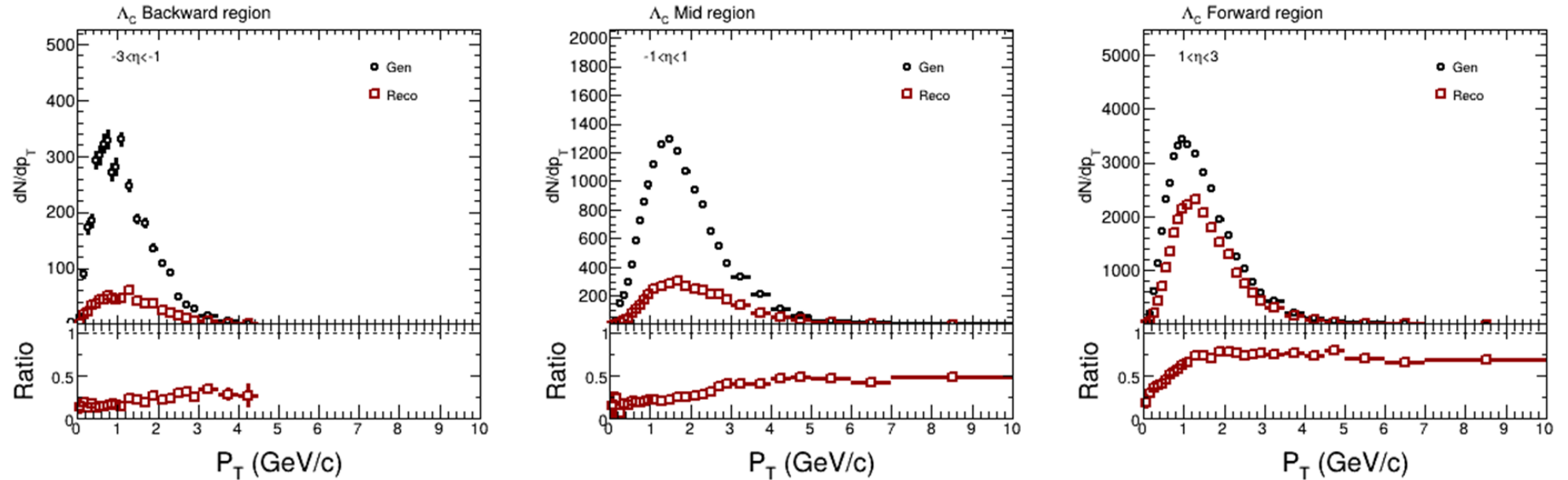


Invariant mass reconstruction



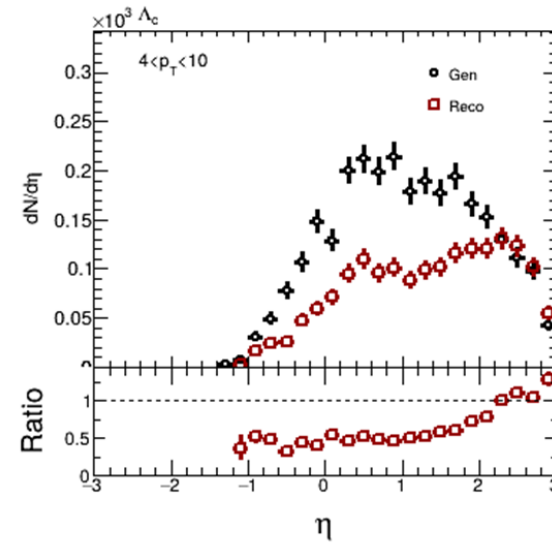
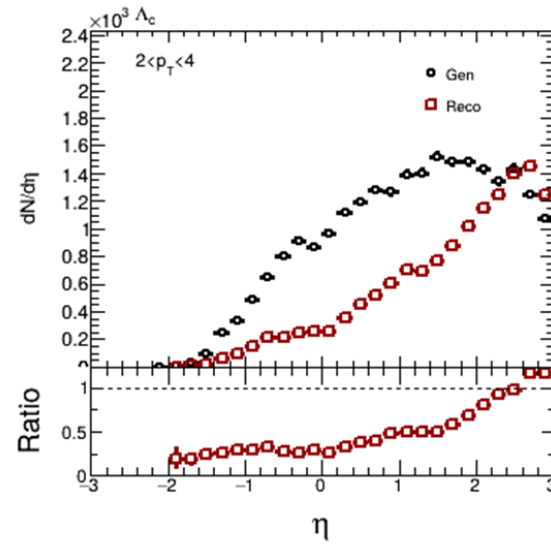
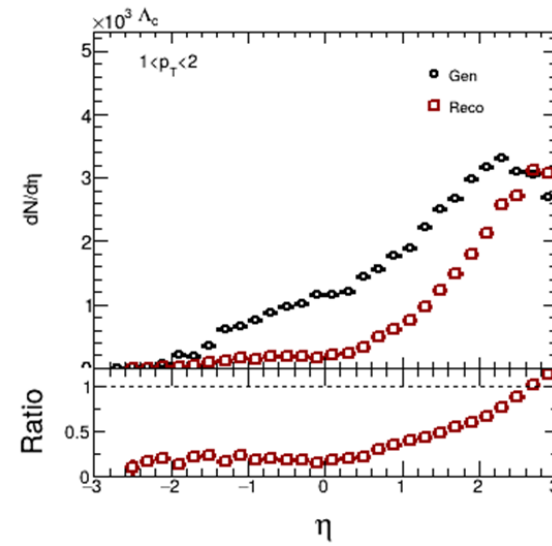
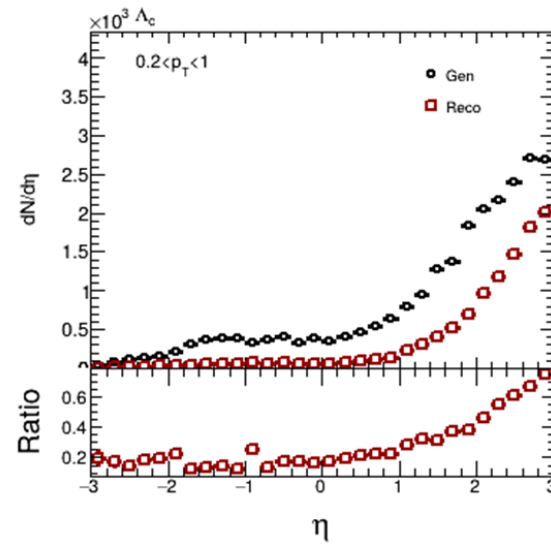
- All ρ, π, K triplets with total charge ± 1 are added to obtain the Λ_c mother
- Reco Λ_c consist of mothers with a mass within 0.086 from the Λ_c invariant mass (2.286)
- Protons are not identified correctly and are assigned a pdg of 0 instead of 2212

