Solving selection's problems

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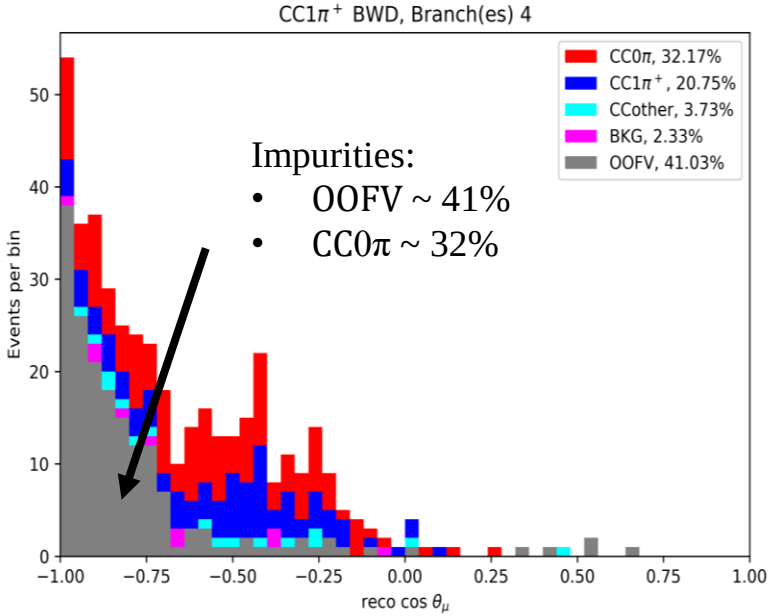
