TTH Full Simulation Study Report

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Status

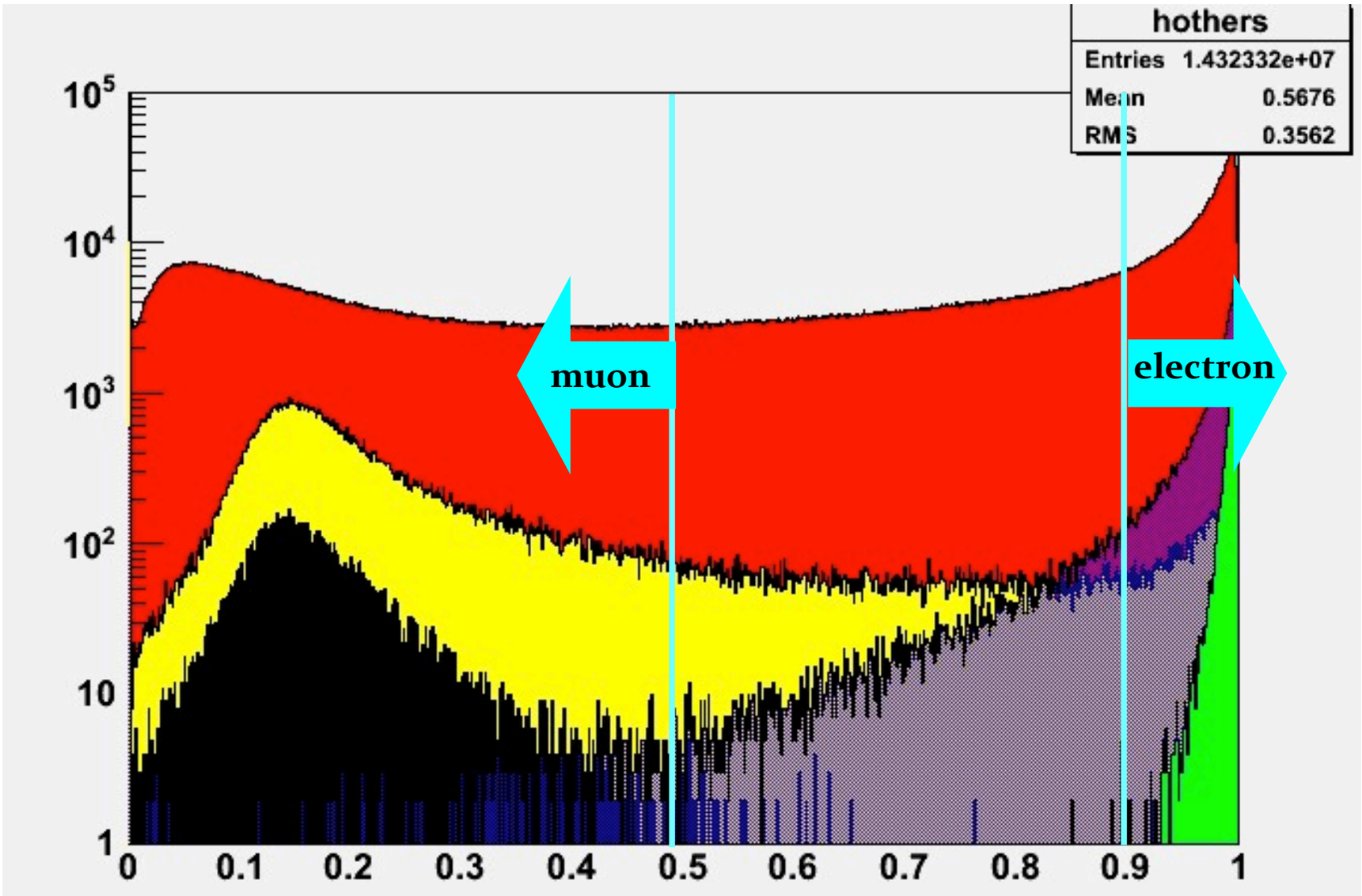
We have tried to find isolated lepton and check the performance in ttH events.

