UNIQUENESS TRACKING IN DSELECTOR

- By default ReactionFilter write out the initial and final state particles used in the combos .
- Each charged track is reconstructed under several different mass hypotheses.
- These mass hypotheses are used in the reconstructed combos
- The mapping between charged particle hypotheses and reconstructed tracks are done in DSelector to keep track of unique track IDs.

Extra Unused Energy Shower = Total energy of unmatched showers that are in time with the combo, but are not part of the combo,

Number of Unused Tracks = Number of charged particle tracks in the event and not used in the combo,

Number of Unused Shower= Number of unmatched showers in the event and not used in the combo,

Cuts : Number of Unused Tracks =0,
        Number of Unused Shower =0,
        Extra Unused Energy Shower =0,

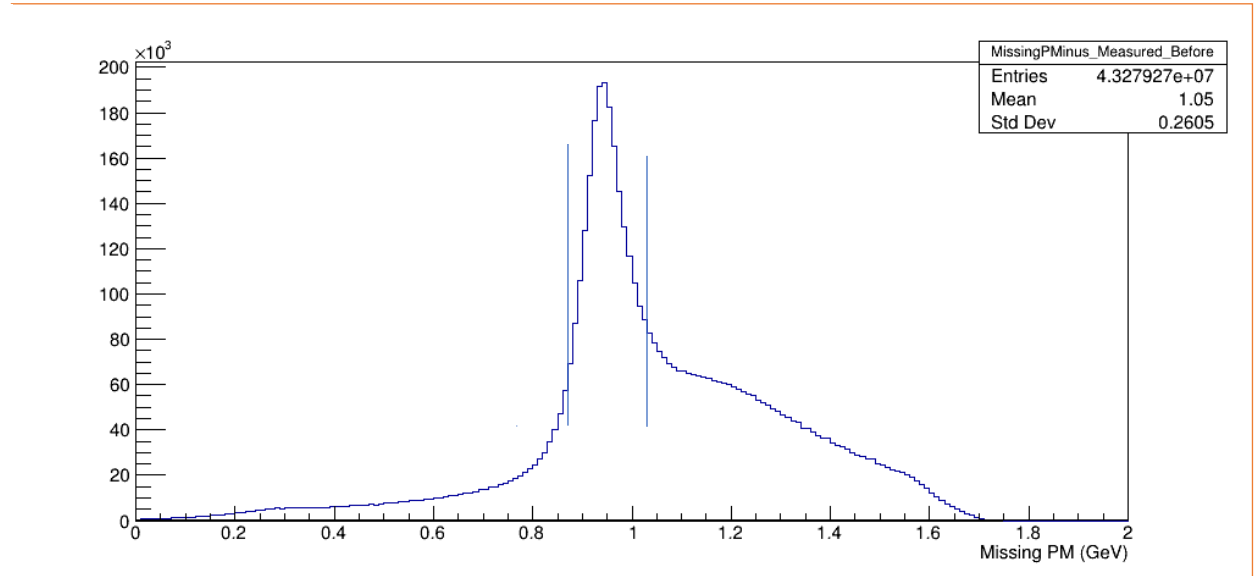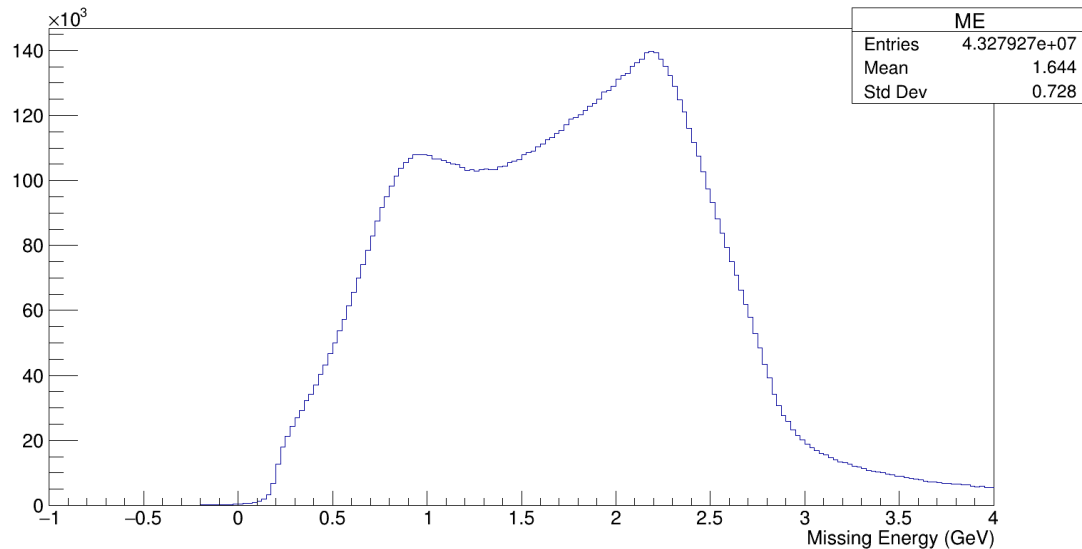# With and Without cut on unused shower ,unused tracks and unused energy.
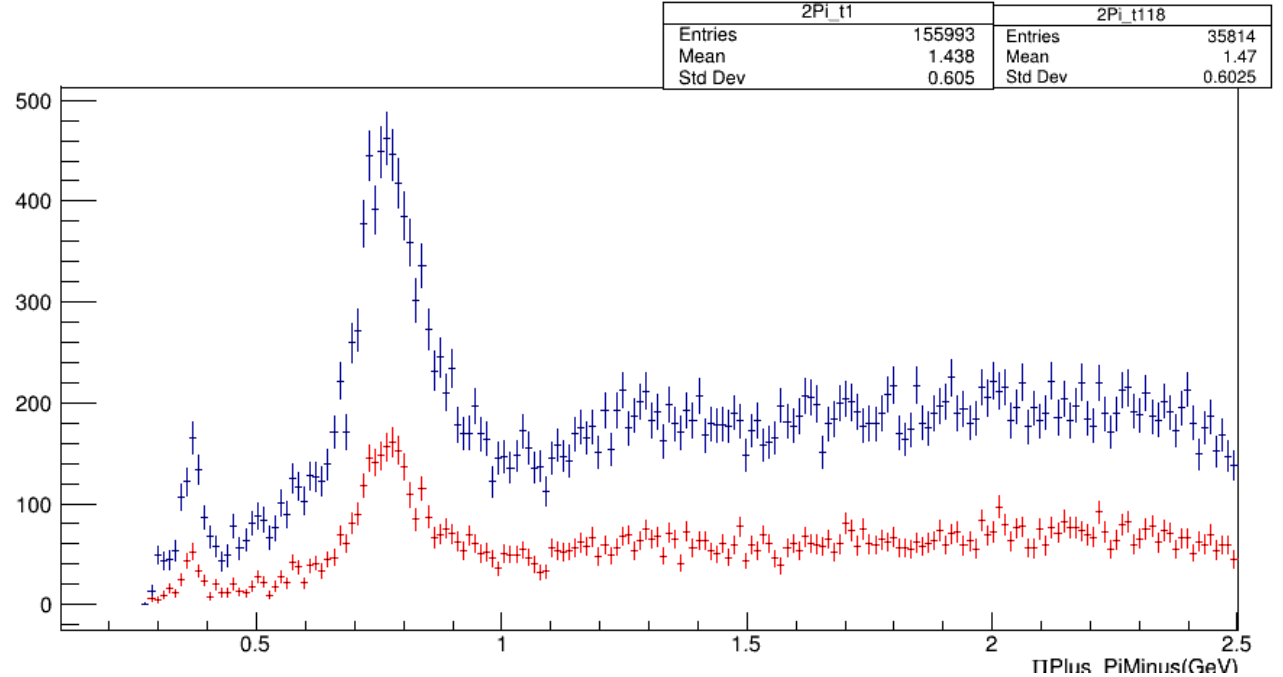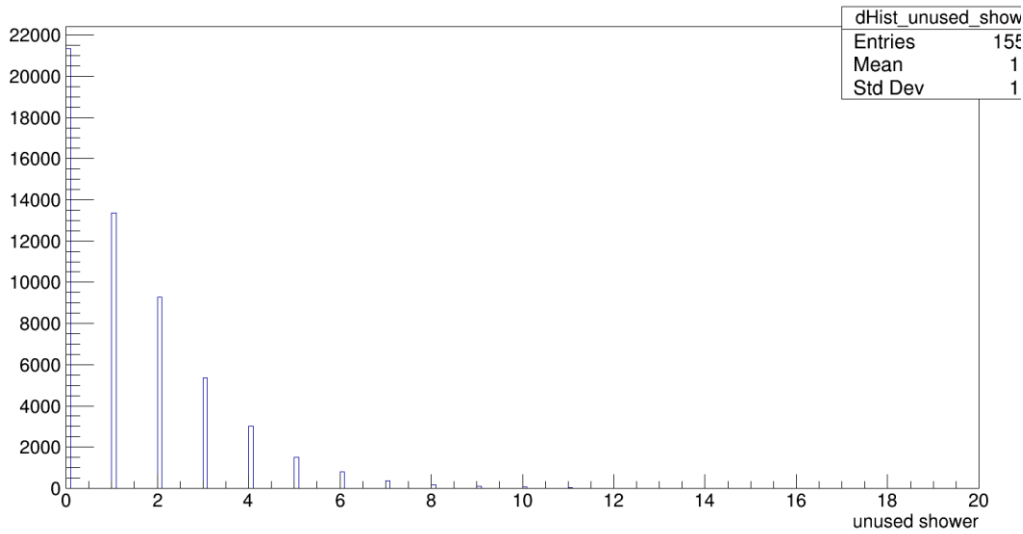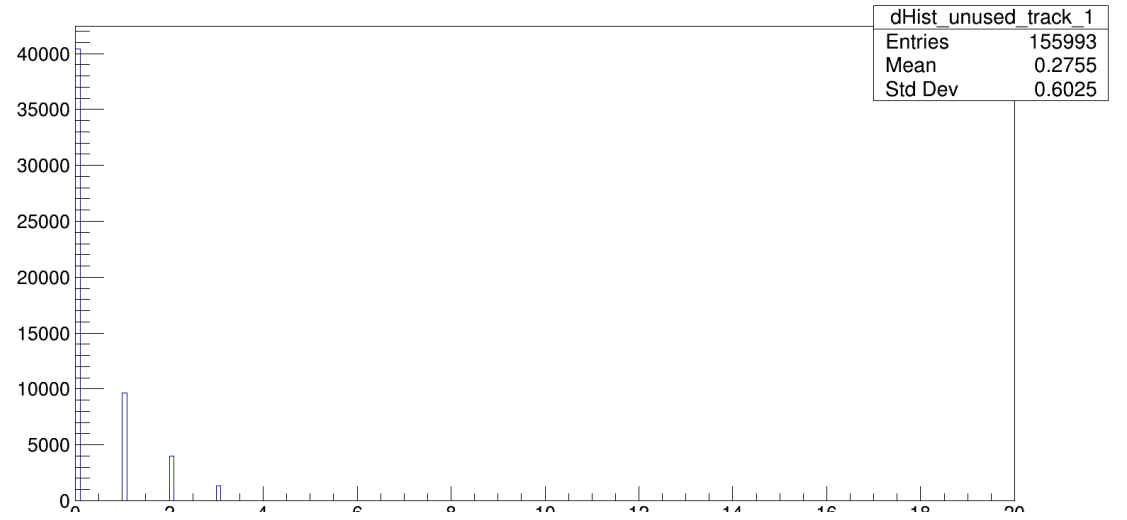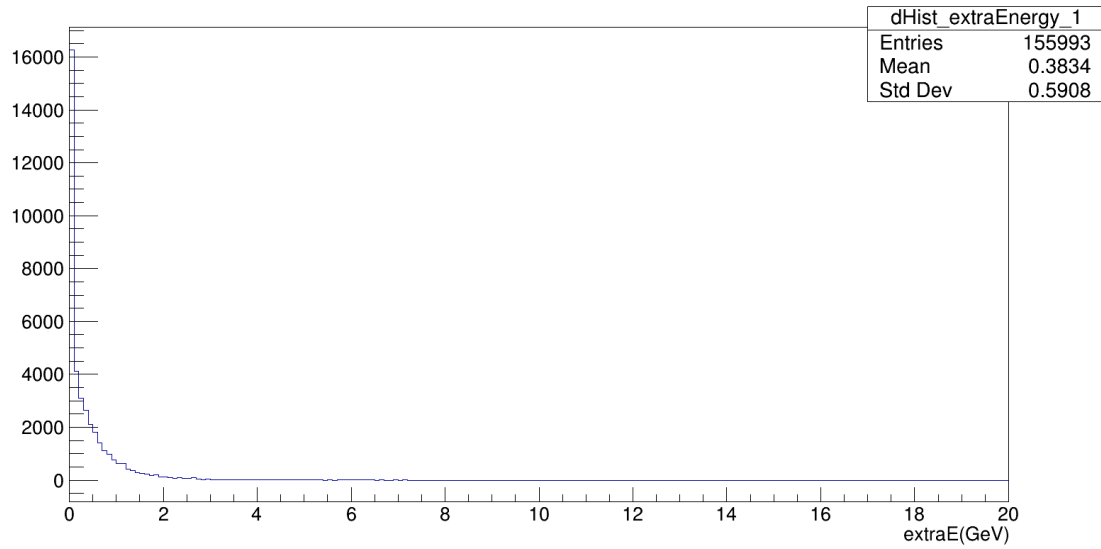
Missing Energy vs Missing Piminus .