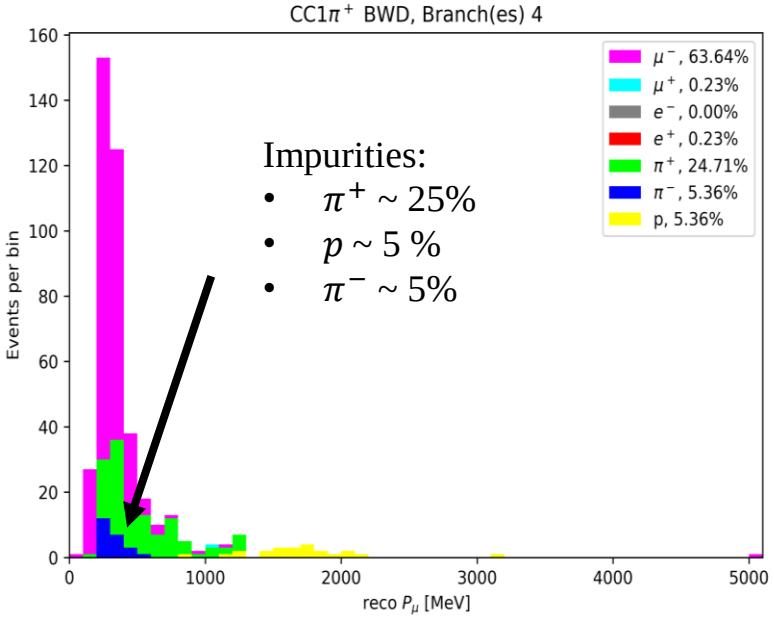
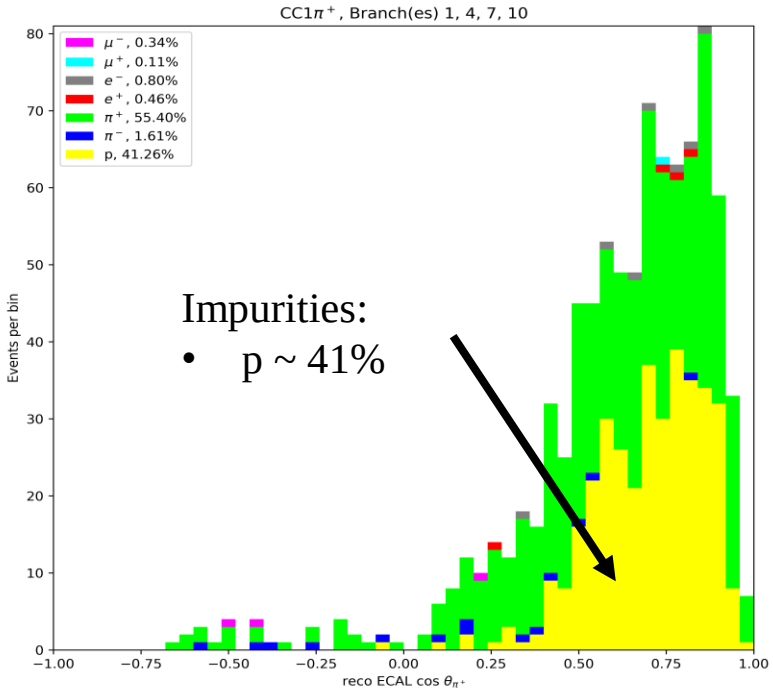
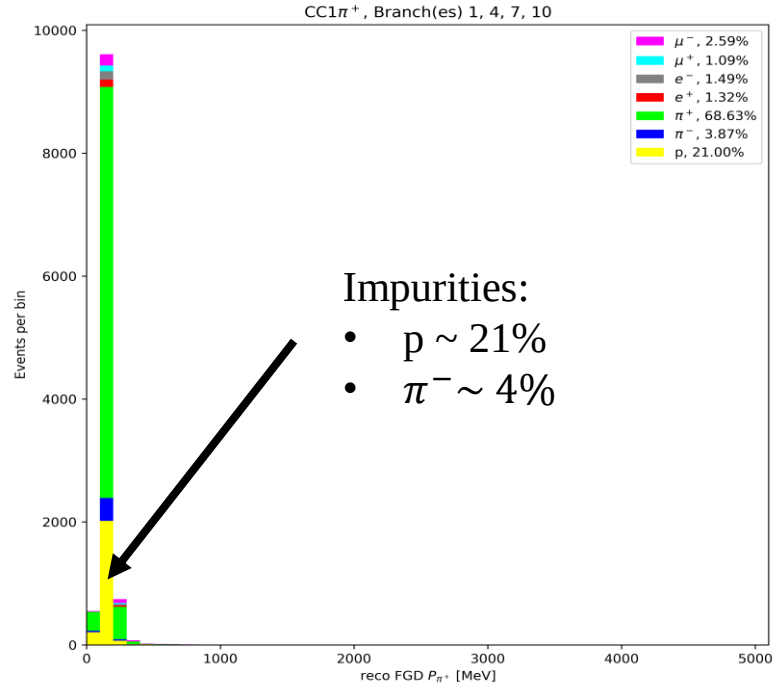
Problems

