

Week 8 - ECal

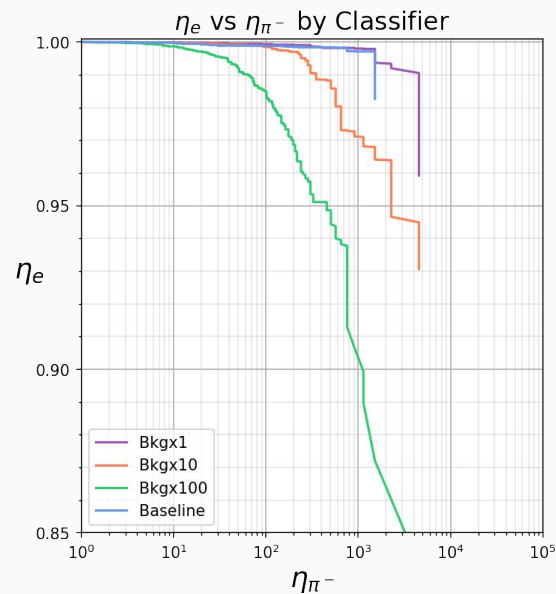
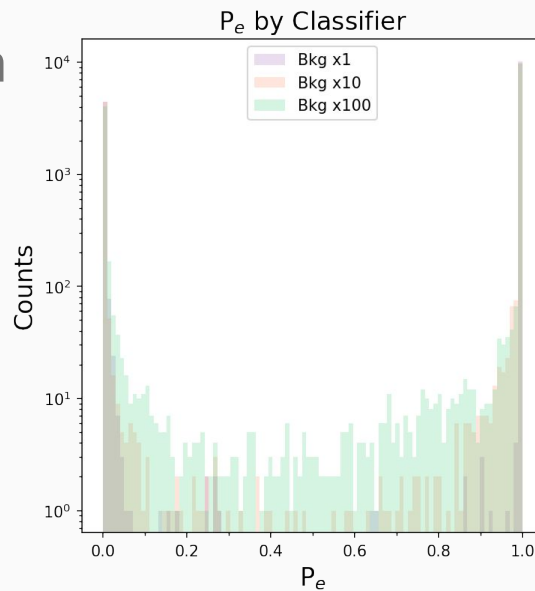
Darren Upton



Beam Test Sim with Background

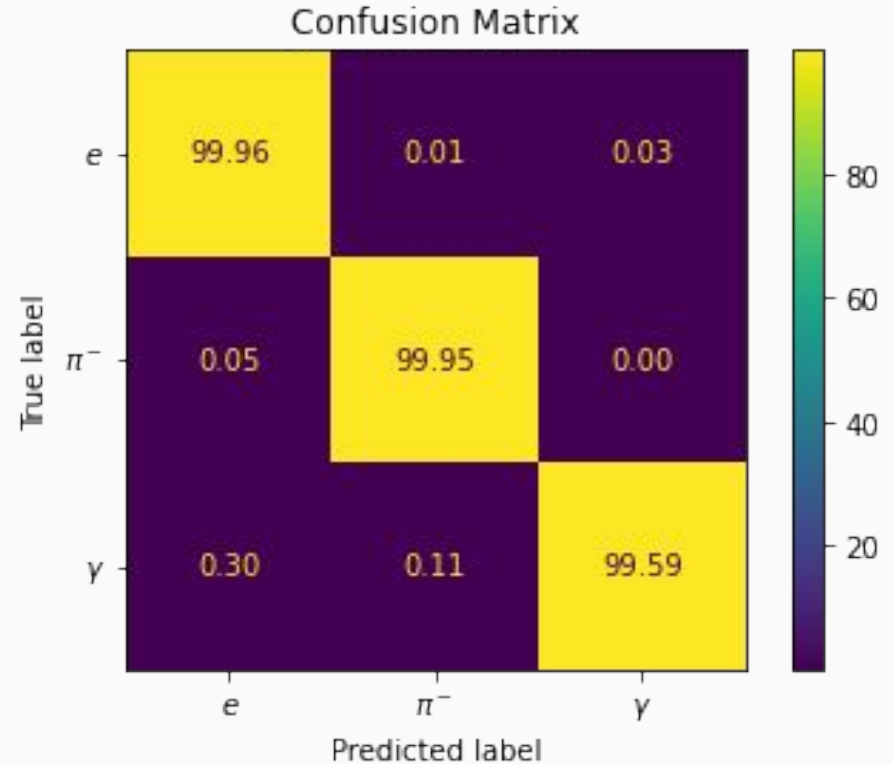
- ❖ Background events mixed with signal events at specified ratios
- ❖ Using ECal, NPE/NCh, & SCs
- ❖ TS3 A&D requirement
- ❖ Standard MLP configuration
- ❖ **Results:** >Bkg -> Worse
 - Baseline vs Bkgx1

