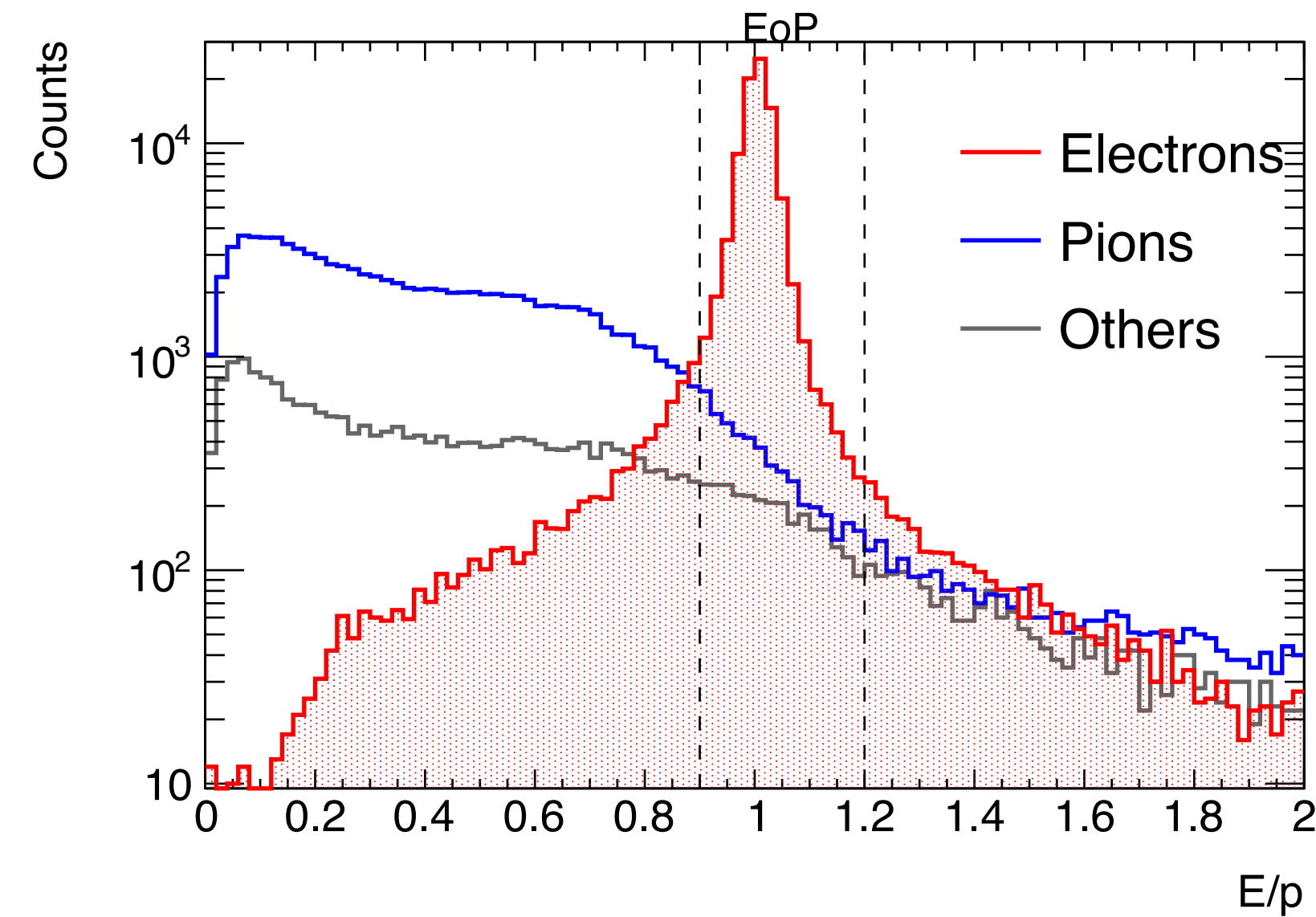


eID procedure and performance

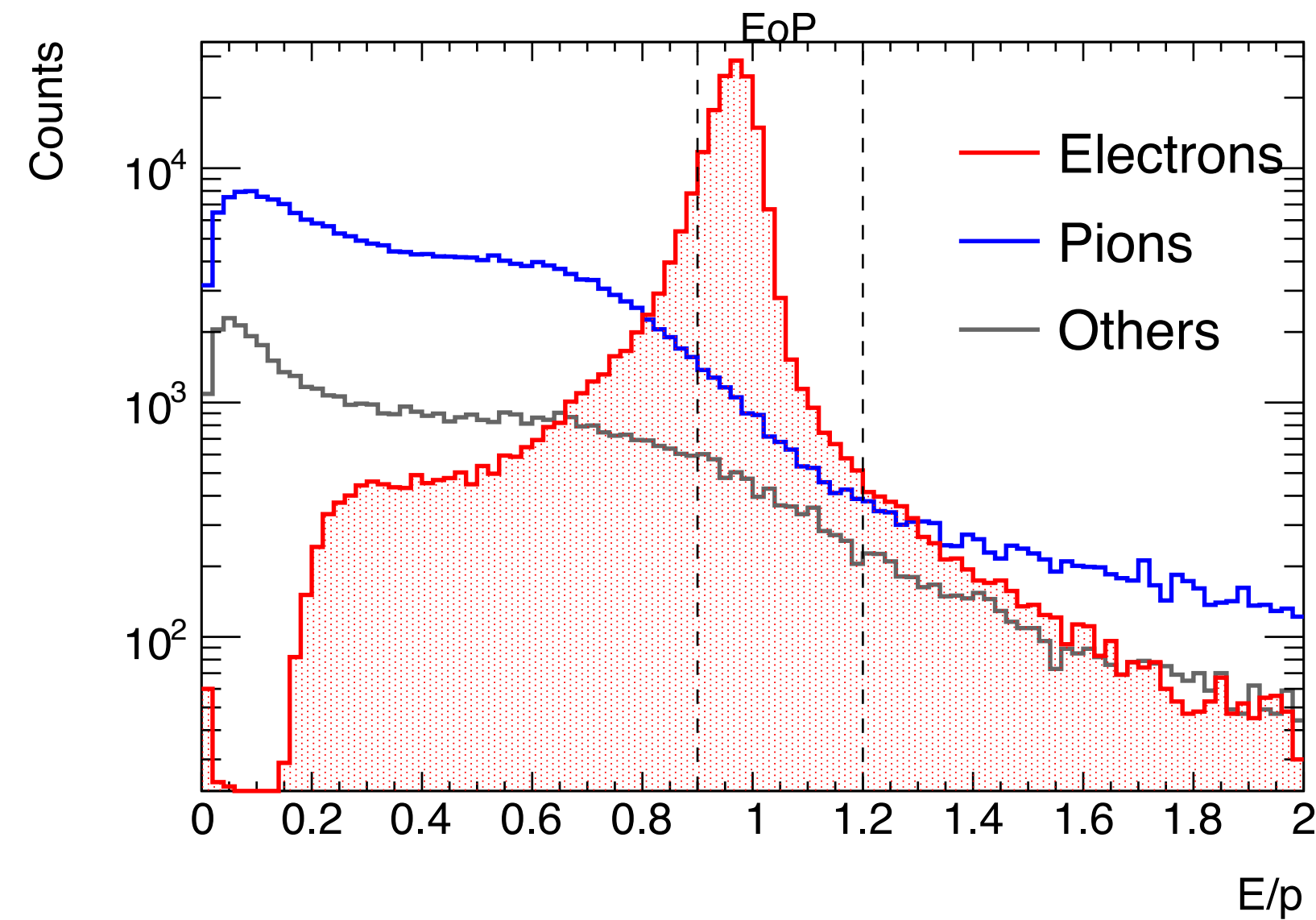
1

- ▶ Start from “ReconstructedParticleCollection” ← Currently still using MC to match clusters and tracks
- ▶ Require negative tracks
- ▶ $0.9 < E/p < 1.2$