- ✓ 41 % of OOFV events in the BWD direction
- ✓ 35 % of particles that are mis indentify as muons
- ✓ 41 % of protons that are mis indentify as pions in ECal
- ✓ 21 % of protons that are mis indentify as pions in FGD1









BWD Muon Kinematics

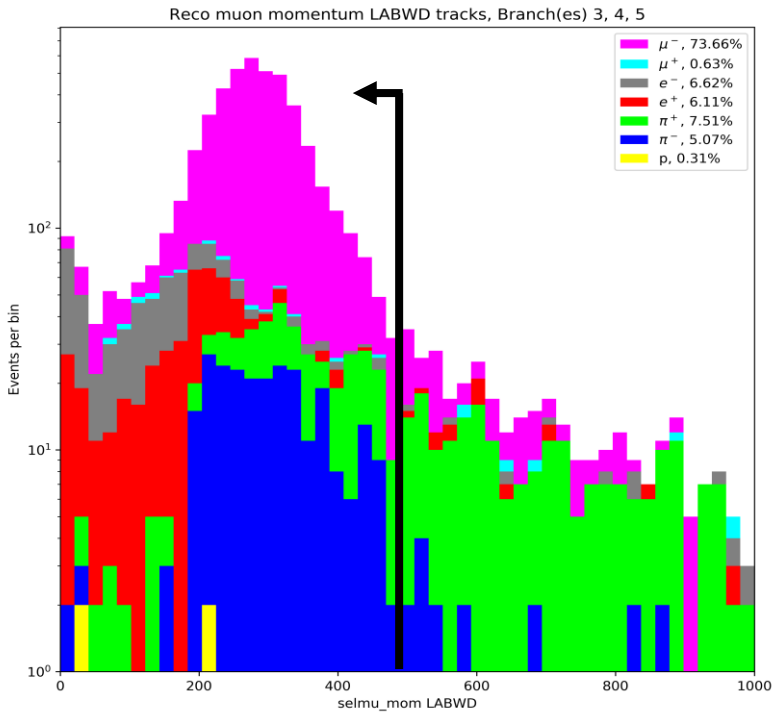
Muon PID for BWD direction is based in a single cut: $L_\mu > 0.05$