Λ_c reconstruction efficiency

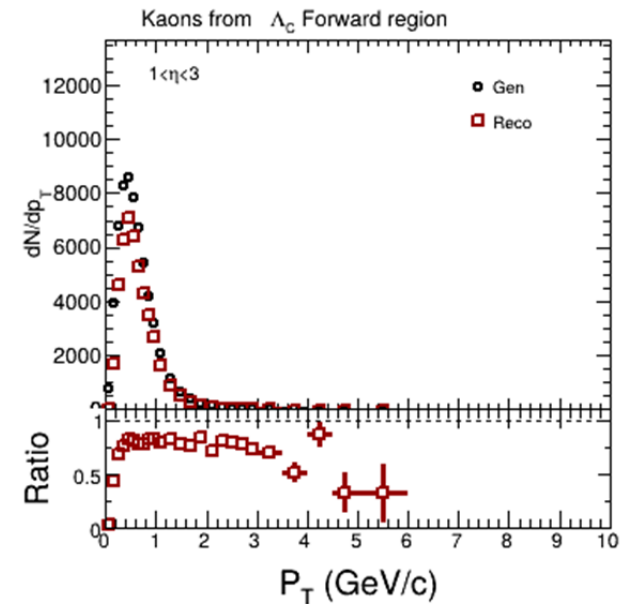
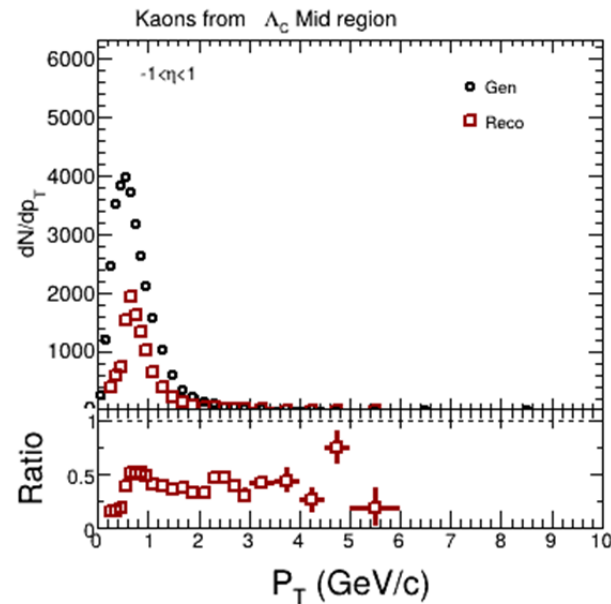
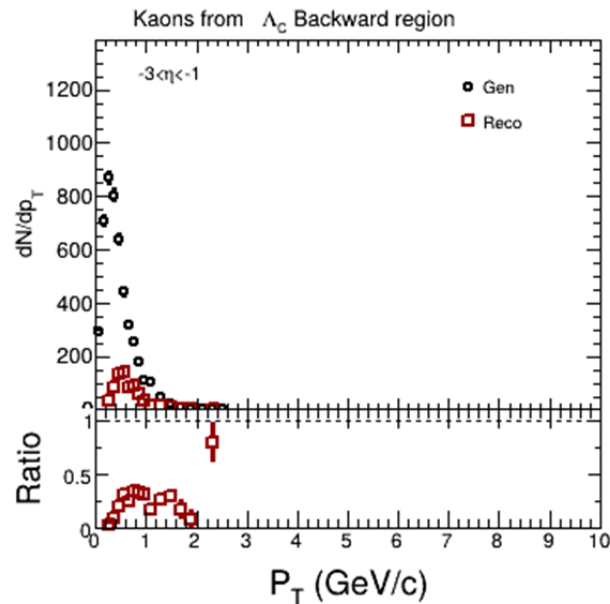
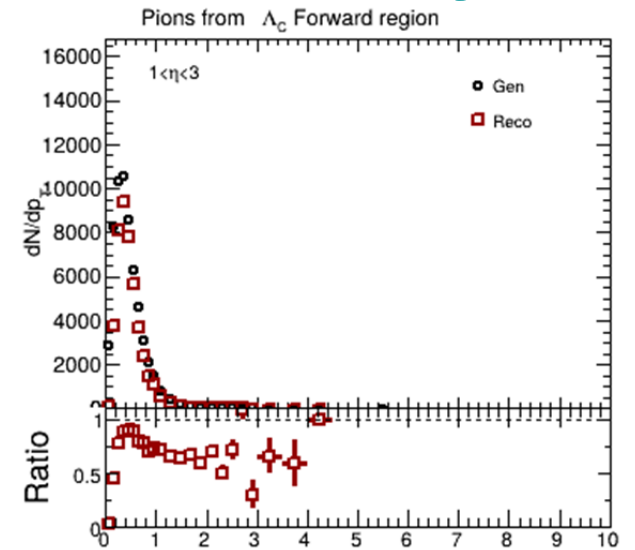
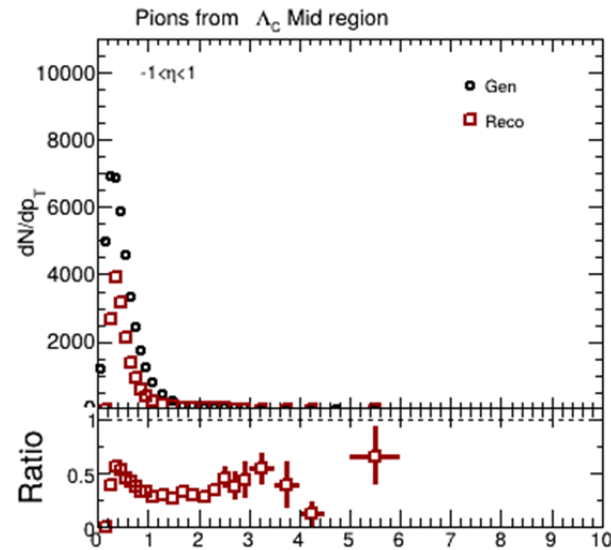
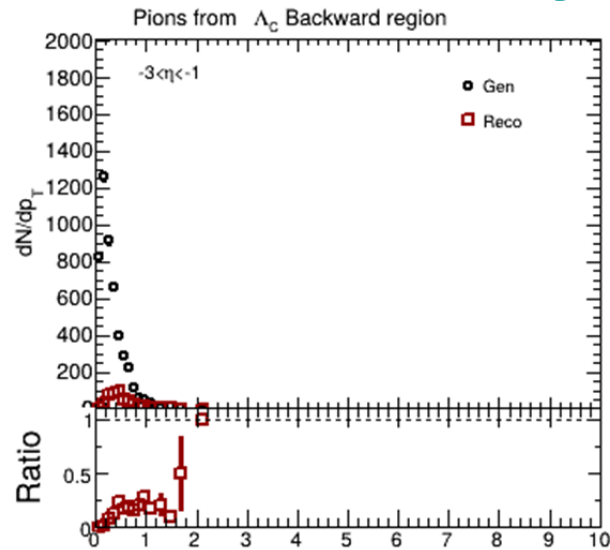