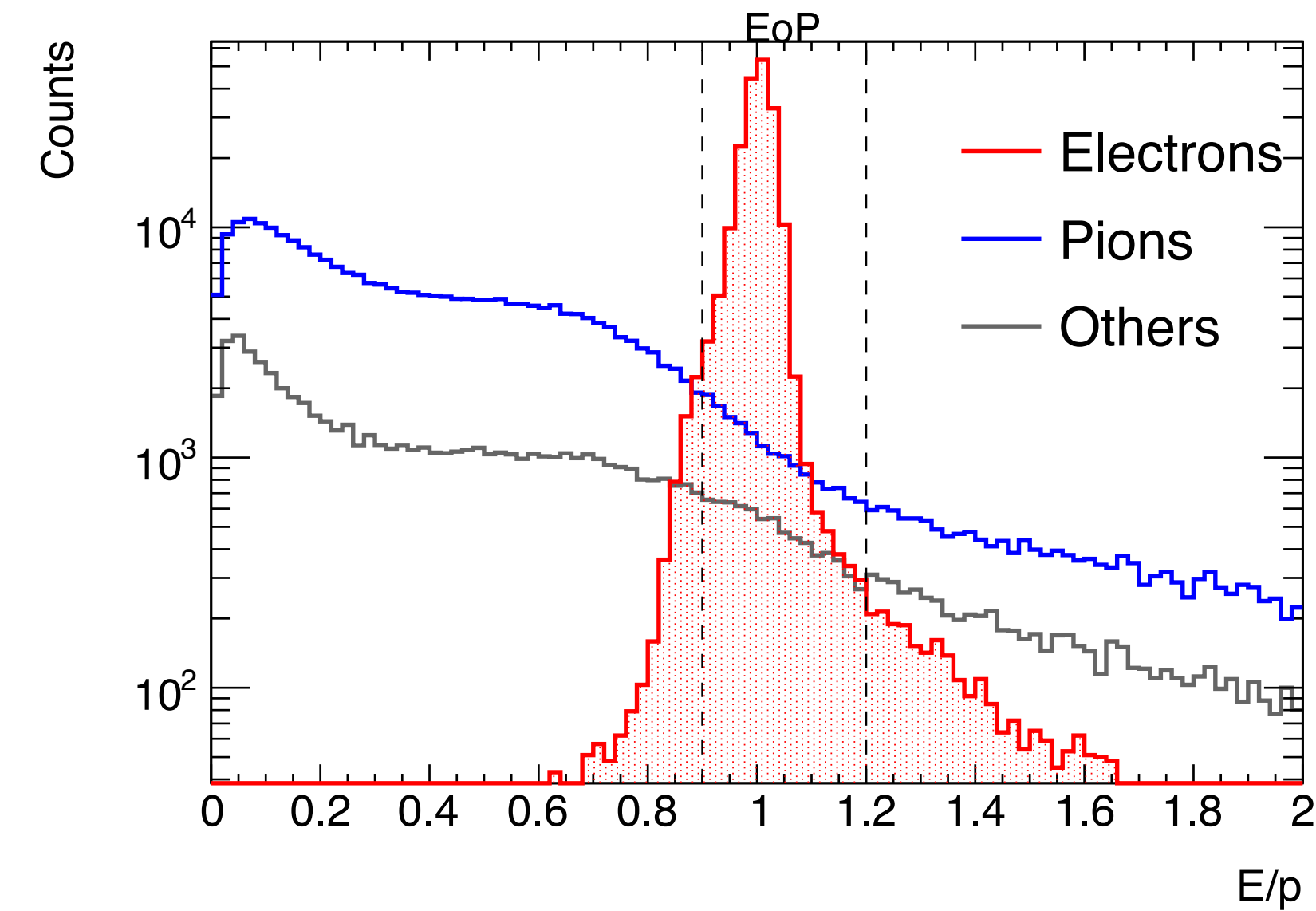
$$2 \leq Q^2 \leq 10 \text{ GeV}^2$$



$$10 \leq Q^2 \leq 100 \text{ GeV}^2$$



$$Q^2 \geq 100 \text{ GeV}^2$$



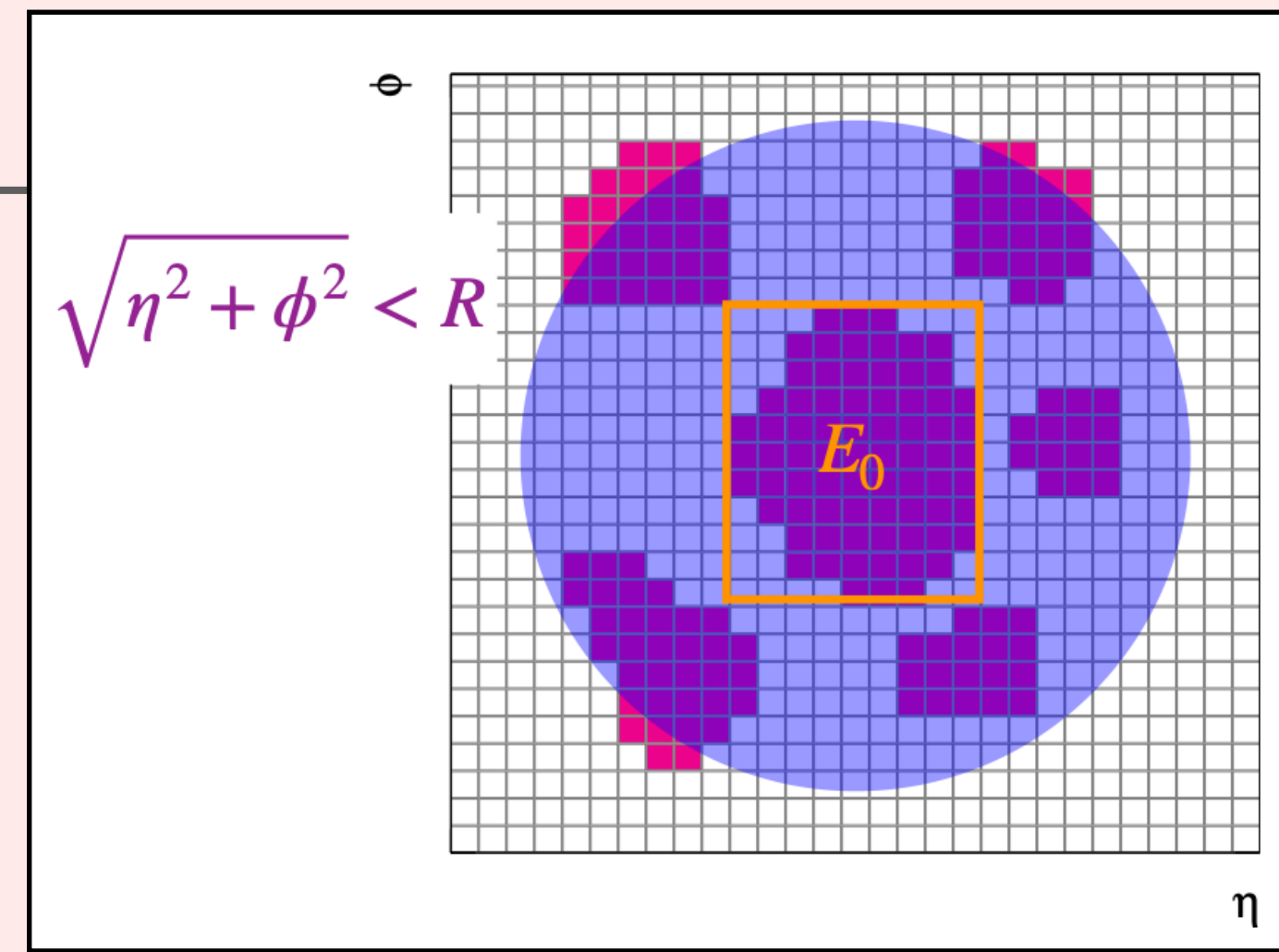
* EPIC 25.05.0 Sim. eHe3 10x166

CAL sim. had issues in 07 and 08 campaign, eID efficiency were low

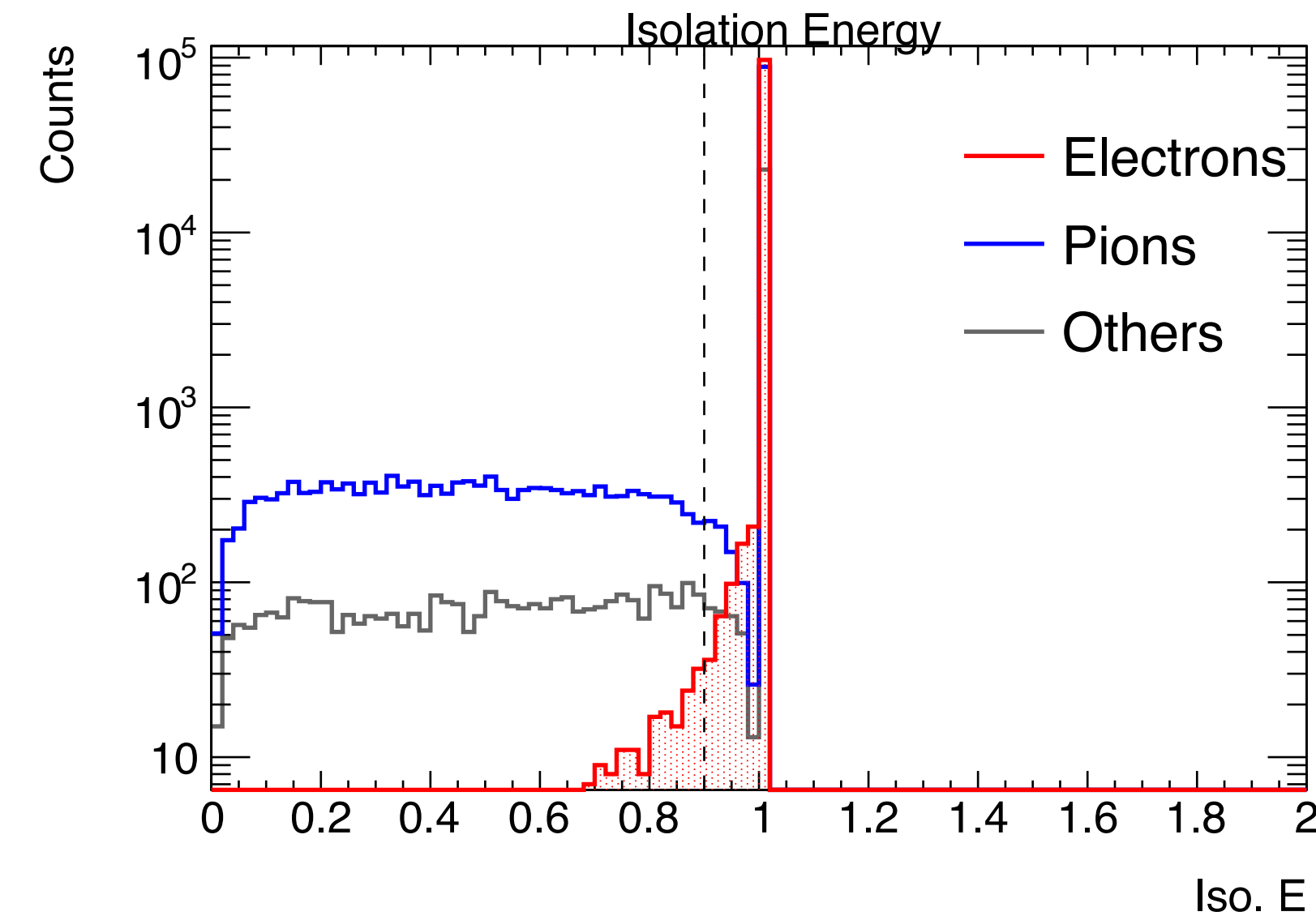
eID procedure and performance

2

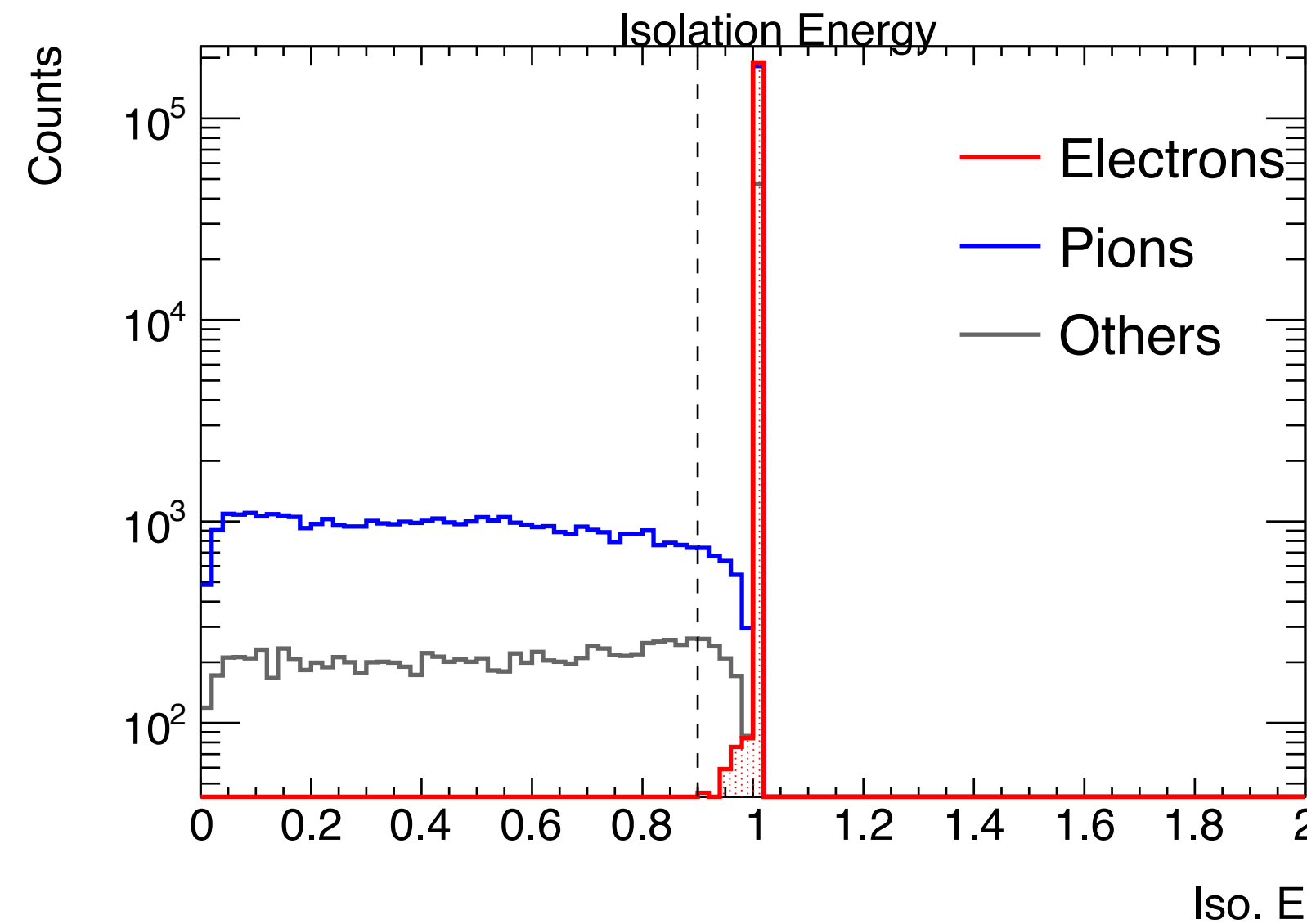
- ▶ Start from “ReconstructedParticleCollection”
- ▶ Require negative tracks
- ▶ $0.9 < E/p < 1.2$
- ▶ Isolated cluster: $\delta R < 0.4$, $E_0/\Sigma E_R > 0.9$