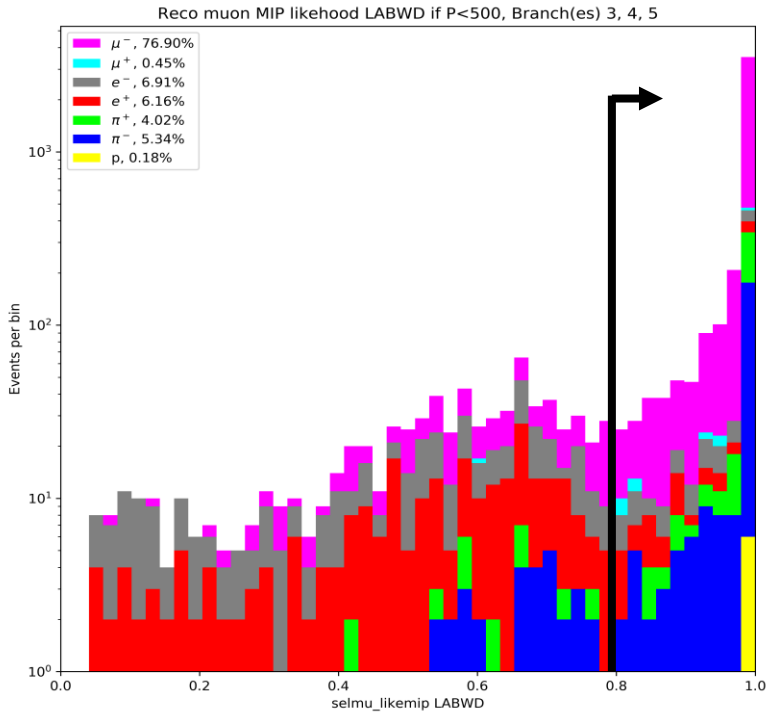
- ✓ If the cut is change to:
  - ✓ $L_\mu > 0.7$

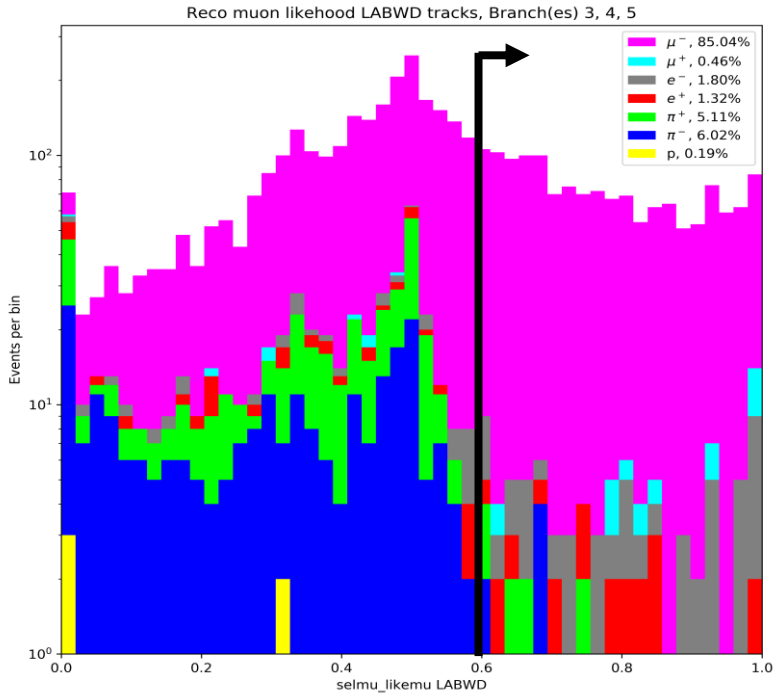
We obtain a purity of $CC1\pi^+$ ~ 46% with $OOFV$ ~ 12% and an efficiency ~ 9%.

