TTH Full Simulation Study Report

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Isolated lepton finding

Efficiency & Purity

Previous results

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

W --> e/mu is inclueded as true isolated lepton

	efficiency	purity
isolated electron	0.84	0.75
isolated muon	0.92	0.75
isolated electron/muon	0.88	0.75

If e/mu originated from H can be removed

	efficiency	purity
isolated electron	0.84	0.91
isolated muon	0.92	0.90
isolated electron/muon	0.88	0.90

There is room for further improvement to optimize lepton ID,
and the cut value of cone energy-track energy plot .

Plan:
move onto jet clustering step

Backup

Efficiency：

of the particles that are recognized as isolated lepton candidates and that are truly isolated leptons divided by # of true isolated leptons

Purity：

of the particles that are recognized as isolated lepton candidates and that are truly isolated leptons divided by # of isolated lepton candidates

Two types of Electron ID and Muon ID

1. PID from pandra PFA

using “getType()” method

2. My PID (isolated lepton specific)

For e+/e-

(ECal_Energy + HCal_Energy)/P > 0.8) &&
(ECal_Energy / (ECal_Energy + HCal_Energy) > 0.9) &&
(ECal_Energy + HCal_Energy != 0) &&
(Charge != 0)

For mu+/mu-

(ECal_Energy + HCal_Energy)/P < 0.3) &&
(ECal_Energy / (ECal_Energy + HCal_Energy) < 0.5) &&
(ECal_Energy + HCal_Energy != 0) &&
(Charge != 0)