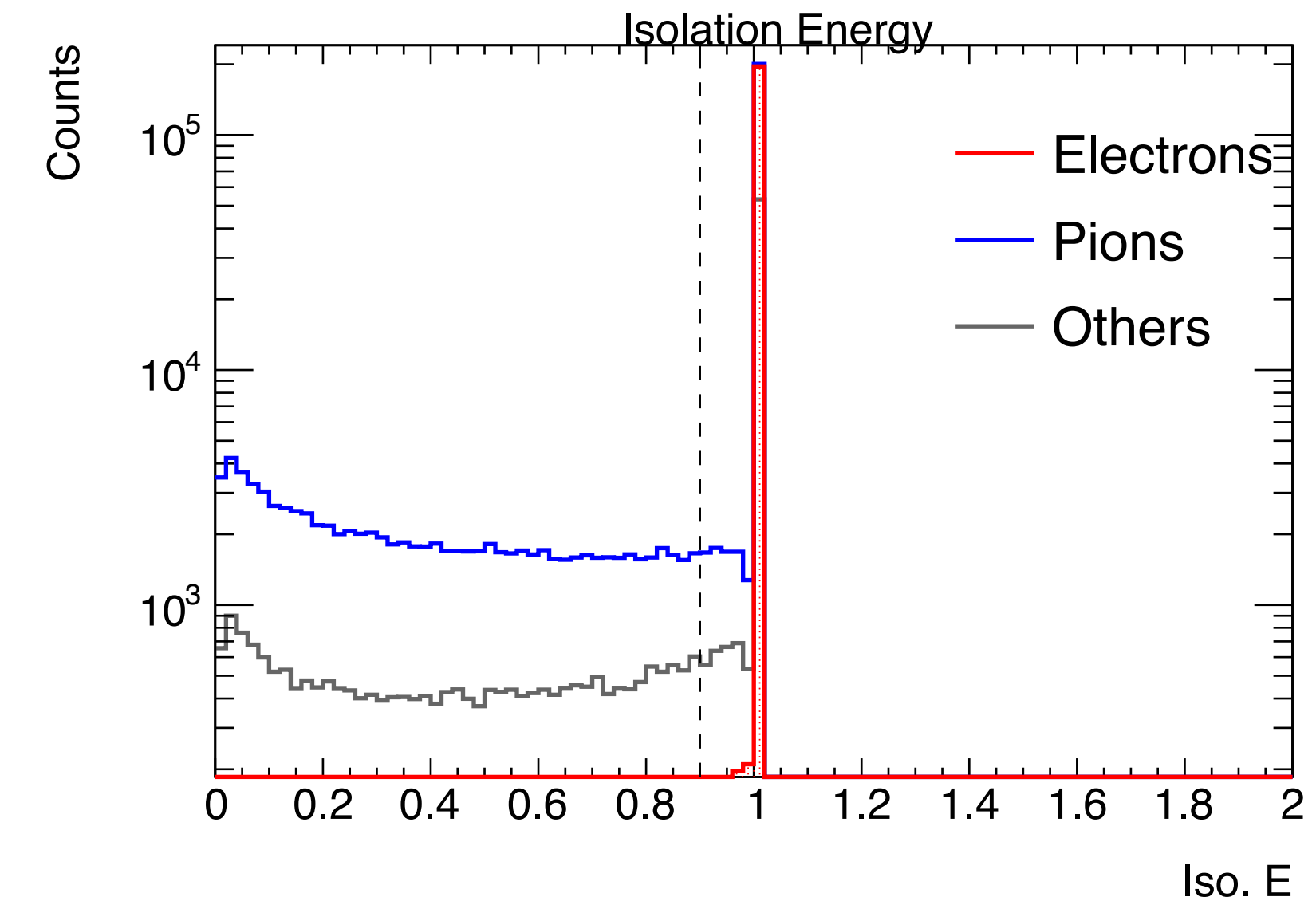
$$2 \leq Q^2 \leq 10 \text{ GeV}^2$$



$$10 \leq Q^2 \leq 100 \text{ GeV}^2$$

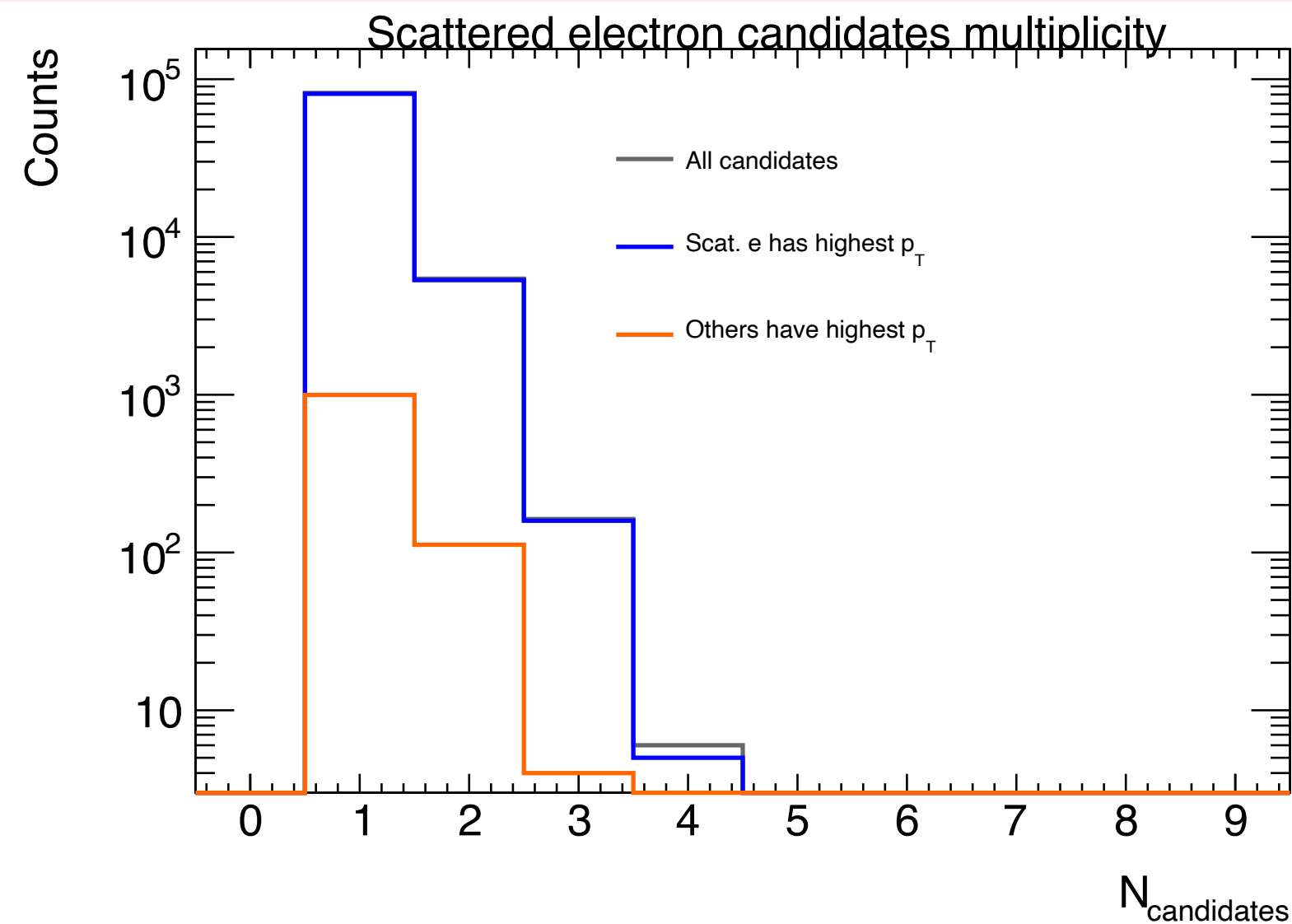


$$Q^2 \geq 100 \text{ GeV}^2$$

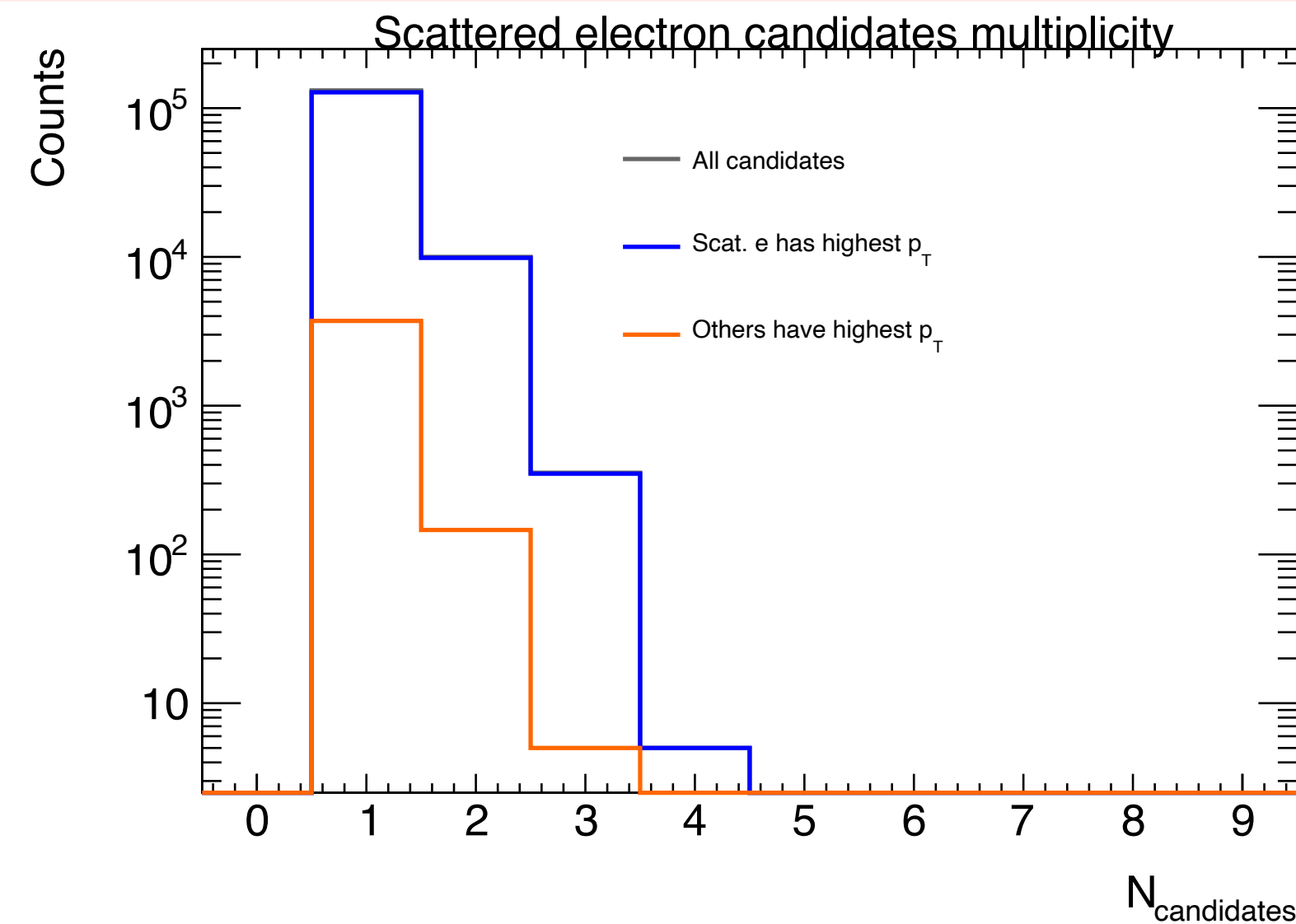


- ▶ Start from “ReconstructedParticleCollection”
- ▶ Require negative tracks
- ▶ $0.9 < E/p < 1.2$
- ▶ Isolated cluster: $\delta R < 0.4$, $E_0/\Sigma E_R > 0.9$
- ▶ Select the highest P_T particle