- All ρ, π, K triplets with total charge ± 1 are added to obtain the Λ_c mother
- Reco Λ_c consist of mothers with a mass within 0.086 from the Λ_c invariant mass (2.286)
- Protons are not identified correctly and are assigned a pdg of 0 instead of 2212

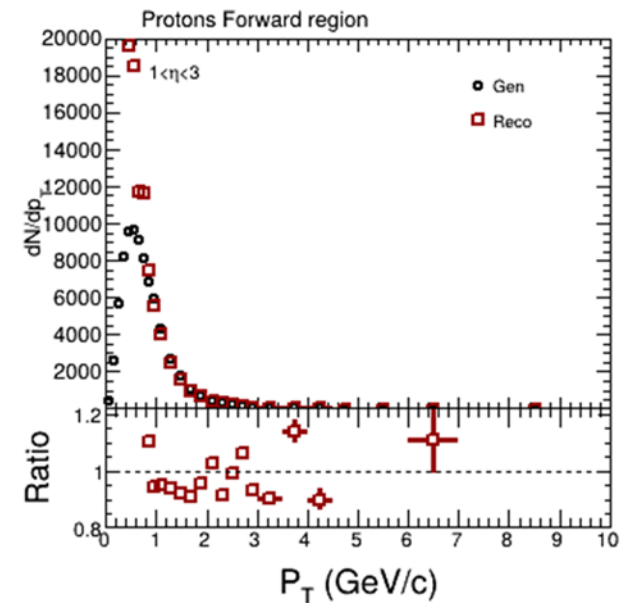
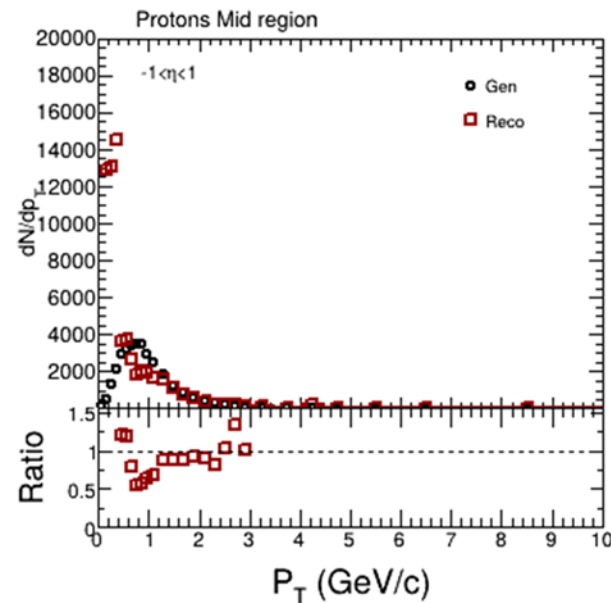
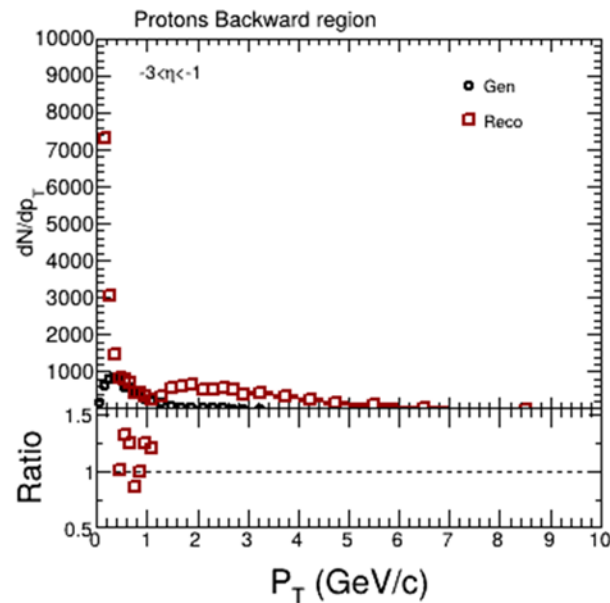
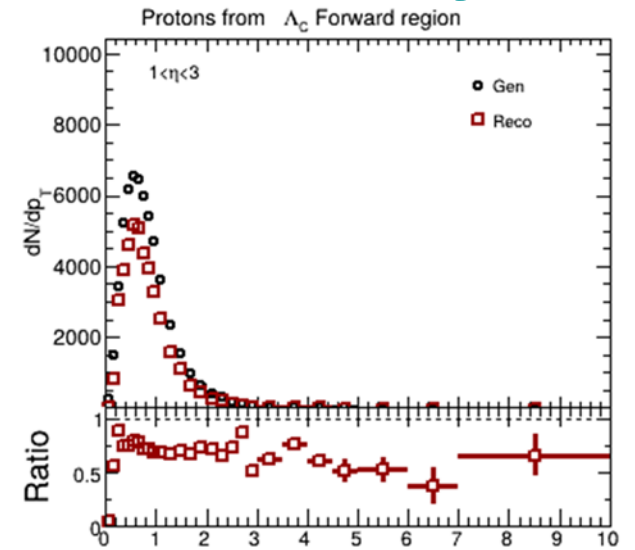
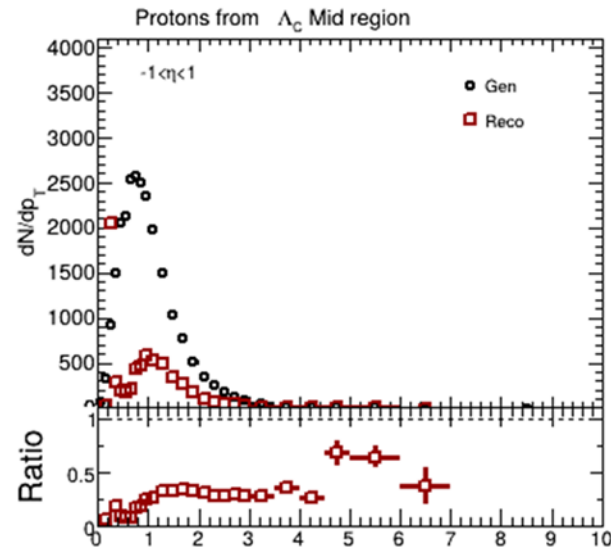
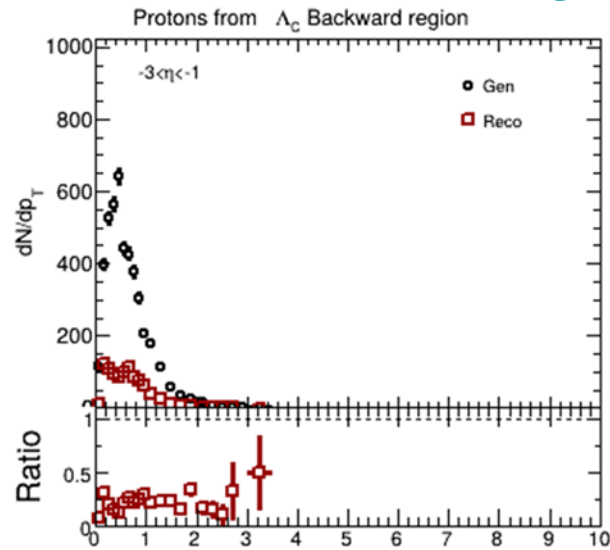
Λ_c reconstruction efficiency



