

Lepton ID Update

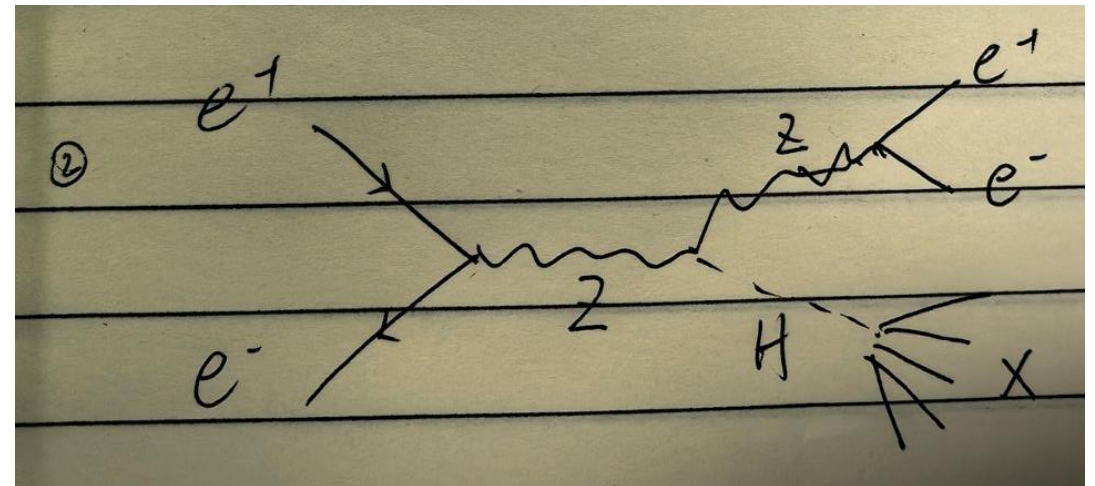
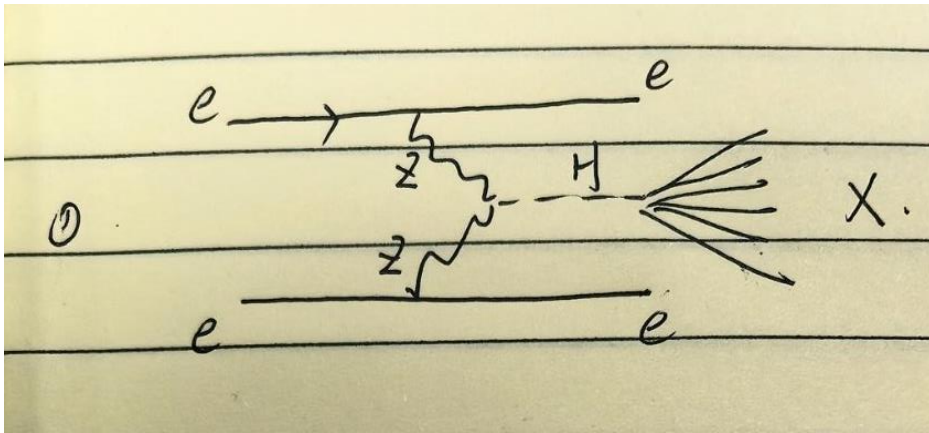
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Updates

- 1. Use $ee \rightarrow HX$ samples provided by Geliang
- 2. Try to use XGBoost to do leptonID
 - Use binary classification to distinguish electron and pion