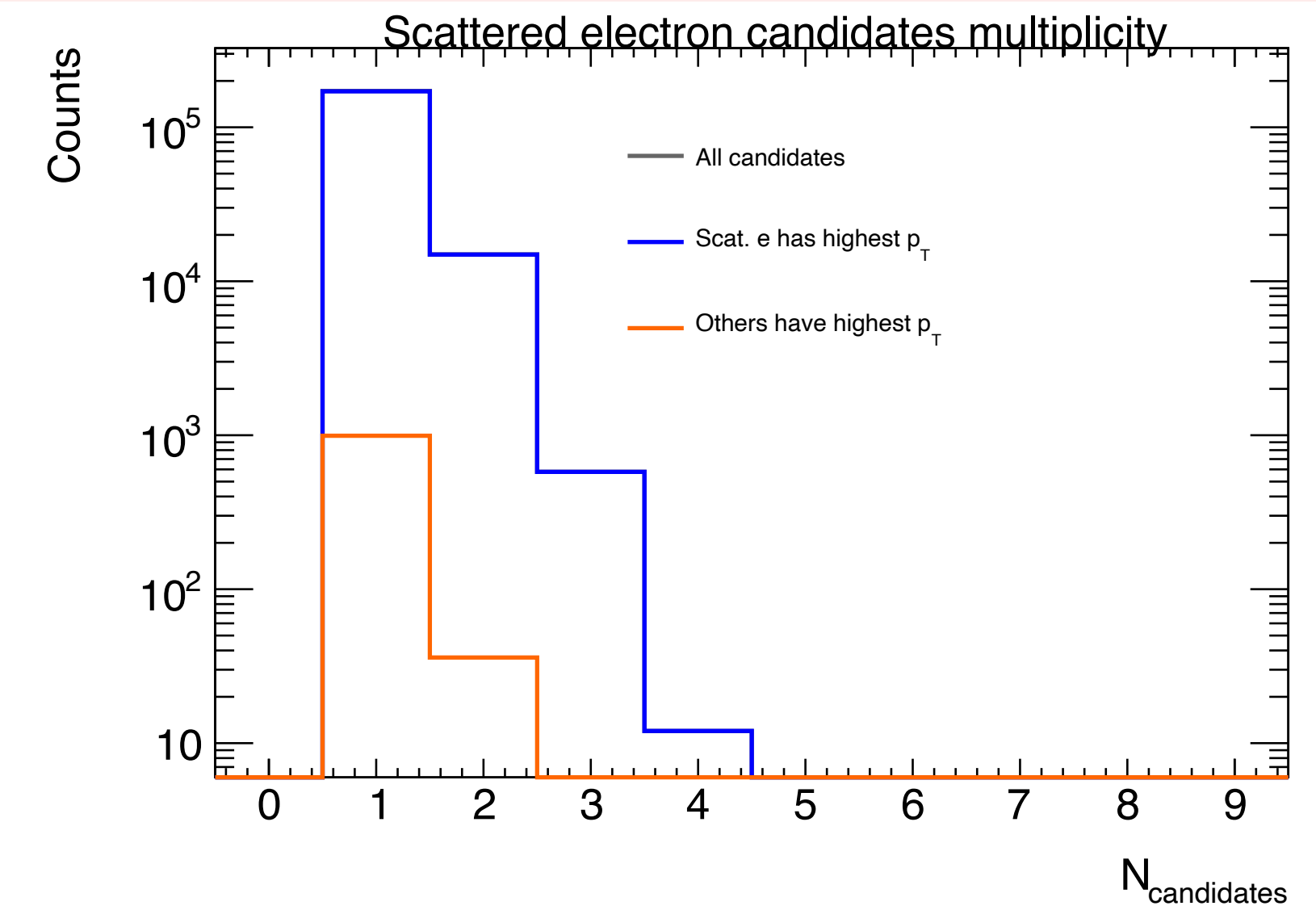
$$2 \leq Q^2 \leq 10 \text{ GeV}^2$$



$$10 \leq Q^2 \leq 100 \text{ GeV}^2$$



$$Q^2 \geq 100 \text{ GeV}^2$$

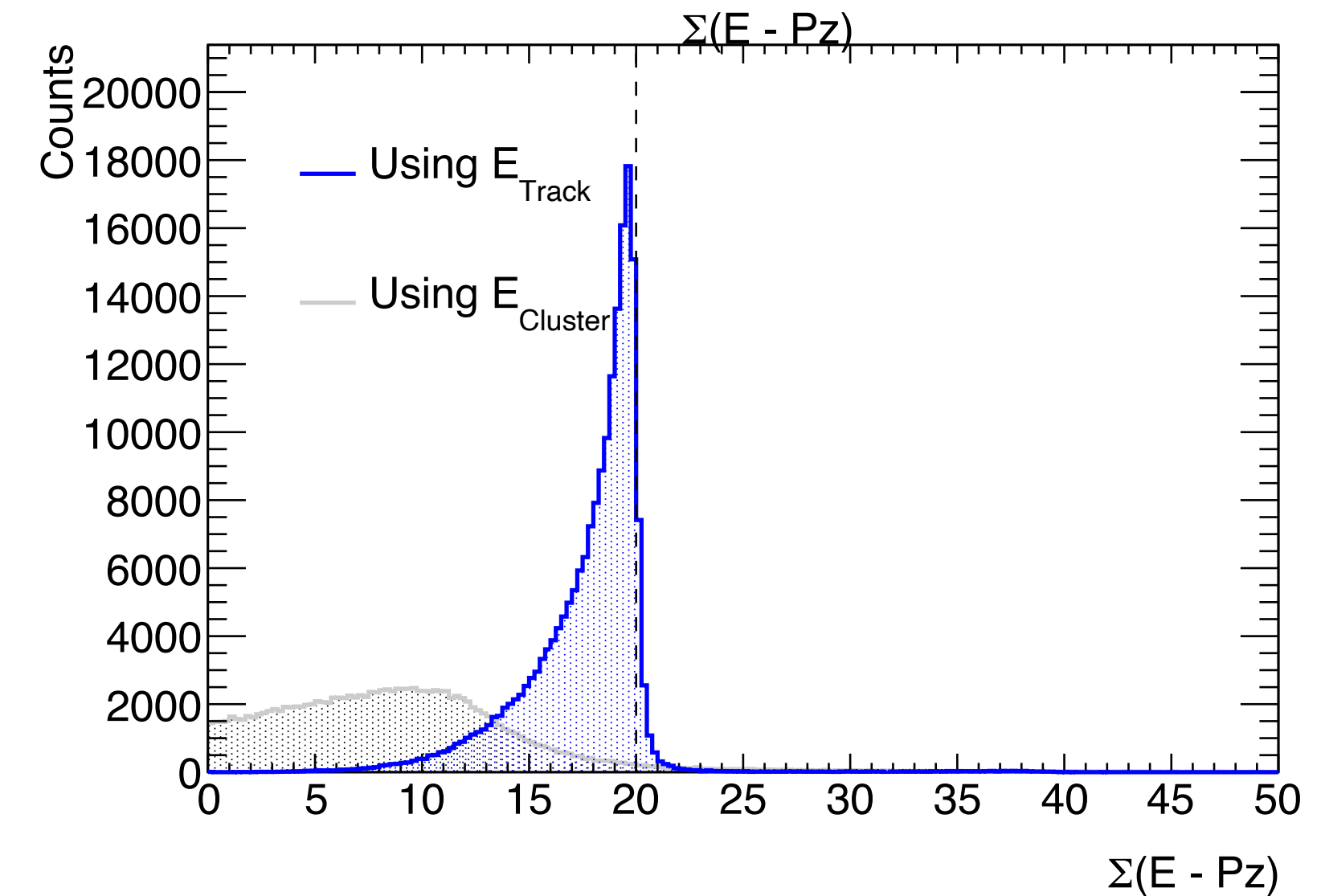
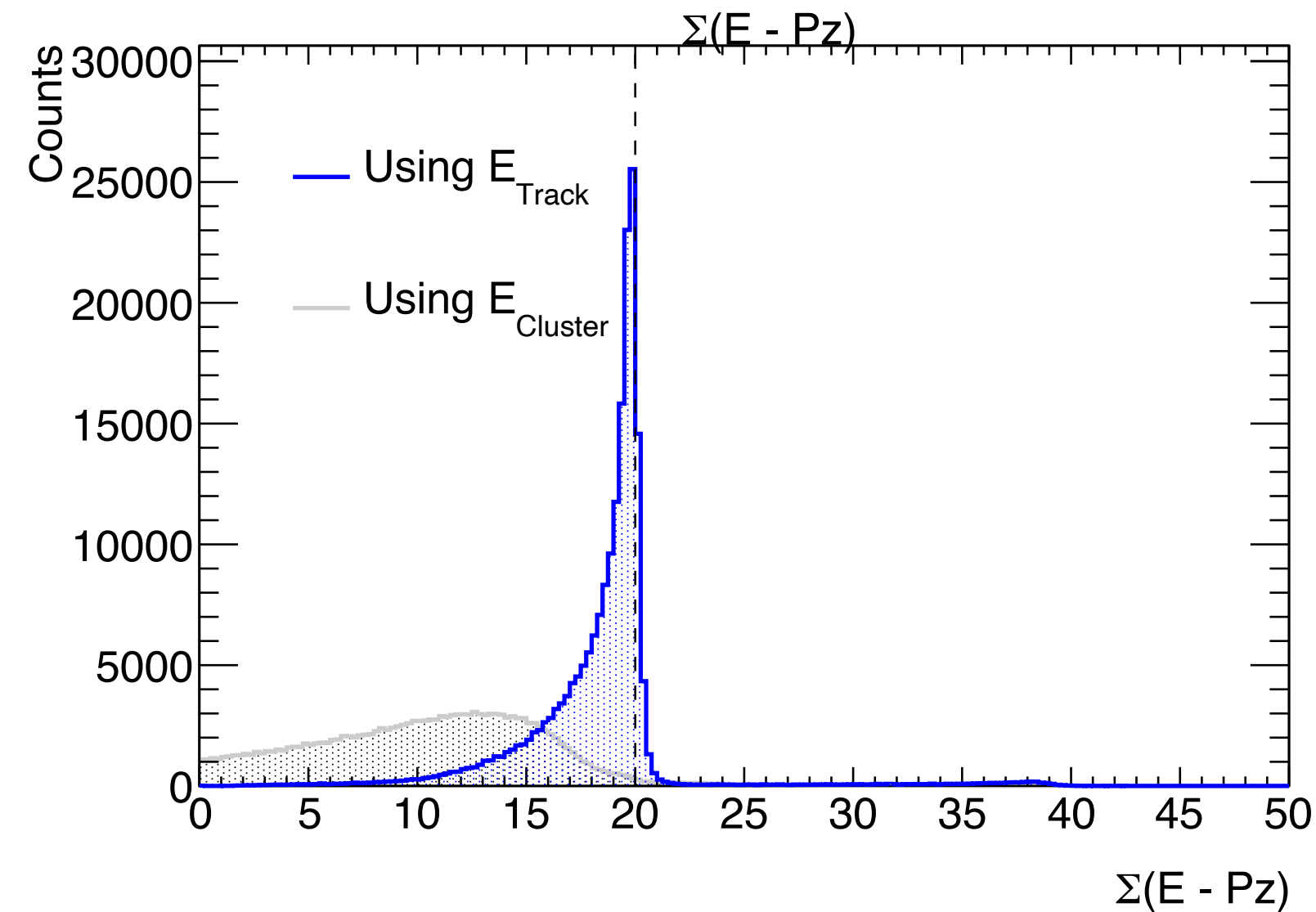
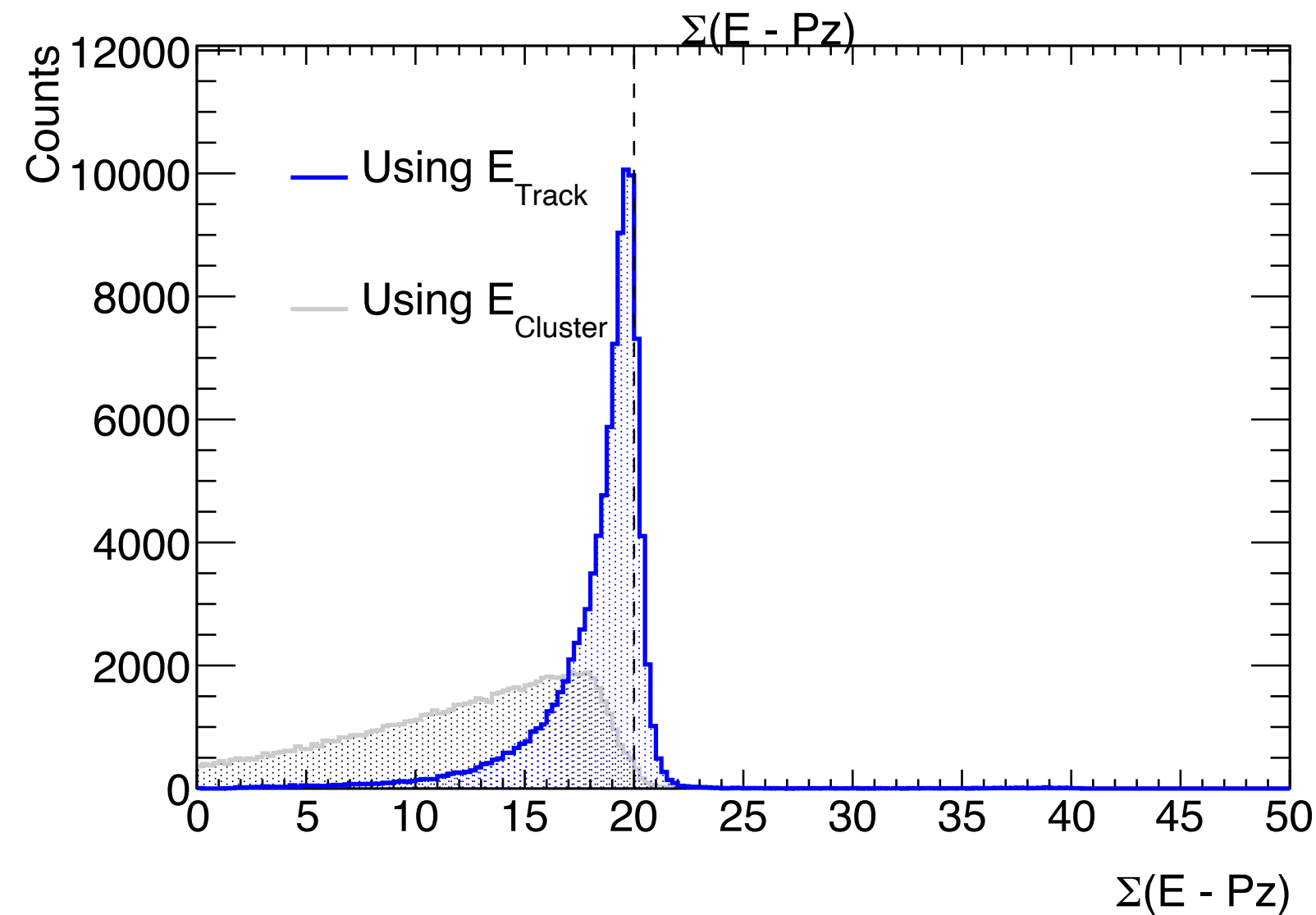