1. Find (isolated) electrons / muons using
- **E-CAL energy / Total CAL energy**
- **Total CAL energy / momentum** **(-->Will be replaced PFA PID in the future)**

2. Take isolated one using
- **cone energy vs energy**

Isolated lepton finding (1)
Ecal/TotalCalE

ttH sample

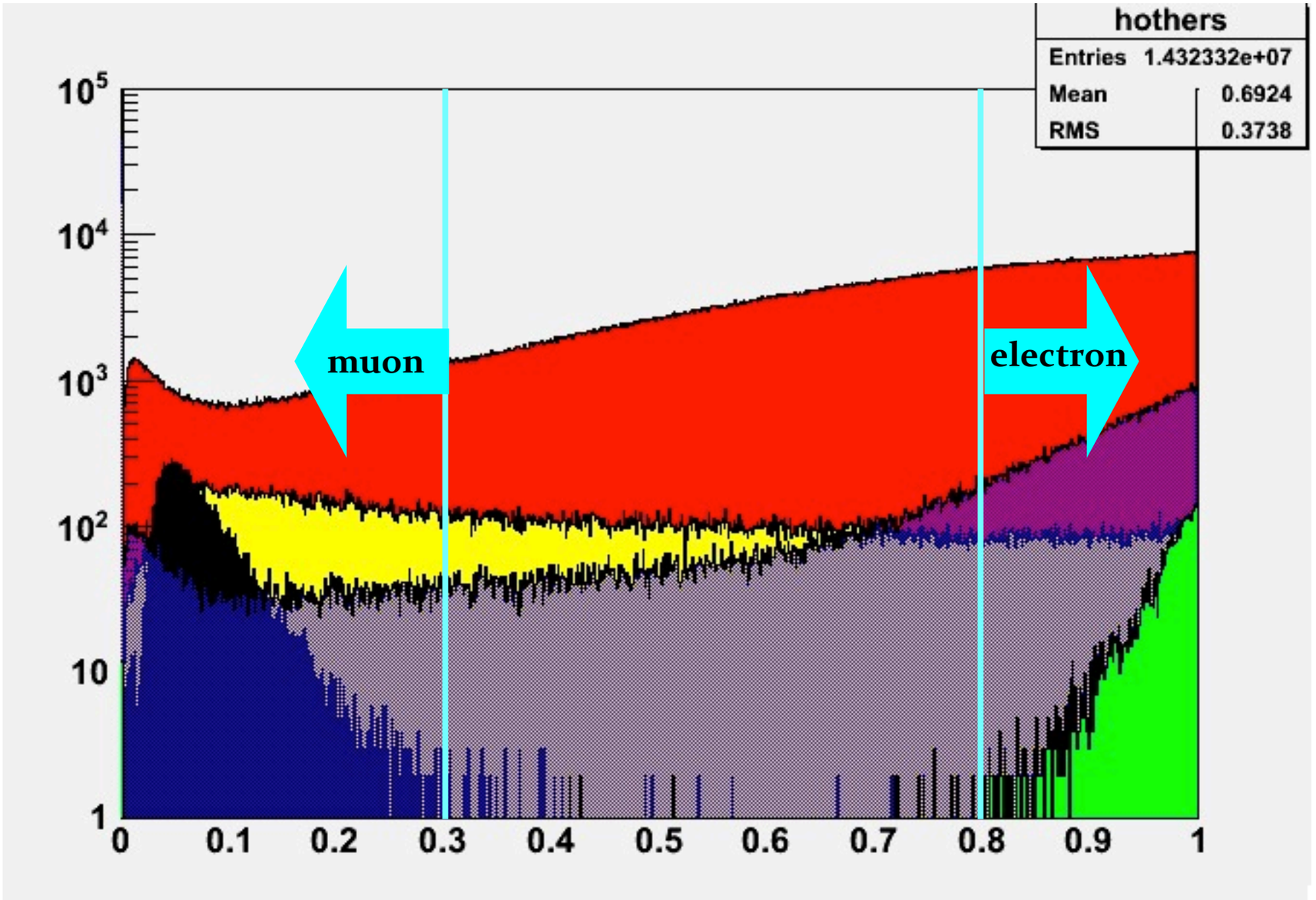


- Isolated muons
- Isolated electrons
- The other muons
- The other electrons
- The other particles

ECalE/TotalCalE is required
- less than 0.5 for muons
- more than 0.9 for electrons.

Isolated lepton finding (2)
TotalCalE/P

ttH sample



- Isolated muons
- Isolated electrons
- The other muons
- The other electrons
- The other particles

TotalCalE/momentum is required
- less than 0.3 for muons
- more than 0.8 for electrons.

Efficiency and Purity

definition of efficiency here：
recoデータのみを用いてisolated electron/muonと認定され、かつそれが(mc情報を用いて求めた)本当のisolated electron/muonであった場合の数の合計を、(mc情報を用いて求めた)本当のisolated electron/muonと認定された数の合計で割ったもの。

definition of purity here：
recoデータのみを用いてisolated electron/muonと認定され、かつそれが(mc情報を用いて求めた)本当のisolated electron/muonであった場合の数の合計を、recoデータのみを用いてisolated electron/muonと認定された数の合計で割ったもの。

	efficiency	purity
isolated electron	0.84	0.59
isolated muon	0.92	0.59
isolated electron/muon	0.88	0.59

Plan
- Investigate the reason that purity is low.