- ✓ If the cut is change to:
  - ✓ $P < 500\ MeV$
  - ✓ $L_{MIP} > 0.8$
  - ✓ $L_\mu > 0.6$

We obtain a purity of $CC1\pi^+$ ~ 40% with $OOFV$ ~ 10% and an efficiency ~ 12%







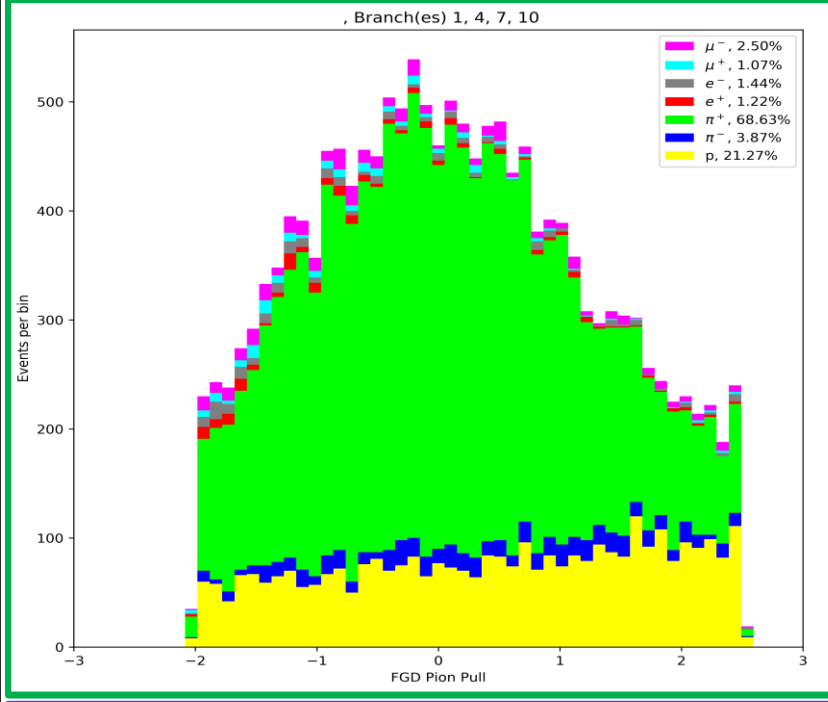
FGD and ECal Positive Pion Kinematics

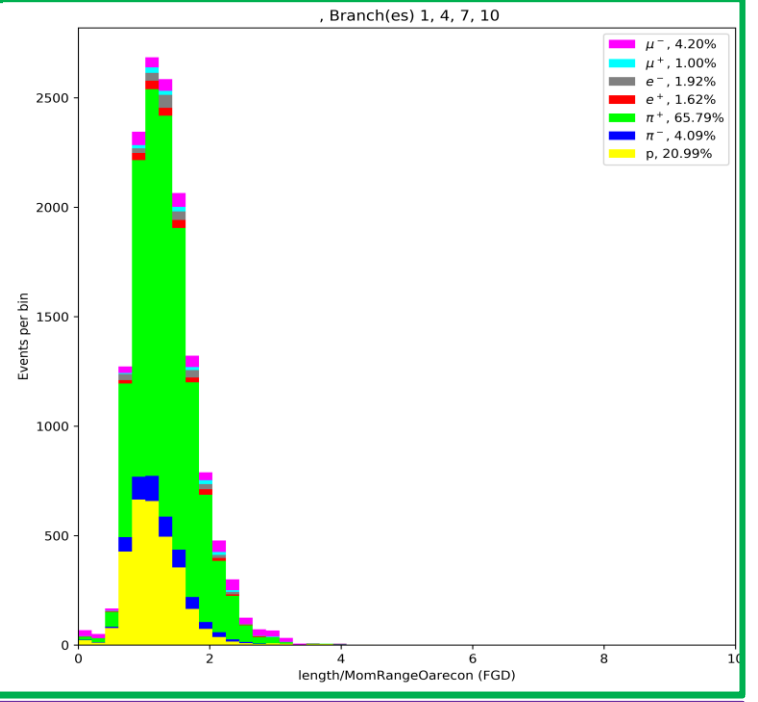
FGD Pion PID

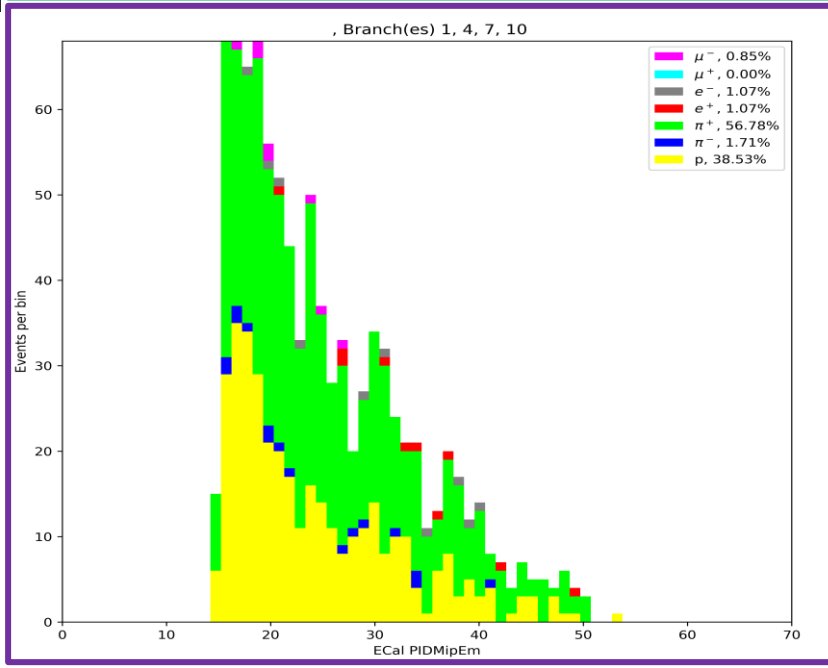
- ✓Track should be in the same time bunch as the muon,
- ✓Track should have no TPC information,
- ✓Track needs to start and stop in FGD,
- ✓-2.0 < Pion pull < 2.5

