

Cross Cleaning on DiLepton Analysis

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Initial Cuts

Initial Cuts on PAT Layer 1

- Jets: $p_T > 15$ GeV and $n\text{Constituents} > 0$
- Electrons: $p_T > 10$ GeV and $|\eta| < 2.5$
- Muons: $p_T > 10$ GeV and $|\eta| < 2.5$
- Photons: $p_T > 10$ GeV and $|\eta| < 2.5$

Used Sample: /LM0/Summer09-MC_31X_V3_7TeV-v1/GEN-SIM-RECO

Cross Cleaning Reminder

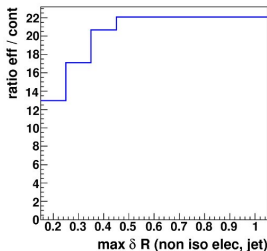
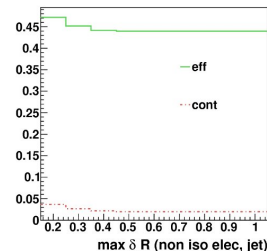
Muon-Jet

- Non-isolated muons will be removed if a jet is in a certain ΔR range
- Isolated muons will be left alone

Electron-Jet

- Non-isolated Electrons will be removed if a Jet with shared Energy is in a certain ΔR range
- Isolated Electrons will be left alone, but can remove a jet, if the relative shared Energy is over a certain threshold

Electron-Jet: Electrons



Electron-Jet

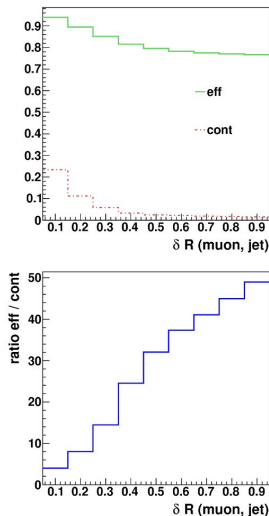
- Non-isolated Electrons will be removed if a Jet with shared Energy is in a certain deltaR range
- Isolated Electrons will be left alone, but can remove a jet, if the relative shared Energy is over a certain threshold

$\text{eff} = n_{\text{matched}} / n_{\text{all_gen}}$

$\text{cont} = n_{\text{notmatched}} / n_{\text{all_reco}}$

$\text{ratio} = \text{eff} / \text{cont}$

Muon-Jet: Muons



Muon-Jet

- Non-isolated muons will be removed if a jet is in a certain δR range
- Isolated muons will be left alone

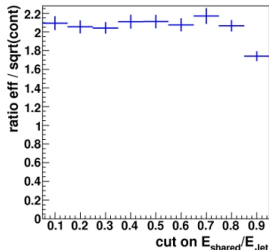
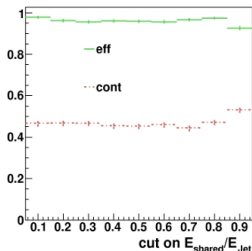
$$\text{eff} = n_{\text{matched}} / n_{\text{all_gen}}$$

$$\text{cont} = n_{\text{notmatched}} / n_{\text{all_reco}}$$

$$\text{ratio} = \text{eff} / \text{cont}$$

Electron-Jet: Jets

Z+Jets, max 2 Jets



Electron-Jet

- Non-isolated Electrons will be removed if a Jet with shared Energy is in a certain ΔR range
- Isolated Electrons will be left alone, but can remove a jet, if the relative shared Energy is over a certain threshold

$\text{eff} = n_{\text{matched}} / n_{\text{all_gen}}$

$\text{cont} = n_{\text{notmatched}} / n_{\text{all_reco}}$

$\text{ratio} = \text{eff} / \text{cont}$

Cross Cleaning with DiLepton preselection

Loose DiLepton Selection

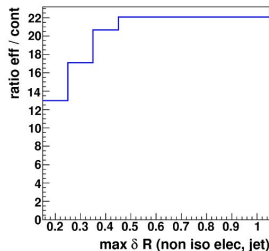
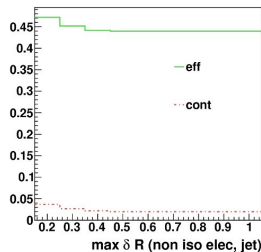
- For illustration, make a “loose” DiLepton selection, to check how the cross cleaner behaves on a DiLepton event topology

DiLepton Selection

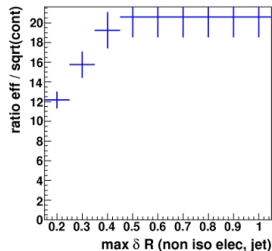
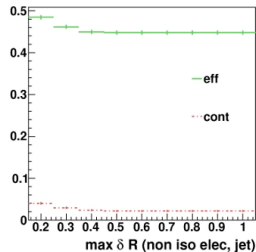
- at least 2 **gen** leptons within acceptance
- at least 3 Jets with $P_T > 50$ and $|\eta| < 2.5$
- MET > 100

Electron-Jet: Electrons

full LM0 sample

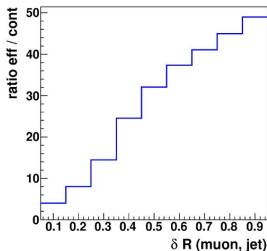
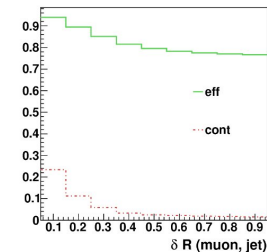


LM0 sample, diLeptonSelected



Muon-Jet: Muons

full LM0 sample



LM0 sample, diLepton selected

