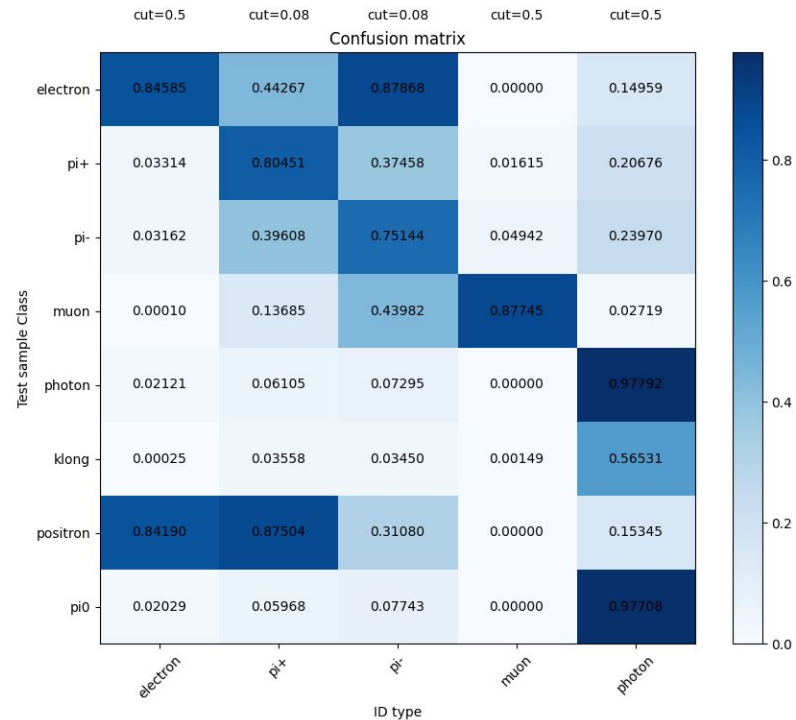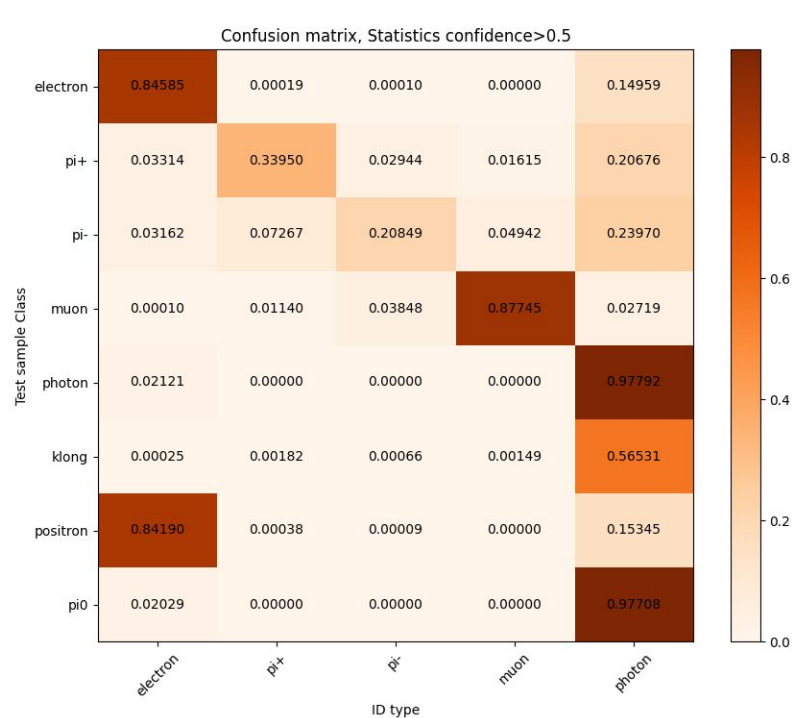# Progress Update