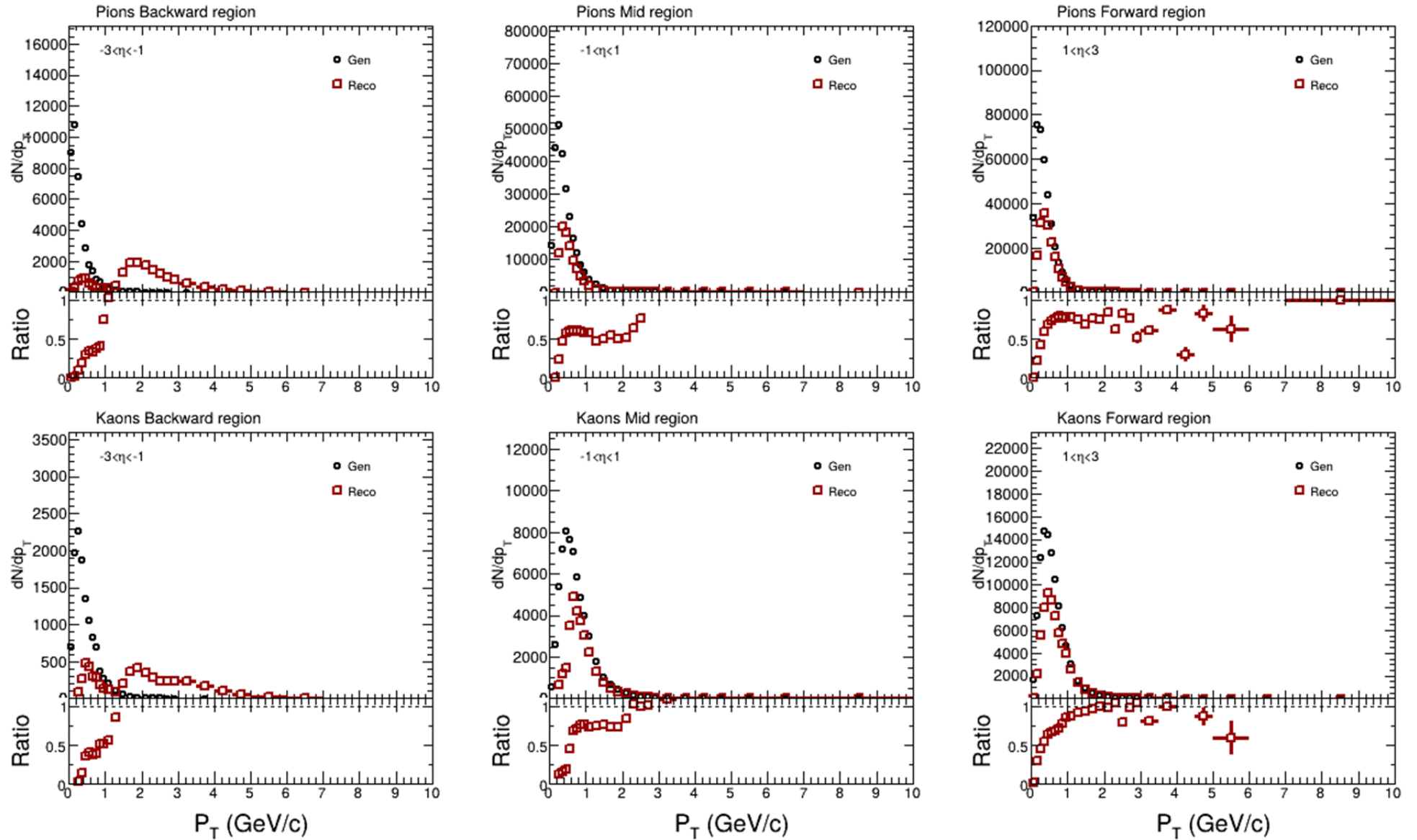
Secondary track reconstruction efficiency