(Only Vertex and Energy cut applied)

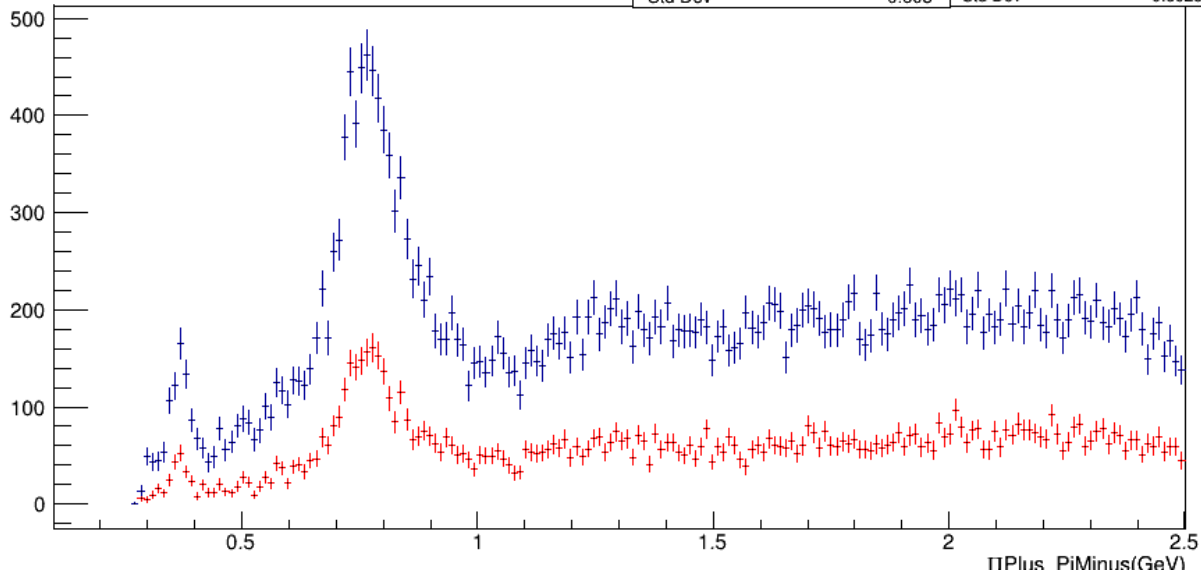*Missing Energy = (beam + Target –(Piplus + PiMinus – Proton).E*

Missing Mass Squared = (beam + Target –(Piplus + PiMinus – Proton).M2();

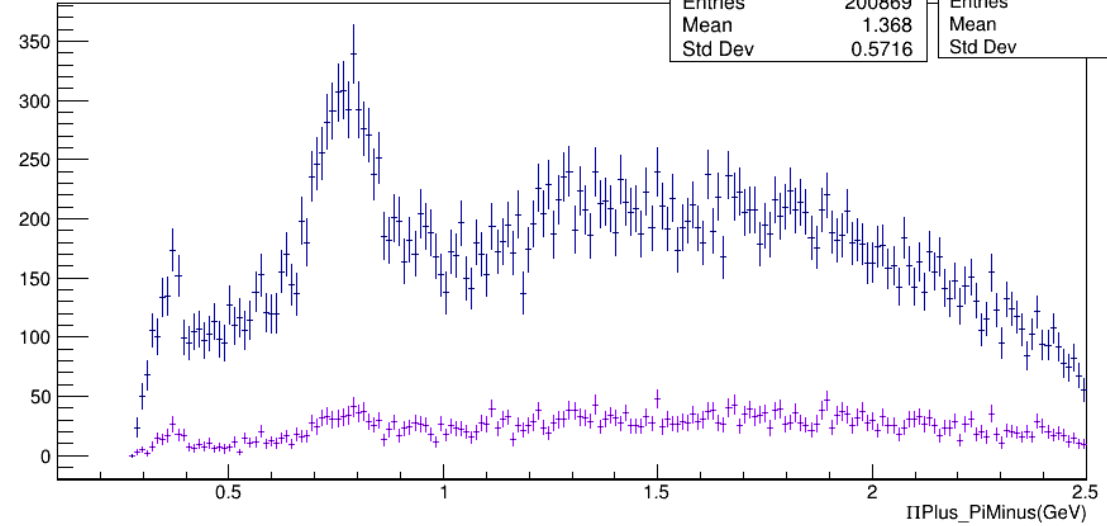*Missing Pminus = (beam + Target –(Piplus + PiMinus – Proton).E - (beam + Target –(Piplus + PiMinus – Proton).Pz*