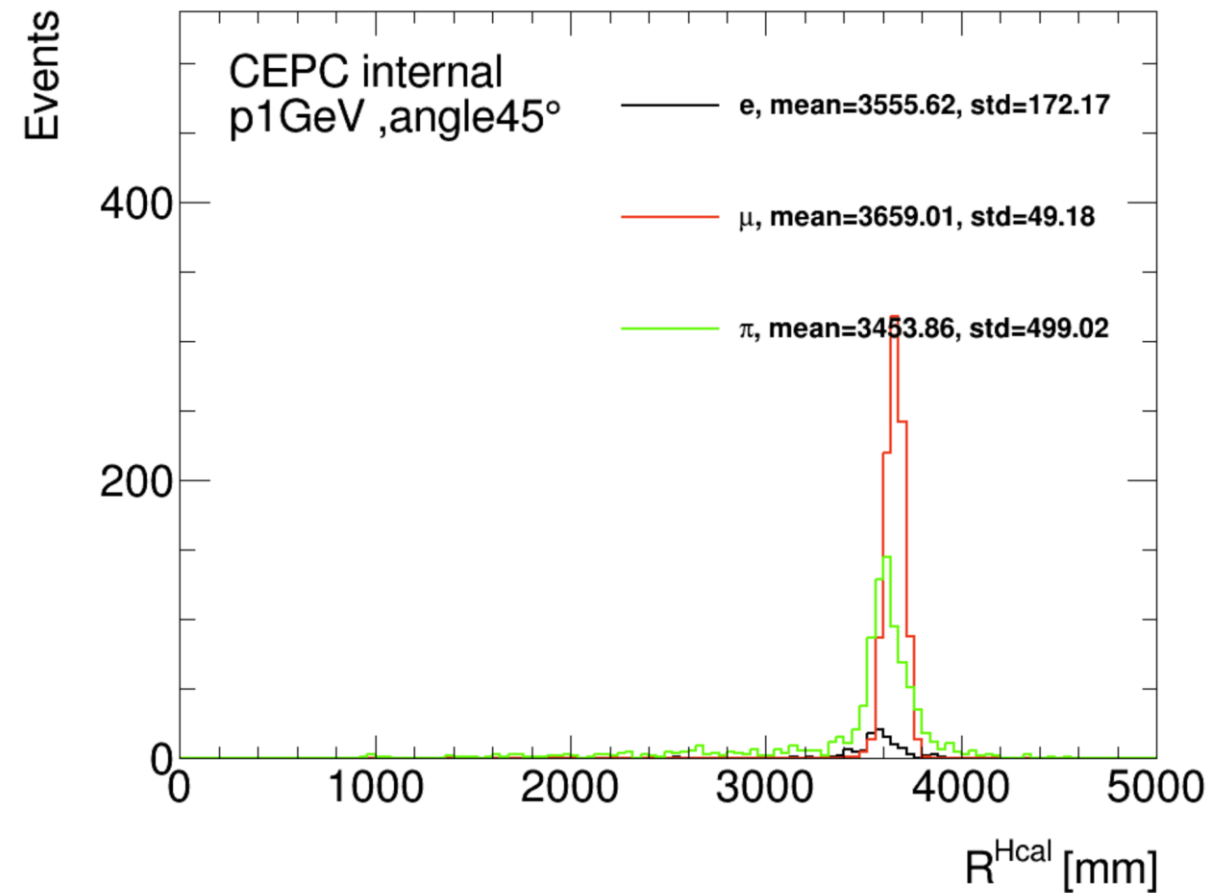
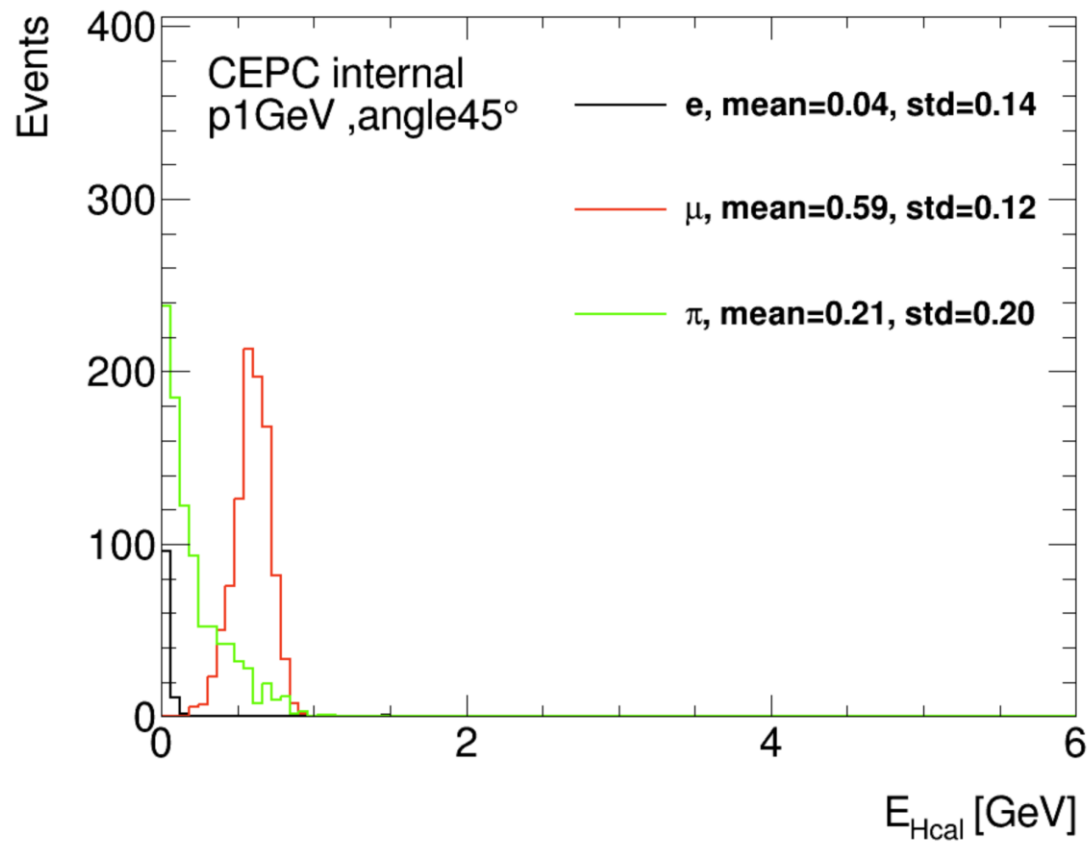
$ee \rightarrow HX$