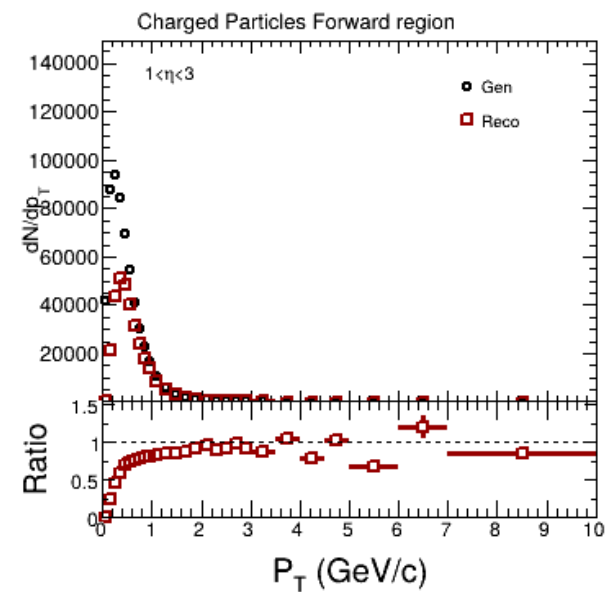
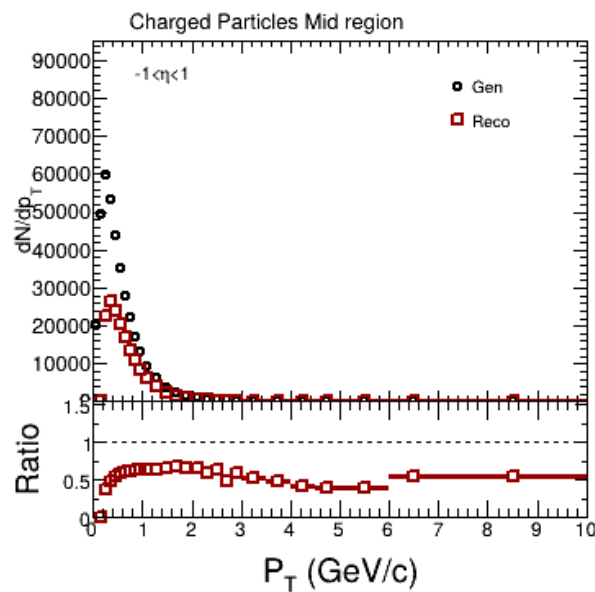
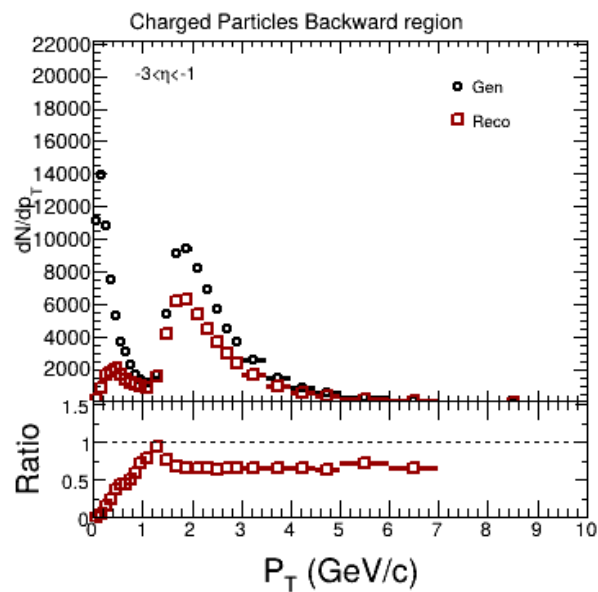