Classifiers for Beam Test Sim

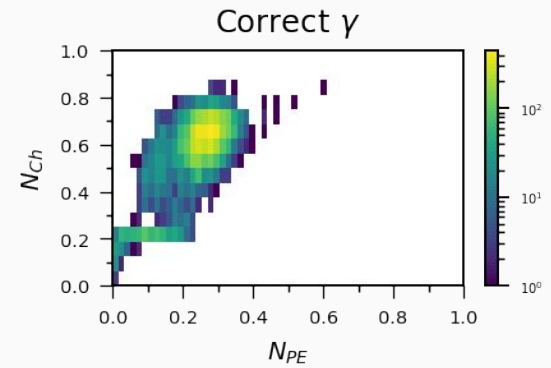
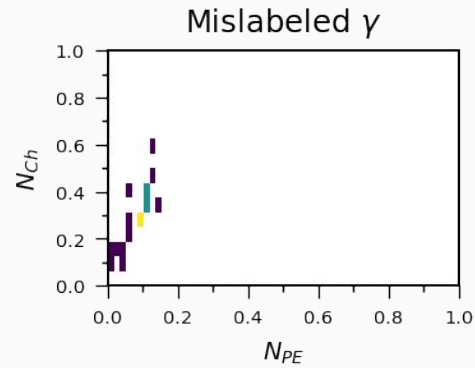
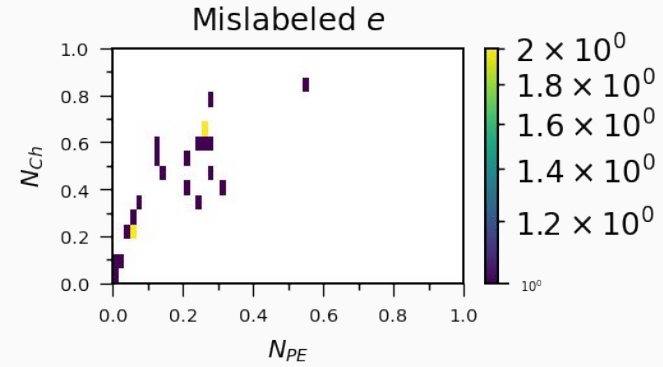
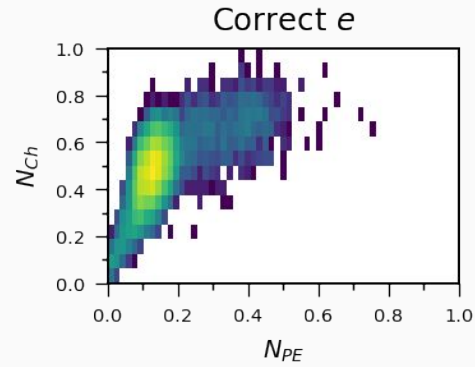


Three Particle PID - Pencil Sim

- ❖ Back to pencil sim for testing
- ❖ Using ECal, NPE/NCh, & SCs
- ❖ Standard MLP configuration
- ❖ TS3 A&D requirement
- ❖ **Sample Sizes:** >15k each
- ❖ **Results:** >99% classification for all three pid