Dowling
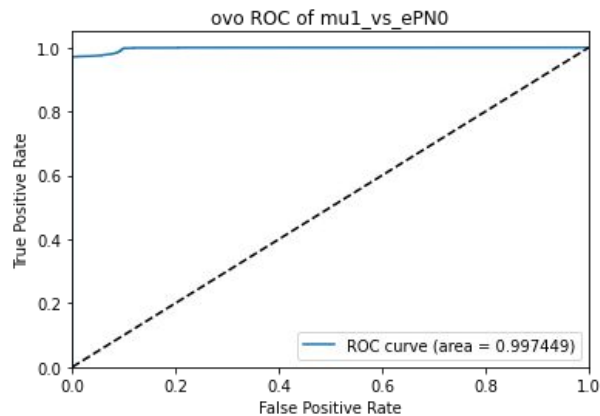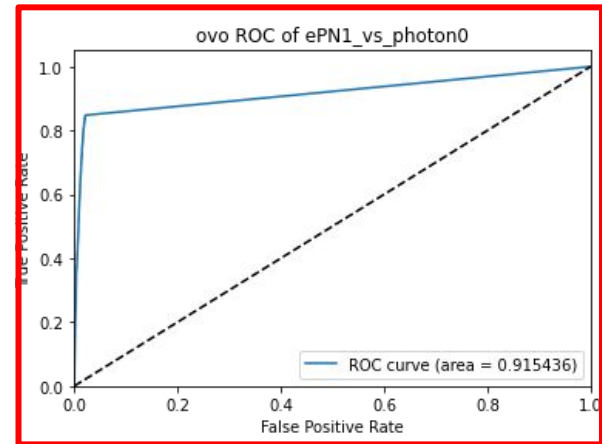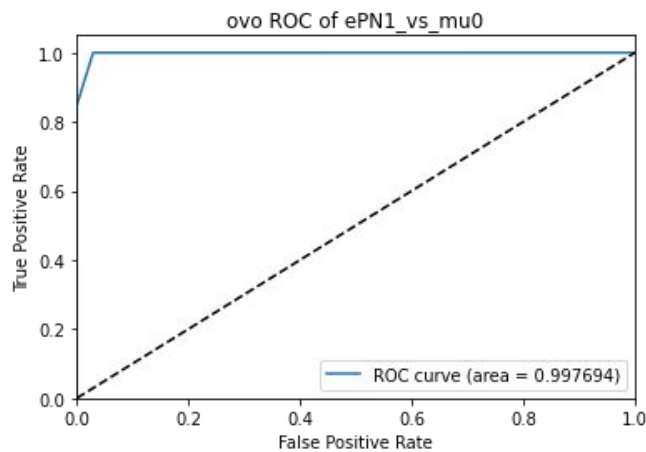Nov.2023
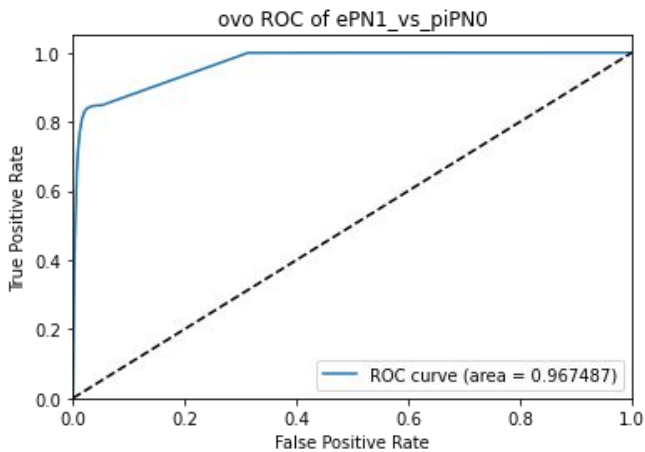
Large ratio for small number for
pi+- ID on electron and positron

Muon ID

ovo ROC of mu1_vs_ePN0 — ROC curve (area = 0.997449)

ovo ROC of mu1_vs_piPN0 — ROC curve (area = 0.978318)

Electron ID

ovo ROC of ePN1_vs_piPN0 — ROC curve (area = 0.967487)

ovo ROC of ePN1_vs_mu0 — ROC curve (area = 0.997694)

ovo ROC of ePN1_vs_photon0 — ROC curve (area = 0.915436)
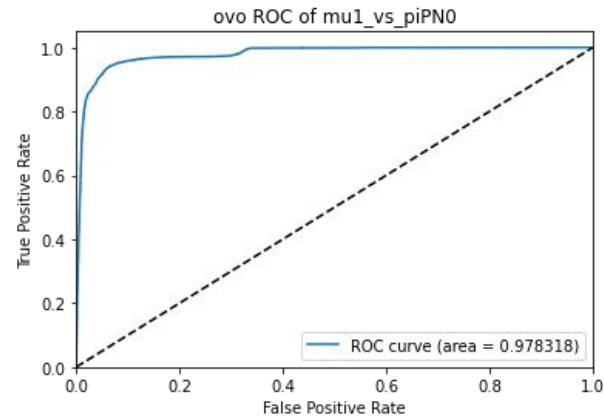
Verification, non-pure training feed