- $\Sigma(E - P_z) \approx 2E_e$, smaller for QED ISR, photoproduction events
- This value can be calculated using Electron Finder, but it is not in the default cut

$$2 \leq Q^2 \leq 10 \text{ GeV}^2$$

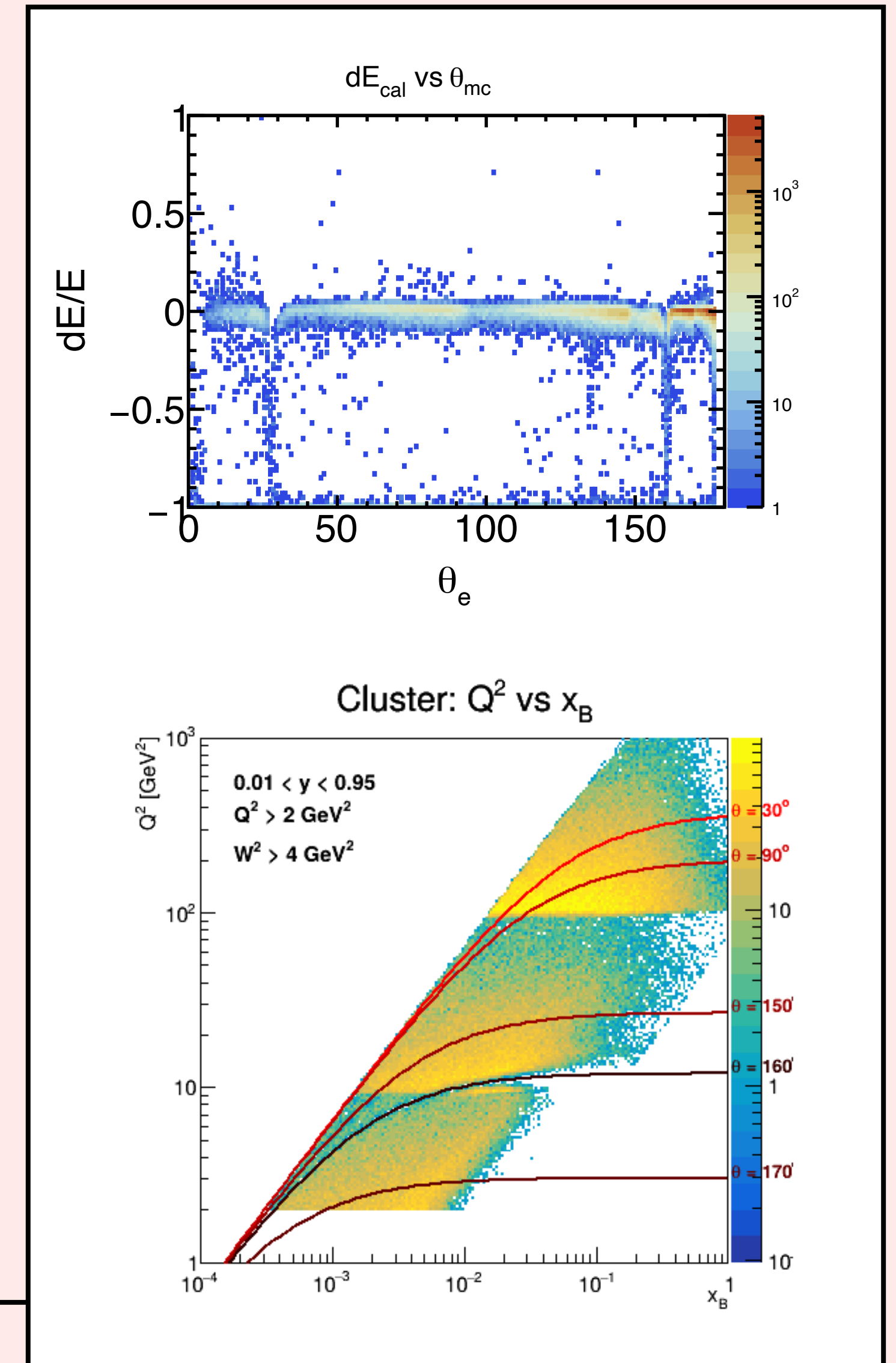
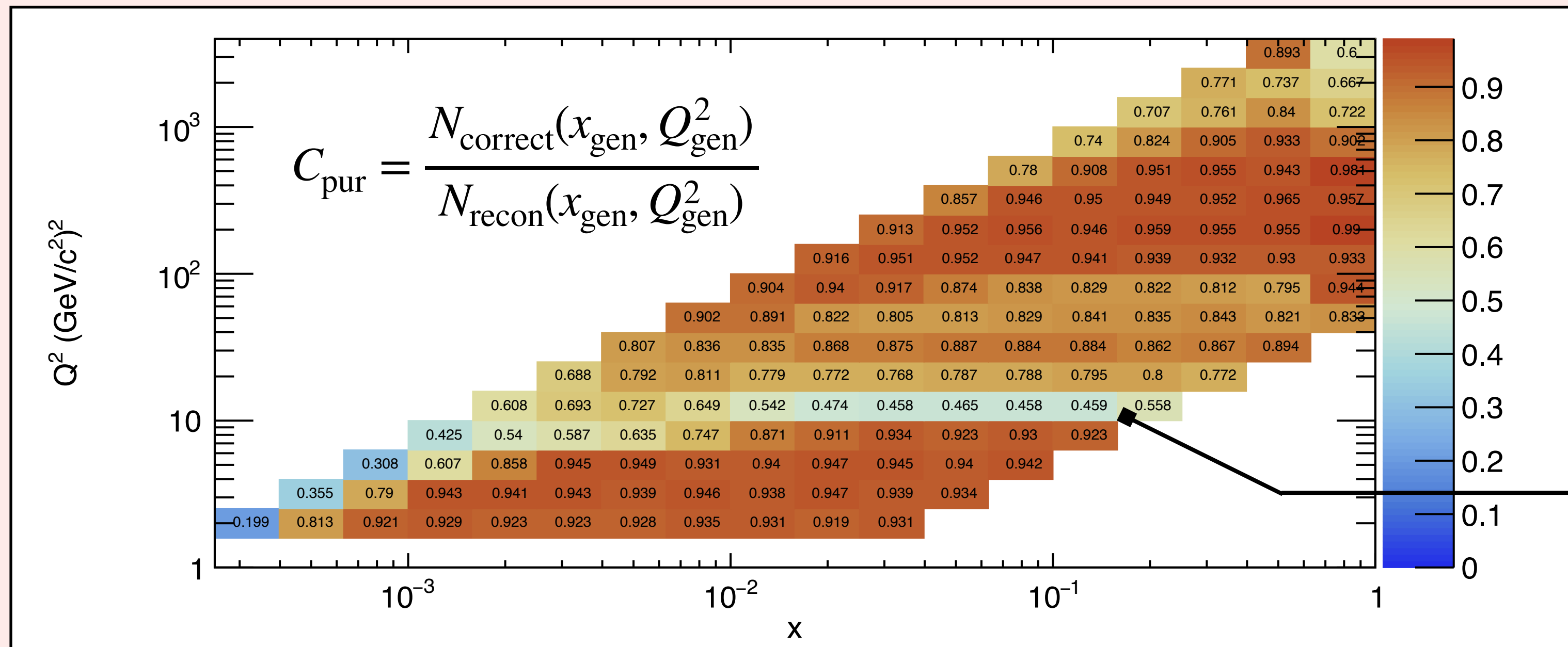
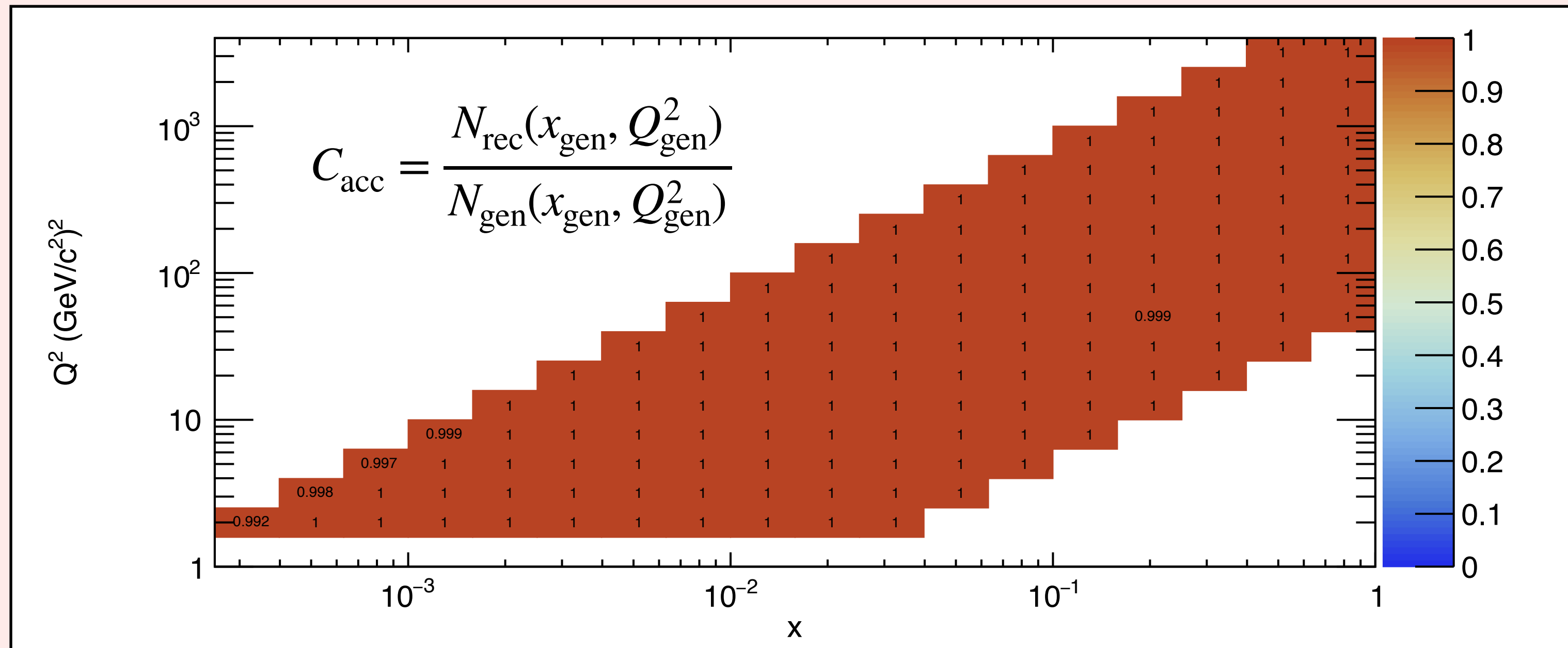
$$10 \leq Q^2 \leq 100 \text{ GeV}^2$$