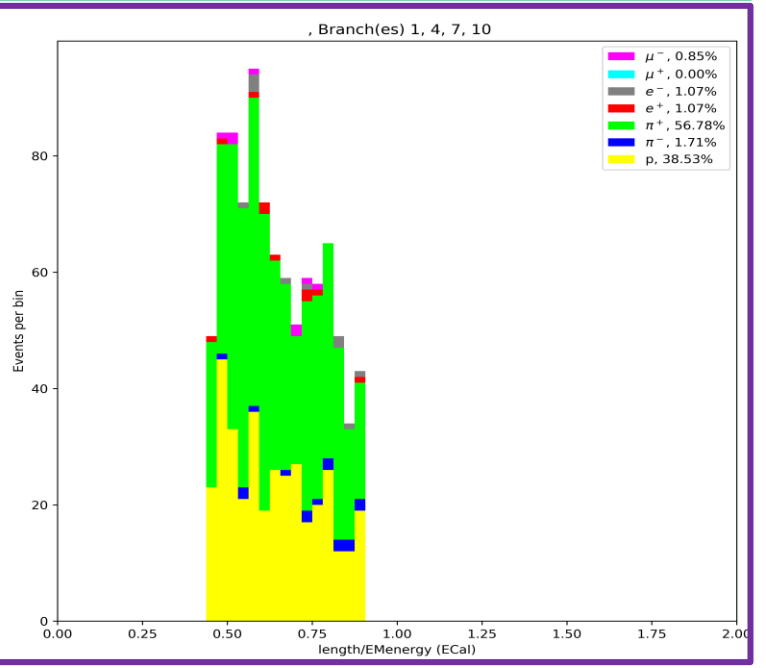
ECal Pion PID

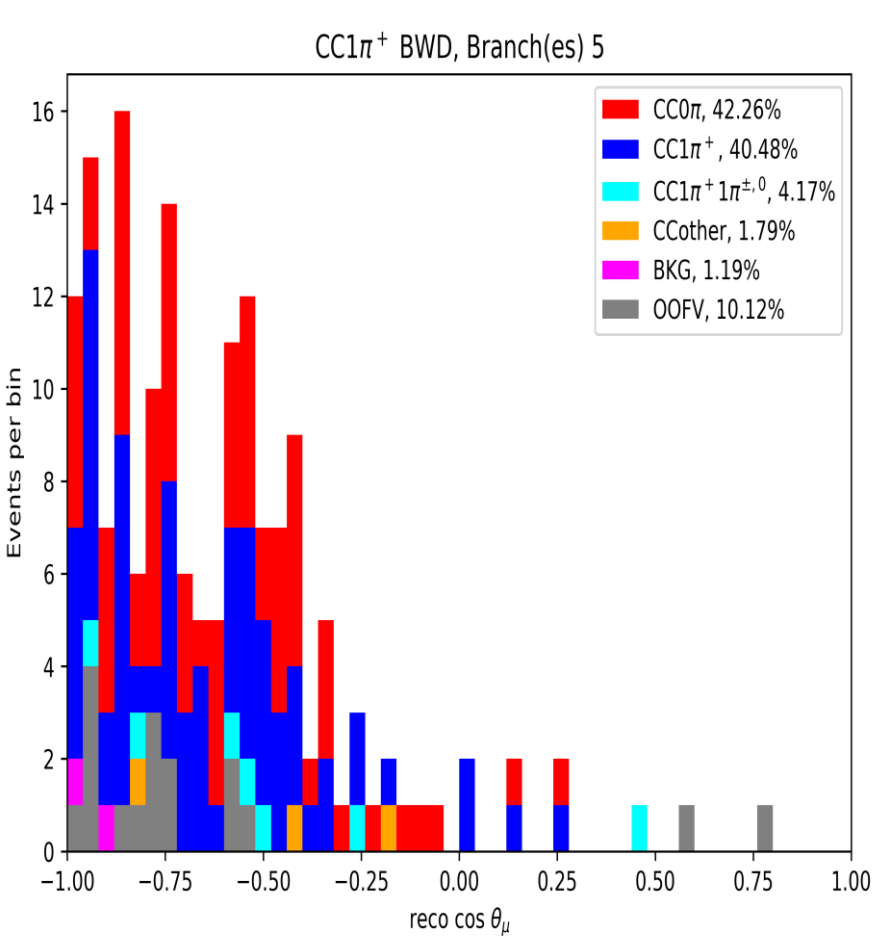
- ✓Track needs to start in FGD1
- ✓Stop in the Barrel ECal,
  - ✓PIDMipEm > 15
  - ✓0.45 < Length/EMenergy < 0.9