Error comes from the electron that has no track

And those electrons, mainly focuses on the energy range from 0-25 GeV
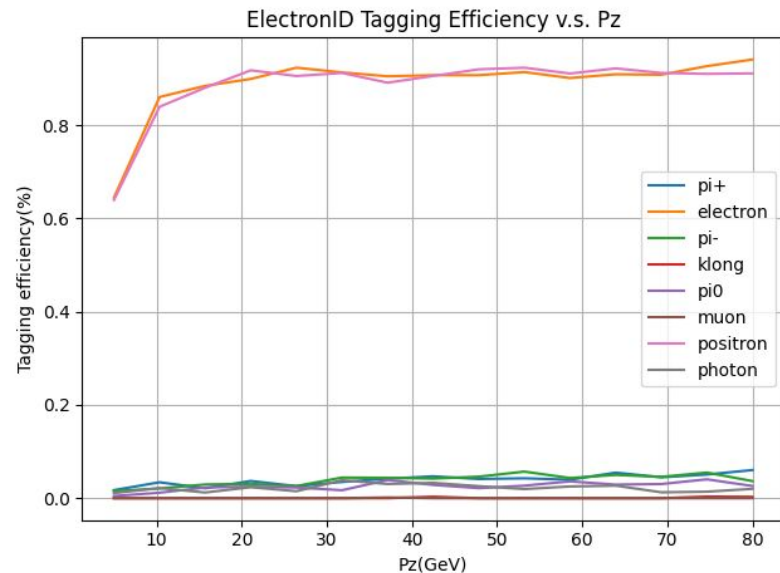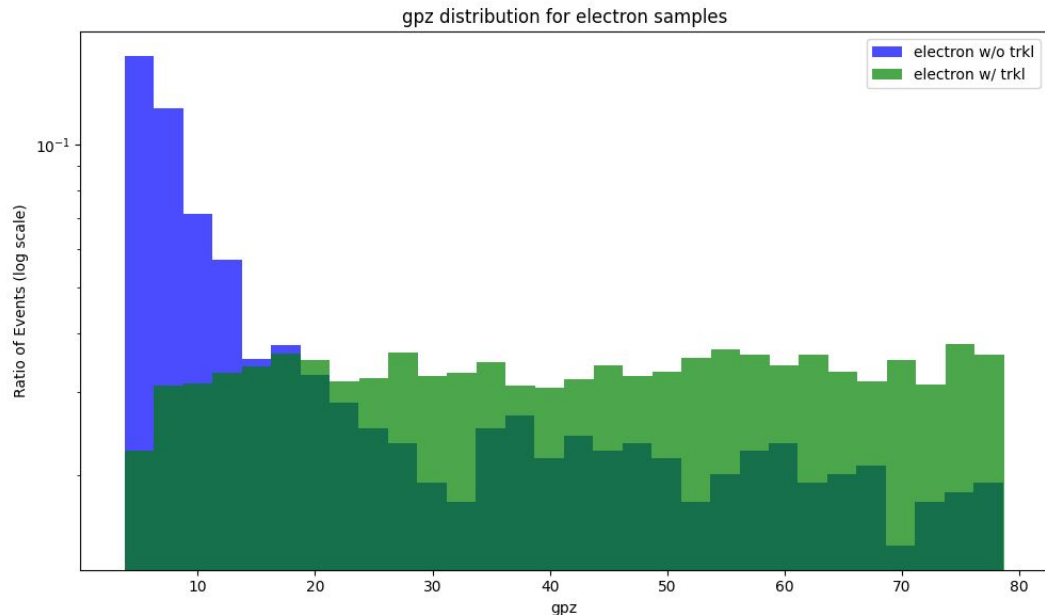
More Evidence on W_EW, Width
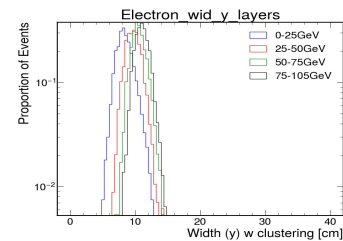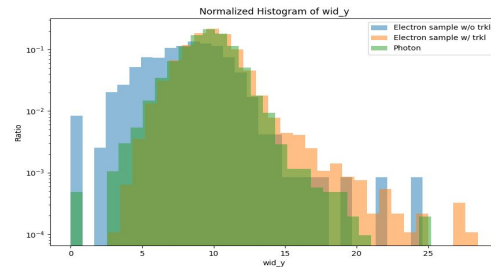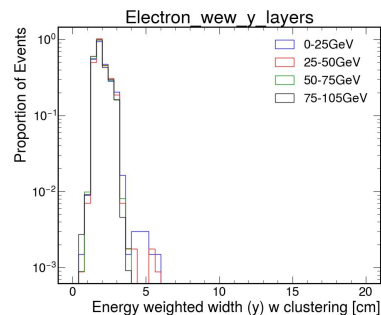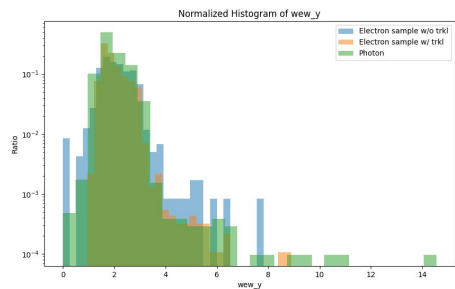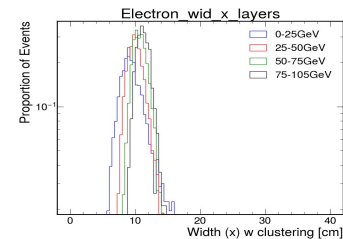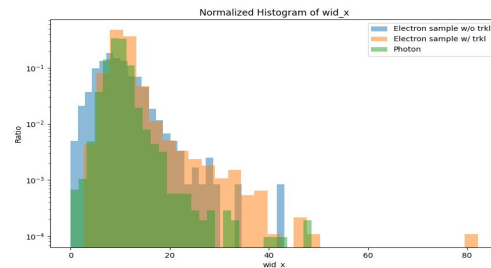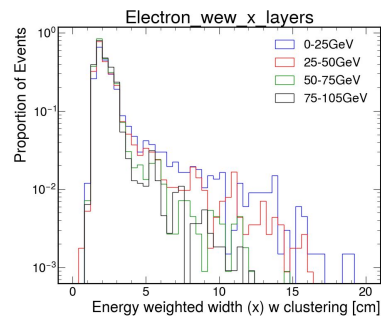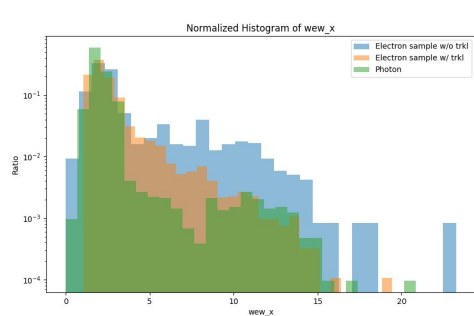
- Total 10,509 particles caught from 10,000 evts
- 1193/10,509 particles don't have trkl
- 509 highly possible are photon emitted from electron
- 337 evts has no st3 trkls
- 1193-509-337=347 /10,000 particle missed in trkl matching
- 347 mainly been cut off by 8cm square of trkl matching