Secondary track reconstruction efficiency



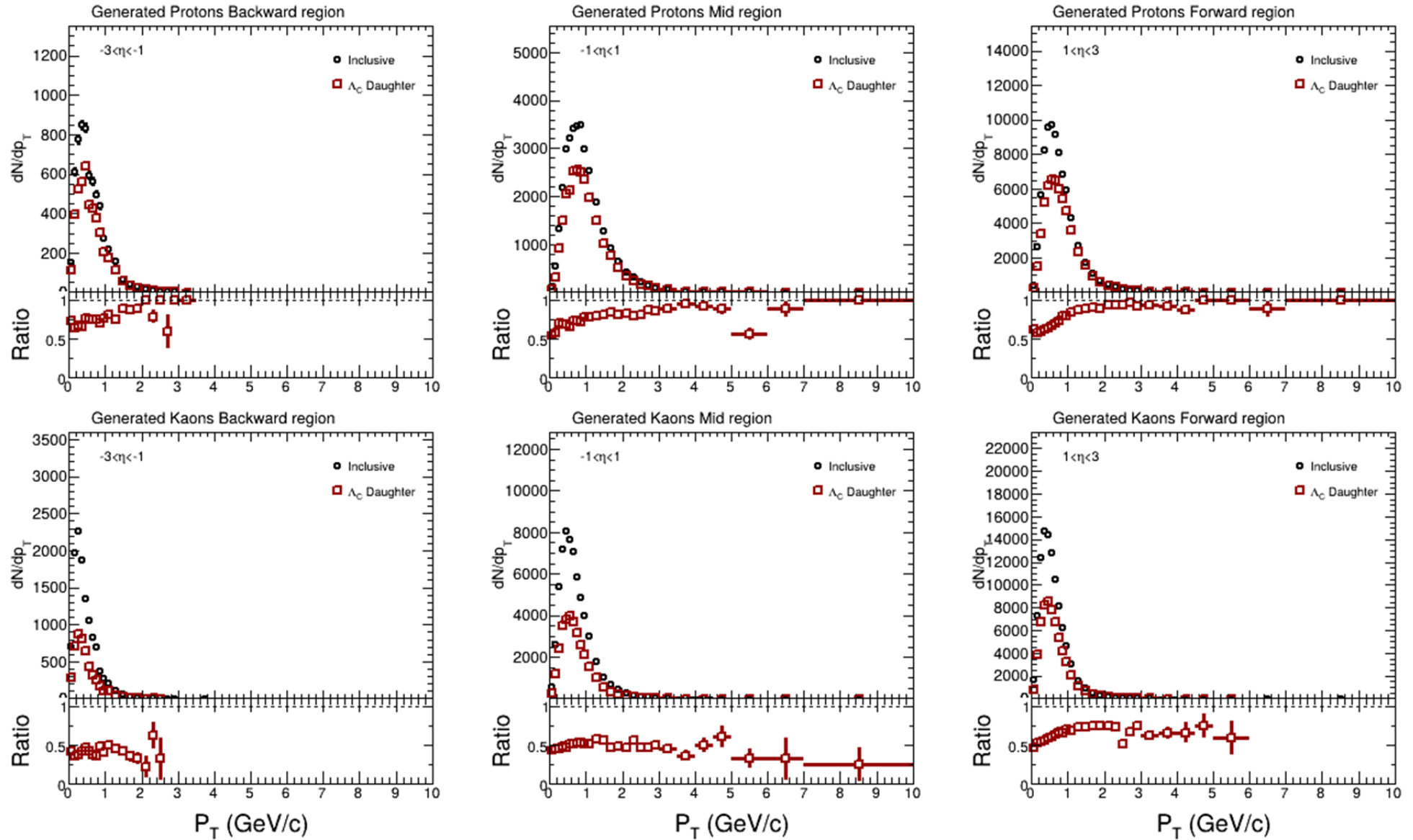
Secondary track reconstruction efficiency