$$Q^2 \geq 100 \text{ GeV}^2$$



eID efficiency (No background)

5

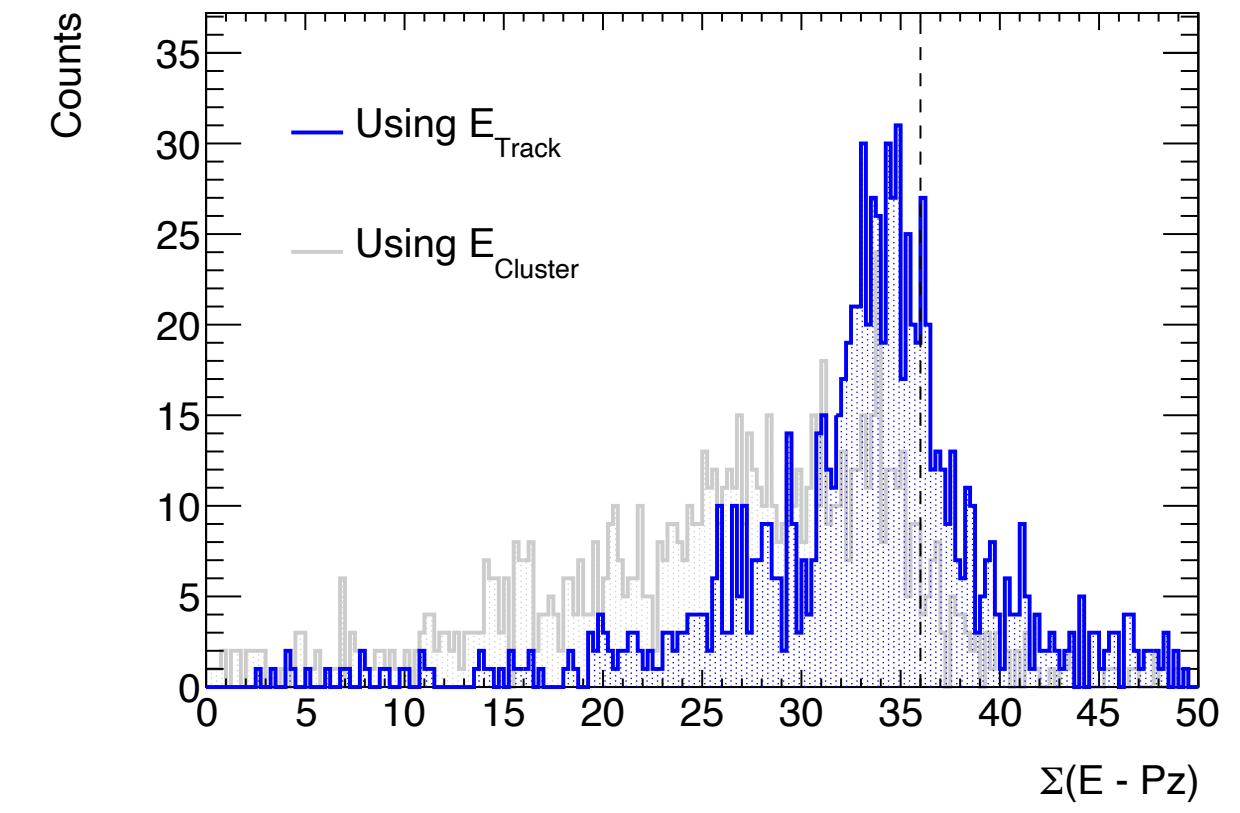
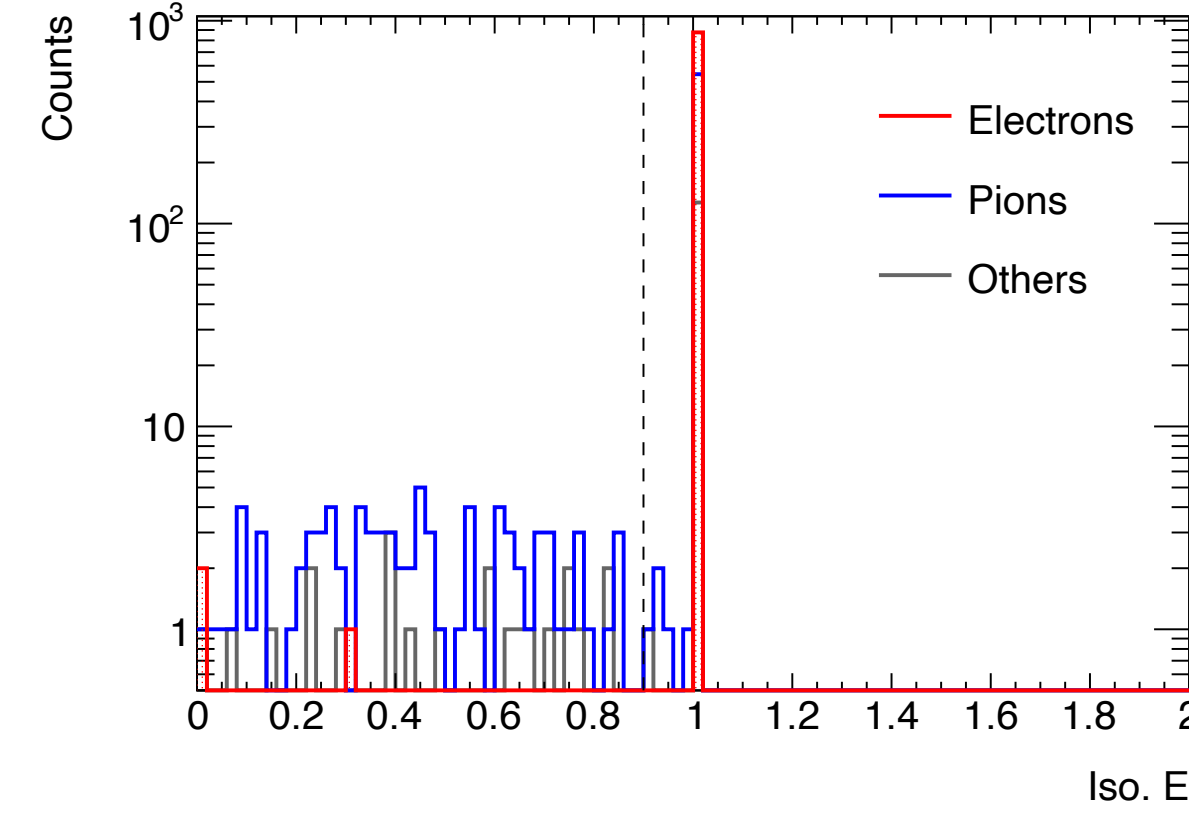
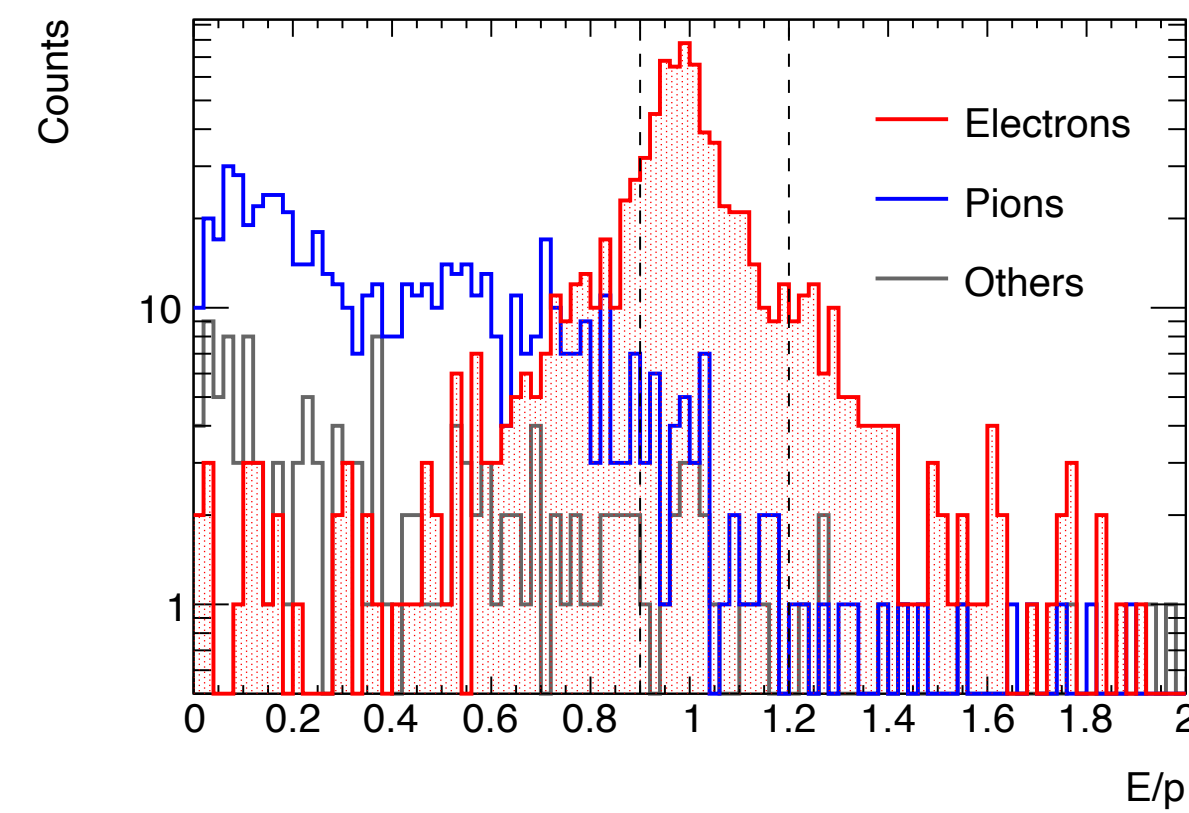