track center-EW center for electron

dist betwn seed and extpl trkl for electron
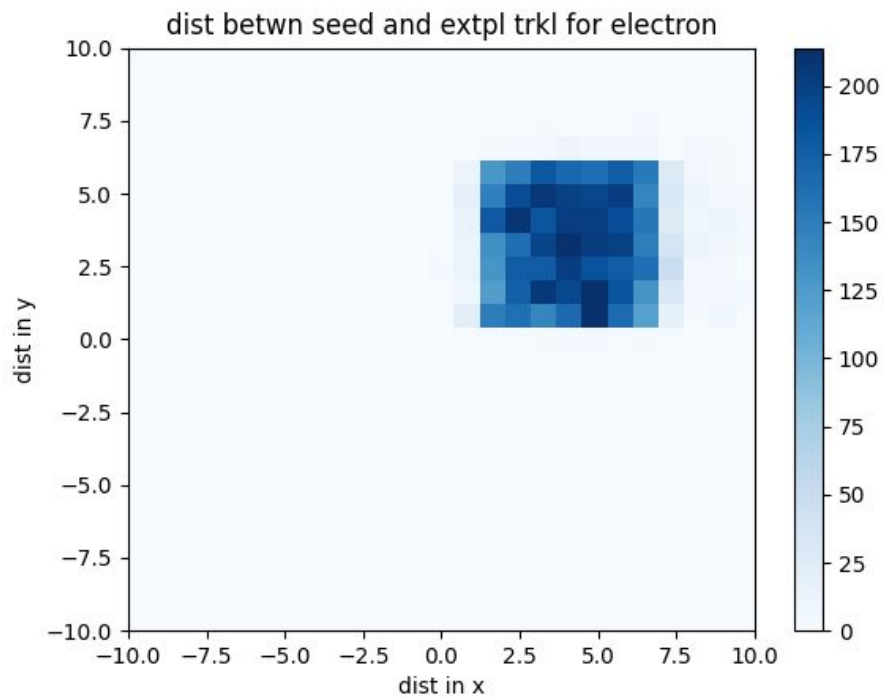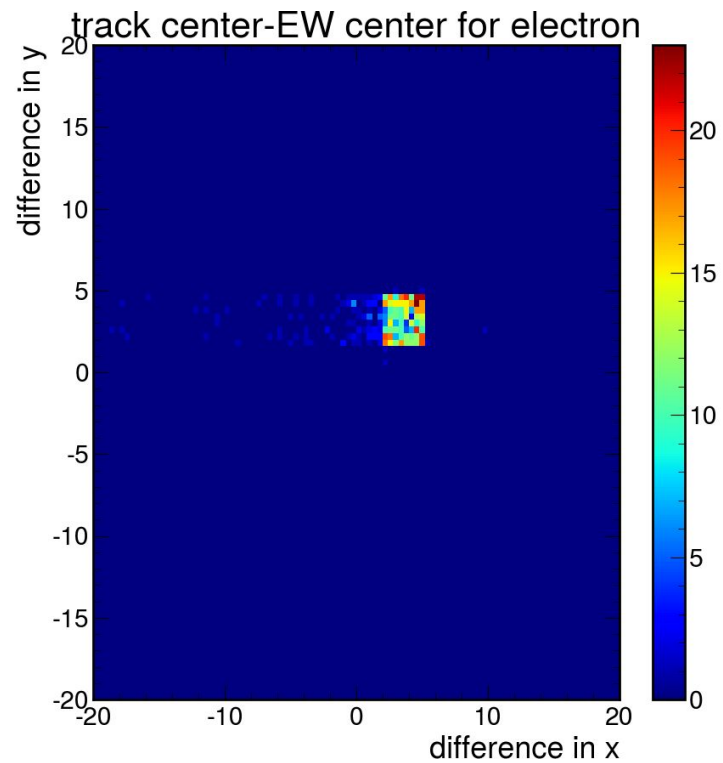
Happening now

