

Muon Mislabeling

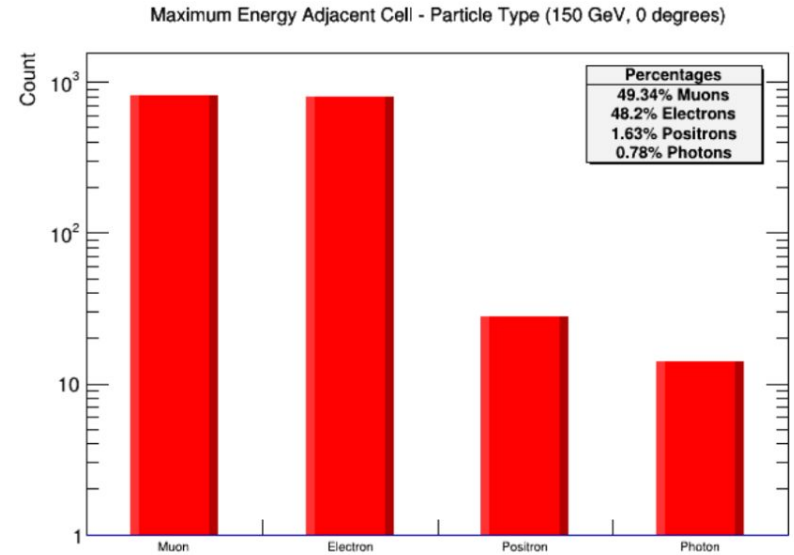
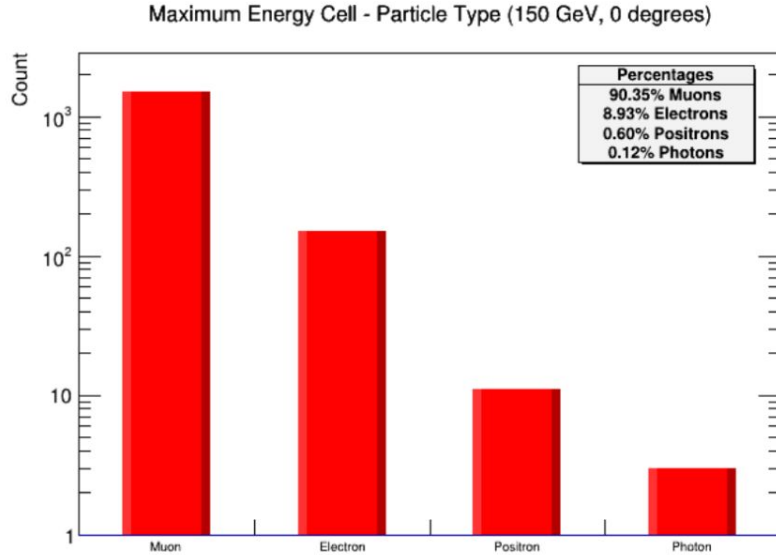


Figure 30: Maximum Energy bar charts for muons at normal incidence.

Cause of Error

- **With the current reconstruction algorithm, our detectors mislabel an electron hit as a muon 55% of them**
 - **~55% of tracks are incorrectly reconstructed**
- **This causes the position of the track on the detector to be +/- 10 mm from the actual position, which magnifies when projected backwards.**
 - **Will do studies to determine the magnitude of this error**
- **Currently, our positional resolution and pointing resolution have been shown to be sufficient (~1.7 mm and ~1.5 mr)—is this worth investigating?**

Possible Methods

- **Expected total deposited energy of muons passing through detector**
 - Use this to parse through particles if the deposited energy would make the total significantly lower or higher than it should be
- **Magnetic dipole moment**
 - Would require radical changes to lab setup, unrealistic