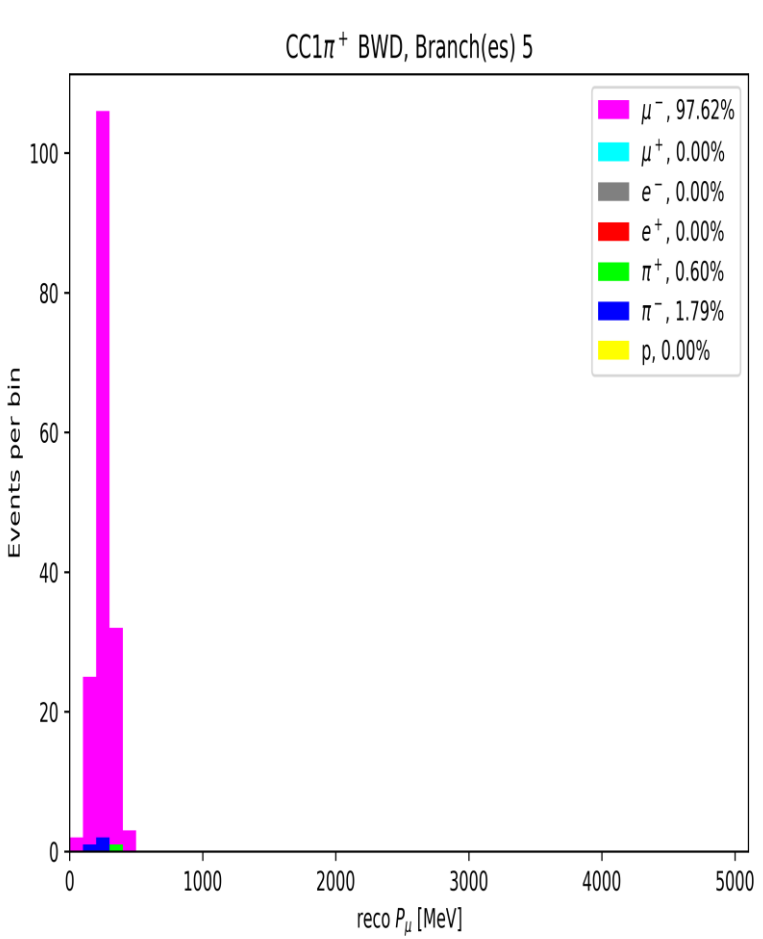


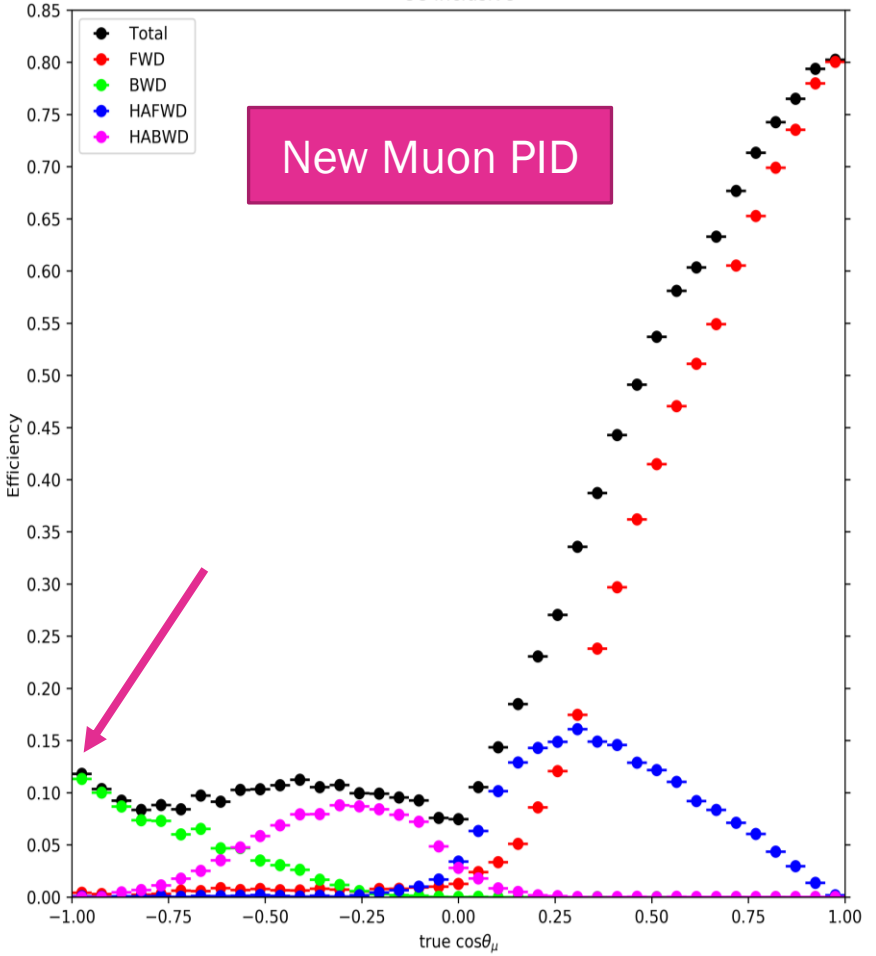












- ✓ Loss of high number of events
- ✓ From ~41 % to ~10 % of OOFV events in the BWD direction
- ✓ From 35 % to ~2 % of particles that are mis indentify as muons
- ✓ Drop of the efficiency on the BWD direction
- ✓ Contamination of protons that are mis indentify as pions in ECal and FGD1
  - ✓ Event display of this events for better undestending

Results

Thank you!!!