1. Multi-class Classifier
2. Compare to C++ interface for DNN online analysis, I came up an idea of Pseudo-Online program for Tagging system. A switch as option in e1039.

<5s for 10,000 evts

```
┌──────────┐         ┌──────────────┐         ┌────────────────┐
│  e1039   │──root──▶│ Pseudo-online│──root──▶│  New ntuple    │
│          │         │   (python)   │         │  w/ tree of    │
└──────────┘         └──────┬───────┘         │ particle types │
                            │ csv             └────────────────┘
                            ▼
                     ┌──────────────┐
                     │  CSV w/ all  │
                     │processed info│
                     └──────────────┘
```
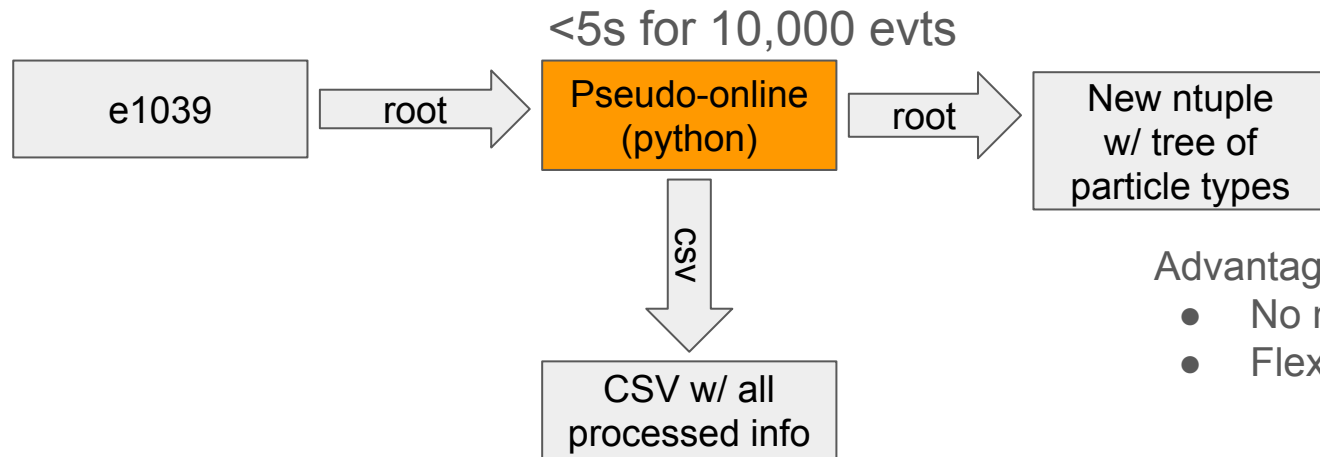
Advantages
- No need to translate & interface
- Flexible, like a plug-in