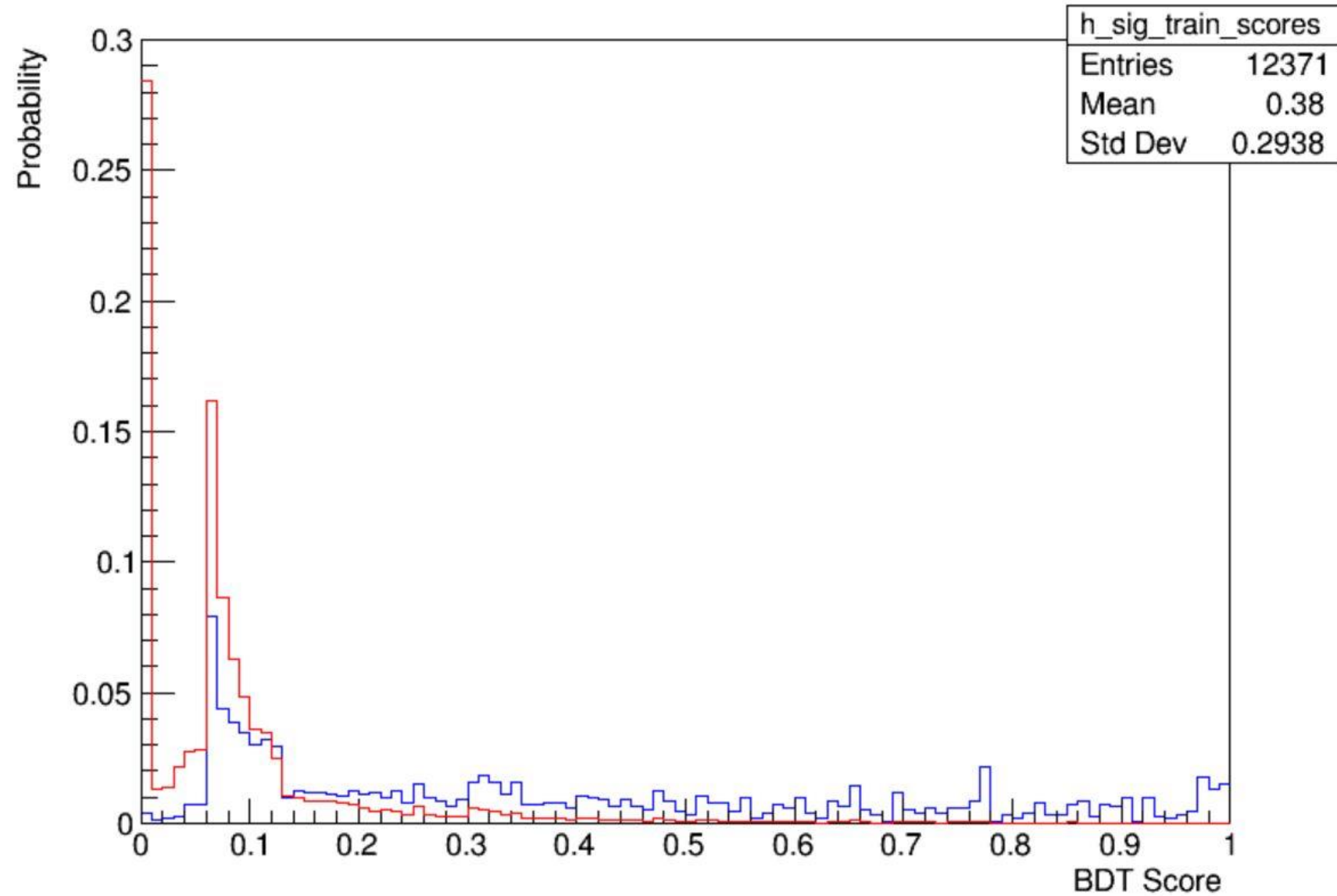
Features at low momentum

```
total:199828
total e:24755
total pi:175073
number of e in Tof: 165, 0.67%
number of pi in Tof: 10380, 5.93%
number of e in Dndx: 1069, 4.32%
number of pi in Dndx: 54248, 30.99%
number of e in Eecal: 5205, 21.03%
number of pi in Eecal: 50554, 28.88%
number of e in Eecalp: 5205, 21.03%
number of pi in Eecalp: 50554, 28.88%
number of e in Ehcal: 18720, 75.62%
number of pi in Ehcal: 86892, 49.63%
number of e in Rhad: 18720, 75.62%
number of pi in Rhad: 86892, 49.63%
number of e in Rhad_moliere: 3334, 13.47%
number of pi in Rhad_moliere: 47886, 27.35%
number of e in MindR: 349, 1.41%
number of pi in MindR: 7919, 4.52%
number of e in MindR1: 193, 0.78%
number of pi in MindR1: 3100, 1.77%
number of e in MindR2: 132, 0.53%
number of pi in MindR2: 1486, 0.85%
number of e in MindR_last: 264, 1.07%
number of pi in MindR_last: 4711, 2.69%
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Ehcal and Rhad



Result



Summary

- Work to do:
 - 1. Add statistical measures
 - 2. Remove some features(tof, MindR)
 - 3. Use Xgboost in muon&pion ID at low momentum