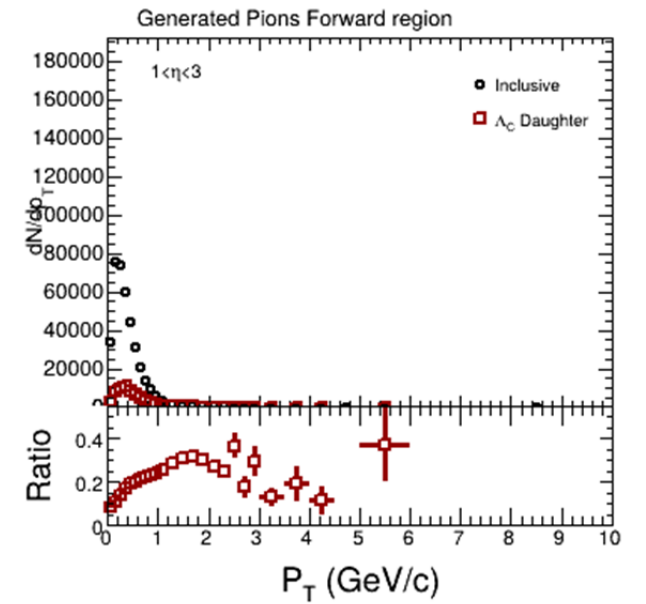
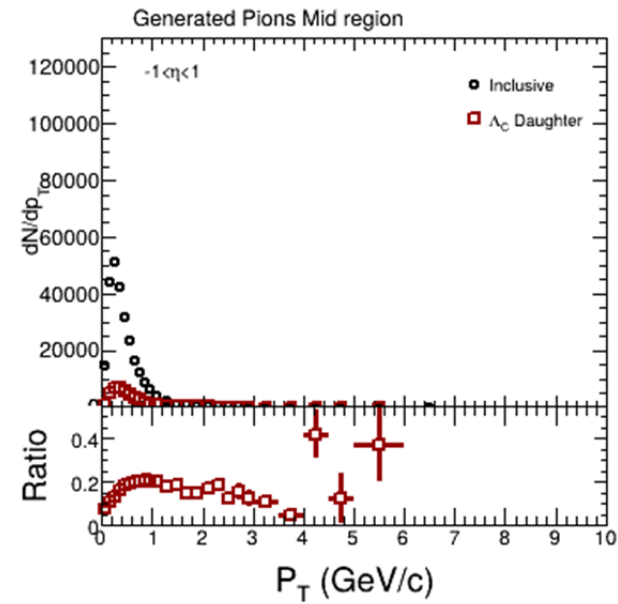
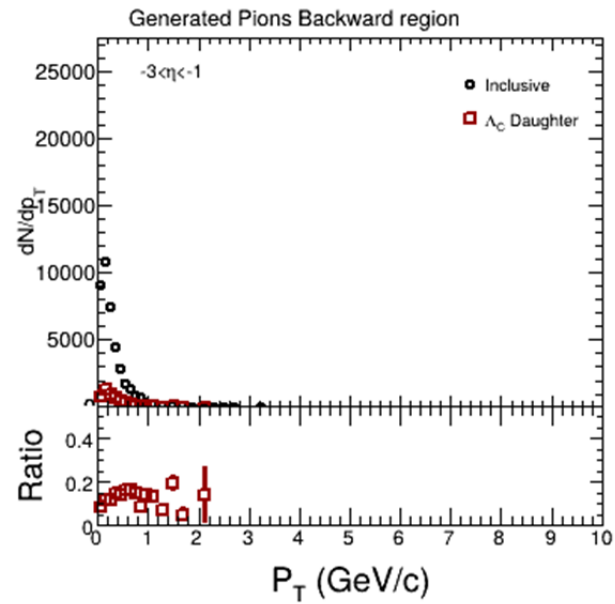
Charged particles reconstruction