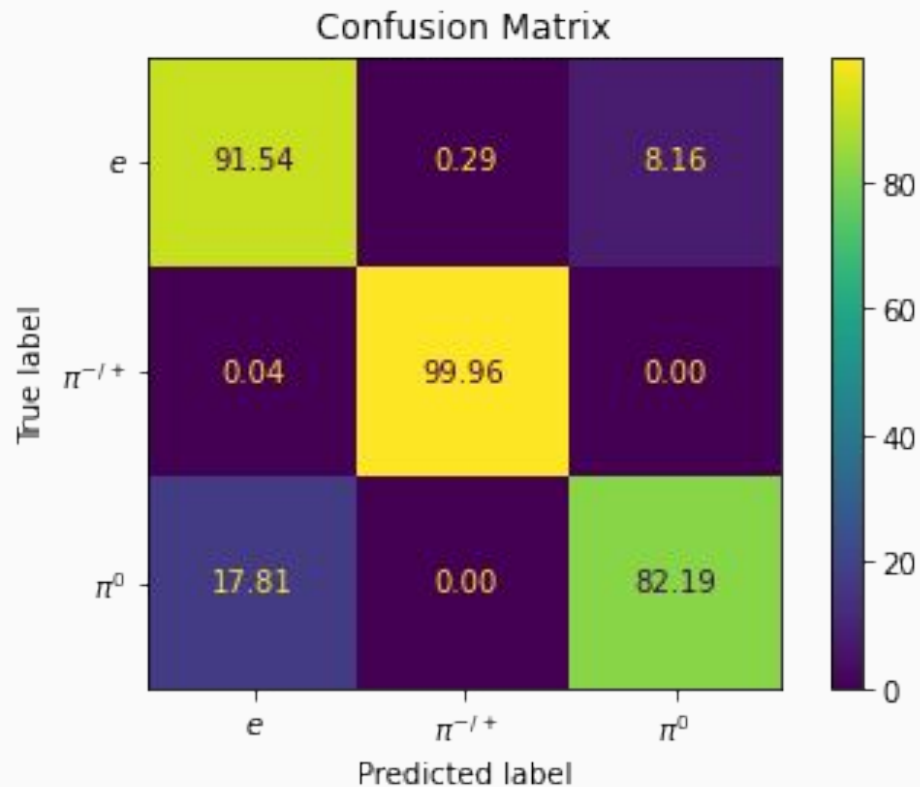


N_{PE} : Confusion Matrix



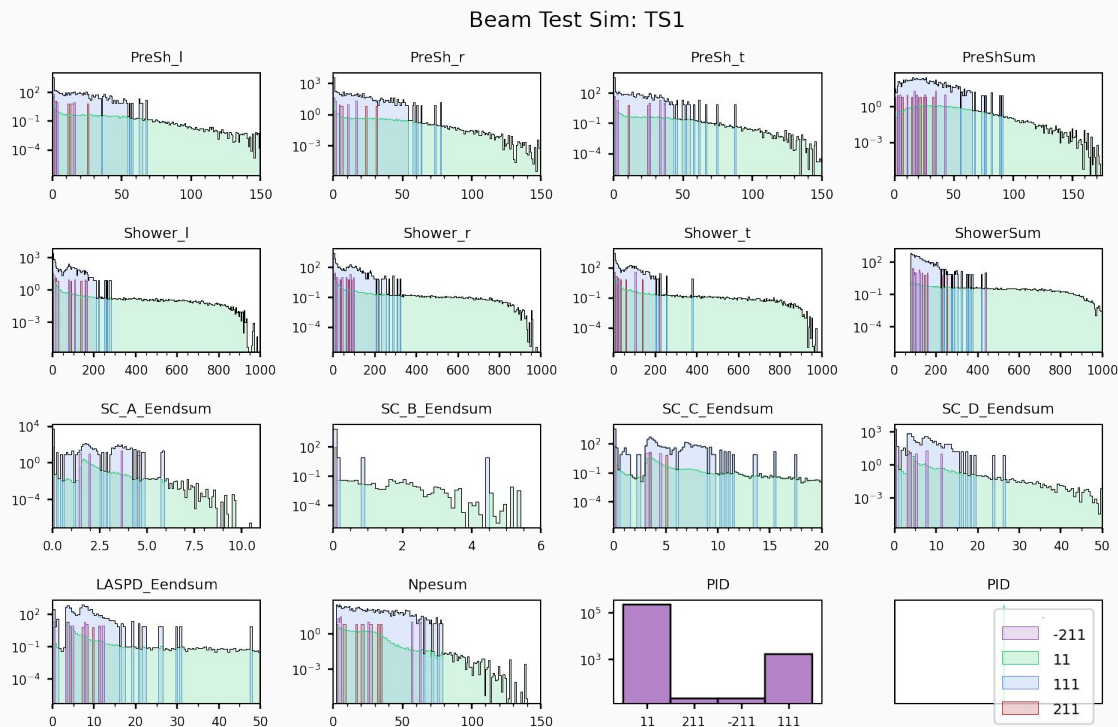
Three Particle PID - Beam Test Sim

- ❖ Using beam test sim
- ❖ Using ECal, NPE/NCh, & SCs
- ❖ Standard MLP configuration
- ❖ TS3 A&D requirement
- ❖ **Sample Sizes:** 15k, 7k, 125
- ❖ **Results:** “Good” classification for e & $\pi^{+/-}$
 - not enough π^0 samples



Look at TS1

- ❖ Using beam test sim
- ❖ **TS1 Req:** NPE & ShSum
- ❖ Dominated by e & π^0
- ❖ Consider for e PID



PID for TS1

- ❖ Using beam test sim
- ❖ Using ECal, NPE/NCh, & SCs
- ❖ Standard MLP configuration
- ❖ TS3 A&D requirement
- ❖ **Sample Sizes:** 120k, 250
- ❖ **Results:** Not enough π^0 samples