* EPIC 25.05.0 Sim. eHe3 10x166

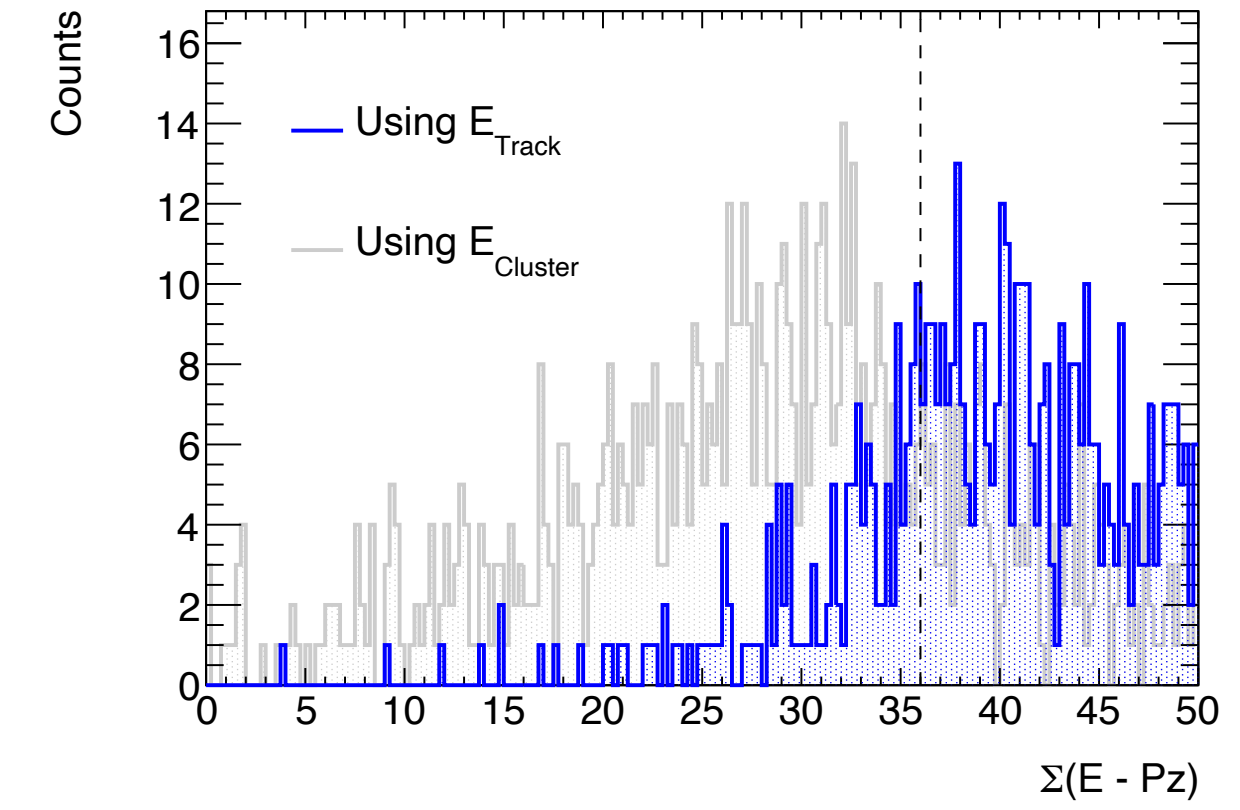
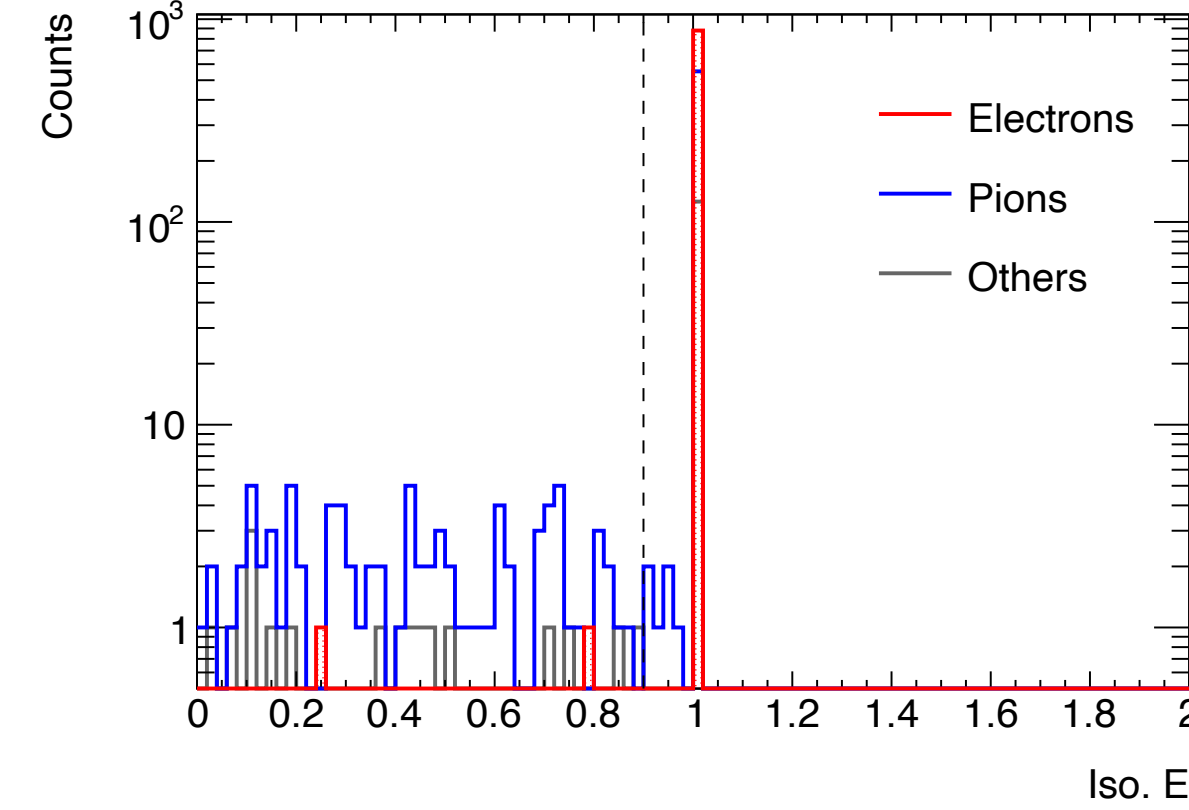
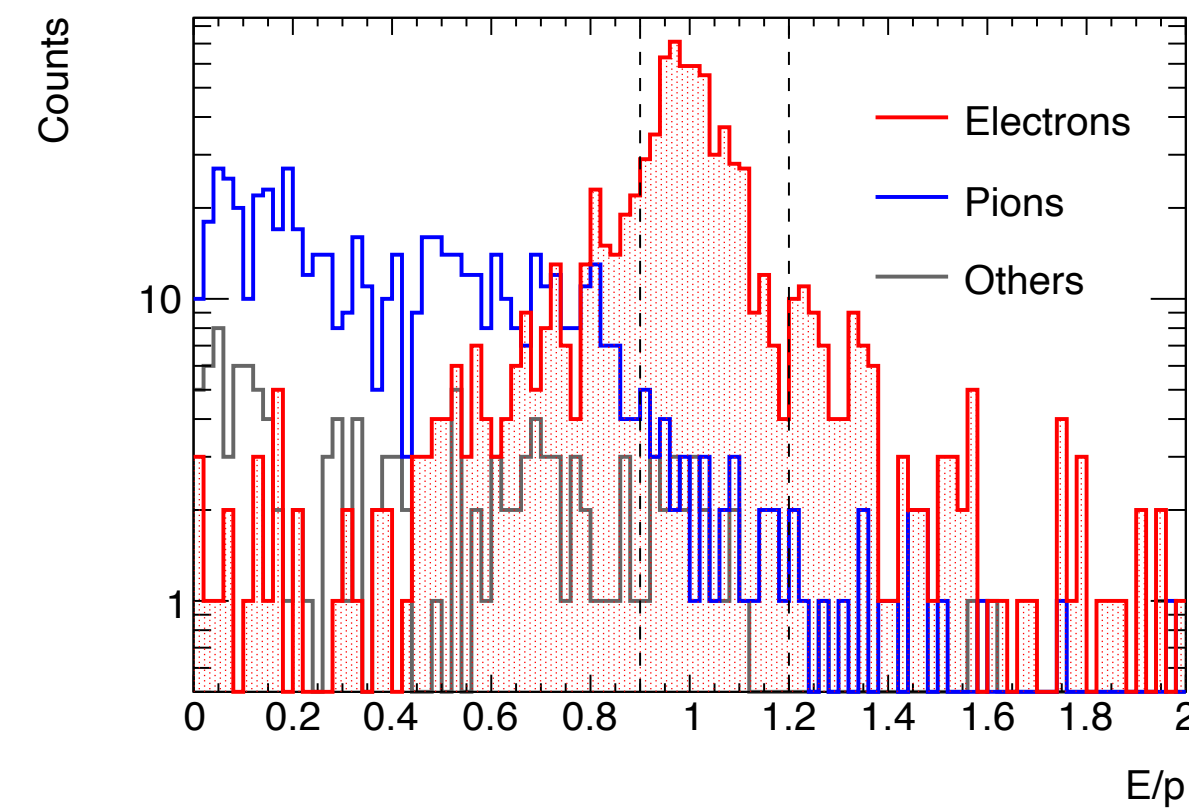
eID with beam background (1 DIS event w. $2\mu s$ bg.)