Applying Missing Mass Squared Cut vs Missing Piminus cut.(with and without cut on extra unused shower, energy and track)
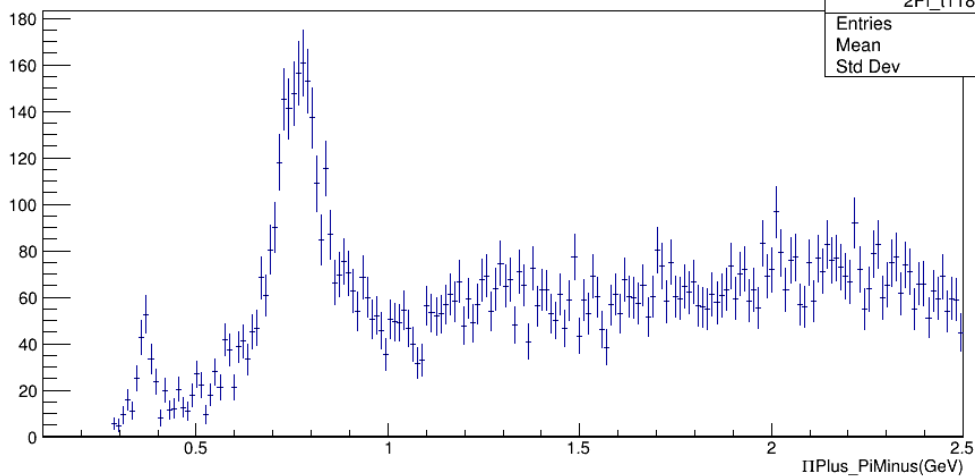
Work in Progress

- Working on Reaction for Carbon and Helium

D2	Rho0 p	1_45__8_9_14_m13	F4_B4	Bhesha, Phoebe	Missing Neutron
He4	Rho0 p	1_47__8_9_14_m46	F4_B4	Bhesha	Missing Tritium
C12	Rho0 p	1_67__8_9_14_m66	F4_B4	Bhesha	Missing 11B
D2	Rho0 p	1_45__8_9_14_m0	F4_B4	Bhesha, Phoebe	Missing Unknown
He4	Rho0 p	1_47__8_9_14_m0	F4_B4	Bhesha, Phoebe	Missing Unknown
C12	Rho0 p	1_67__8_9_14_m0	F4_B4	Bhesha, Phoebe	Missing Unknown
He4	Rho0 p p	1_47__8_9_14_14_m0	F4_B4	Phoebe	Missing Unknown
C12	Rho0 p p	1_67__8_9_14_14_m0	F4_B4	Phoebe	Missing Unknown

UNIQUENESS TRACKING IN DSELECTOR

set<map<Particle_t, set<Int_t> > > locUsedSoFar_MissingMass;

//// Filling Histogram
 map<Particle_t, set<Int_t> > locUsedThisCombo_MissingMass;
                    locUsedThisCombo_MissingMass[Unknown].insert(locBeamID); //beam
                    locUsedThisCombo_MissingMass[PiPlus].insert(locPiPlusTrackID);
                       locUsedThisCombo_MissingMass[PiMinus].insert(locPiMinusTrackID);
        locUsedThisCombo_MissingMass[Proton].insert(locProtonTrackID);
if(locUsedSoFar_MissingMass.find(locUsedThisCombo_MissingMass) == locUsedSoFar_MissingMass.end())

            {
            <mark>Fill histogram</mark>
locUsedSoFar_MissingMass.insert(locUsedThisCombo_MissingMass);   }   }

Extra Unused Energy = dComboWrapper->Get_Energy_UnusedShowers();
Unused Tracks = dComboWrapper->Get_NumUnusedTracks();
Unused Shower = dComboWrapper->Get_NumUnusedShowers();