Fraction of particles from Λ_c daughters



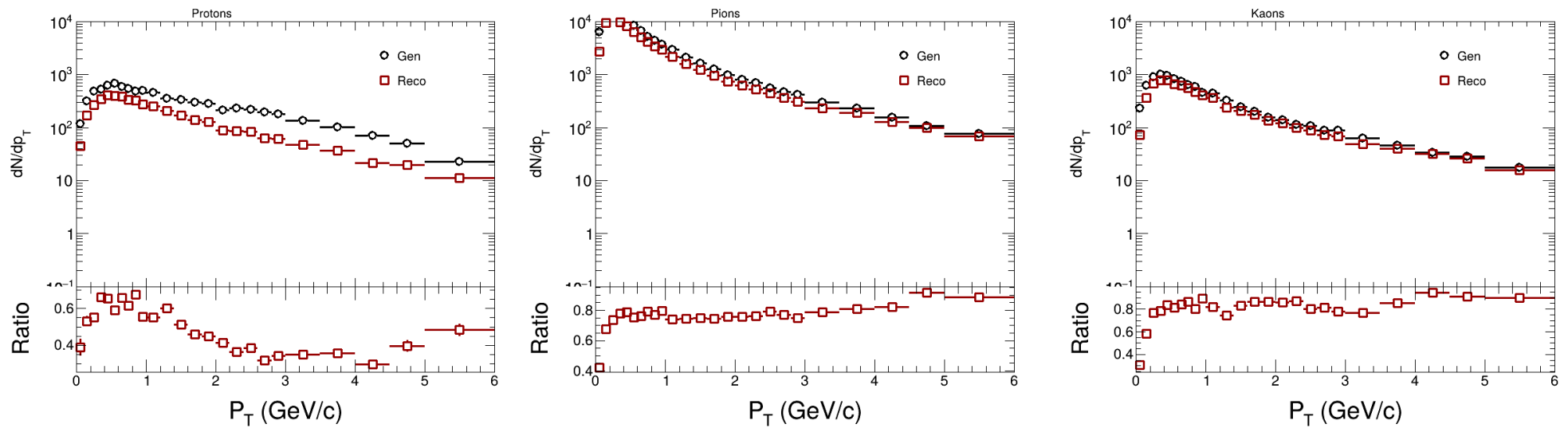
Fraction of particles from Λ_c daughters



Backup

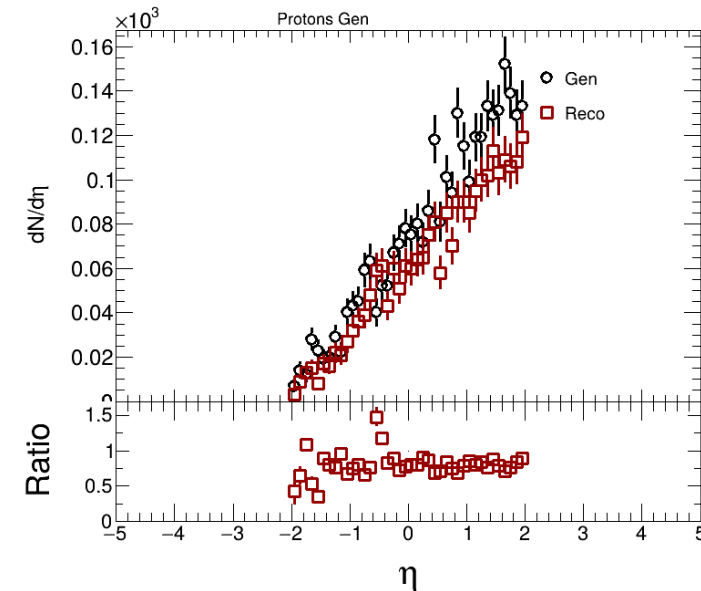
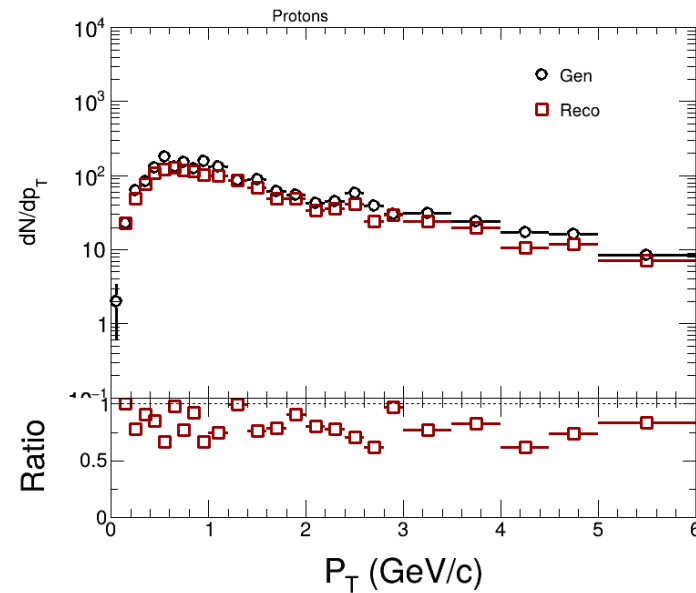


Secondary track reconstruction efficiency From other EIC simulations



- Efficiency of p, π, K vs p_T
- Reference files: `\EIC\EPIC\RECO\23.12.0\epic_craterlake\DIS\NC\18x275\minQ2=100\pythia8NCDIS_18x275_minQ2=100_beamEffects_xAngle=-0.025_hiDiv_1.0049.eicrecon.tree.edm4eic`

Secondary track reconstruction efficiency From other EIC simulations



- Efficiency of p for $|\eta| < 2$
- Reference files: `\EIC\EPIC\RECO\23.12.0\epic_craterlake\DIS\NC\18x275\minQ2=100\pythia8NCDIS_18x275_minQ2=100_beamEffects_xAngle=-0.025_hiDiv_1.0049.eicrecon.tree.edm4eic`

```
// Pythia Configuration File

// Beam Settings
Beams:idA = 2212
Beams:idB = 11
Beams:frameType = 2
Beams:eA = 100
Beams:eB = 10

// Process Settings
WeakBosonExchange:ff2ff(t:gmZ) = on
SpaceShower:dipoleRecoil = on
PDF:lepton = off

// Phase Space Settings
PhaseSpace:Q2min = 1
```