6

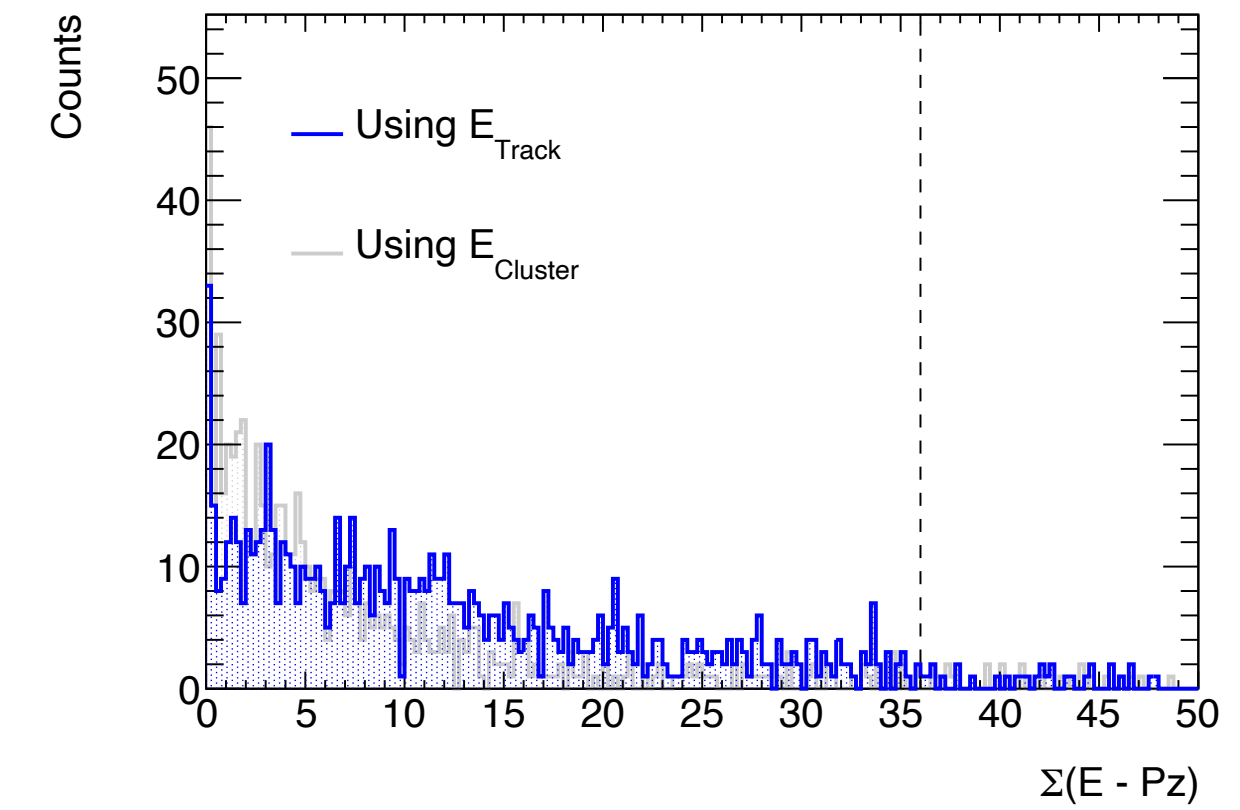
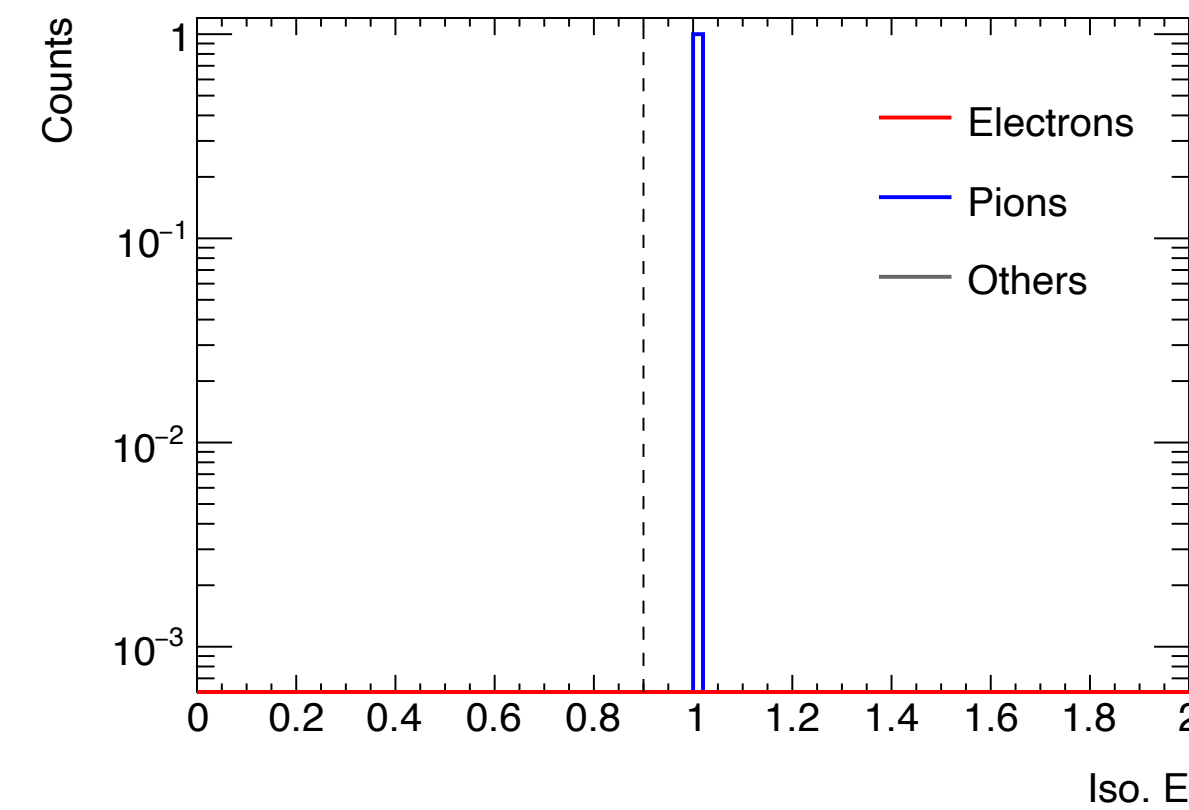
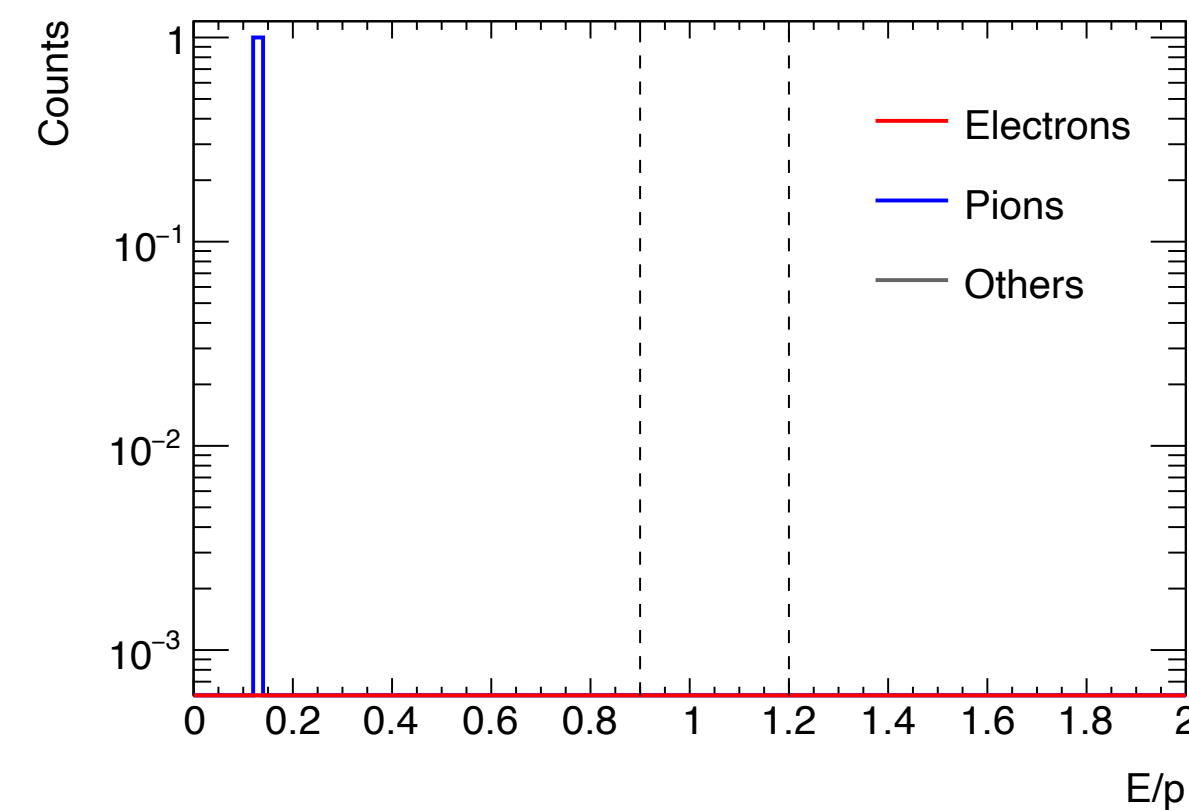
► DIS, no background



► DIS + Background

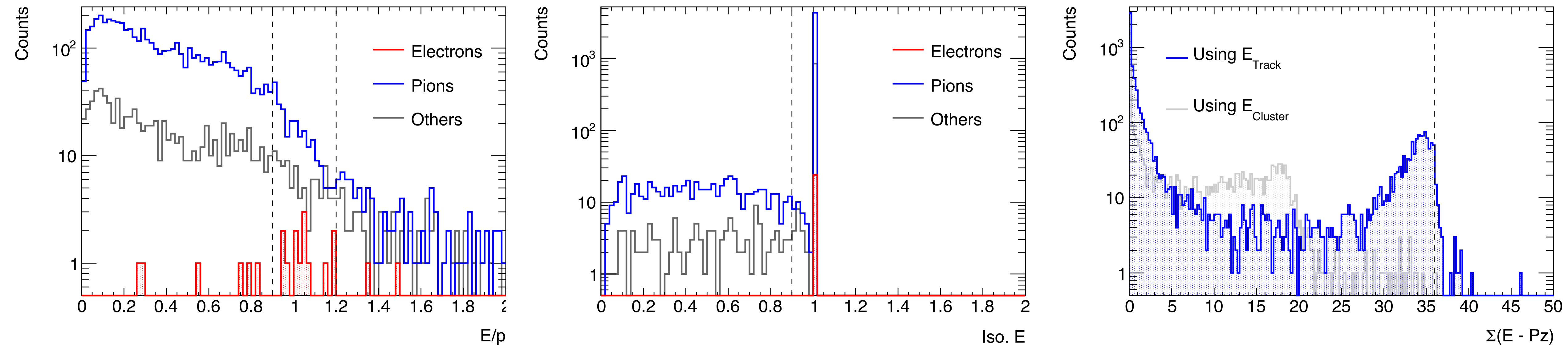


► Background only



* 18x275 ep samples with 1000 events

Photoproduction background



* EPIC 25.05.0 Sim. Pythia6 LowQ ep DIS, 6424 events