



# A Quick Study of L1 Muon Performance

Kalanand Mishra

*FNAL Trigger Upgrade Meeting*  
(November 19, 2012)

# Samples used to compute efficiency & L1 rate



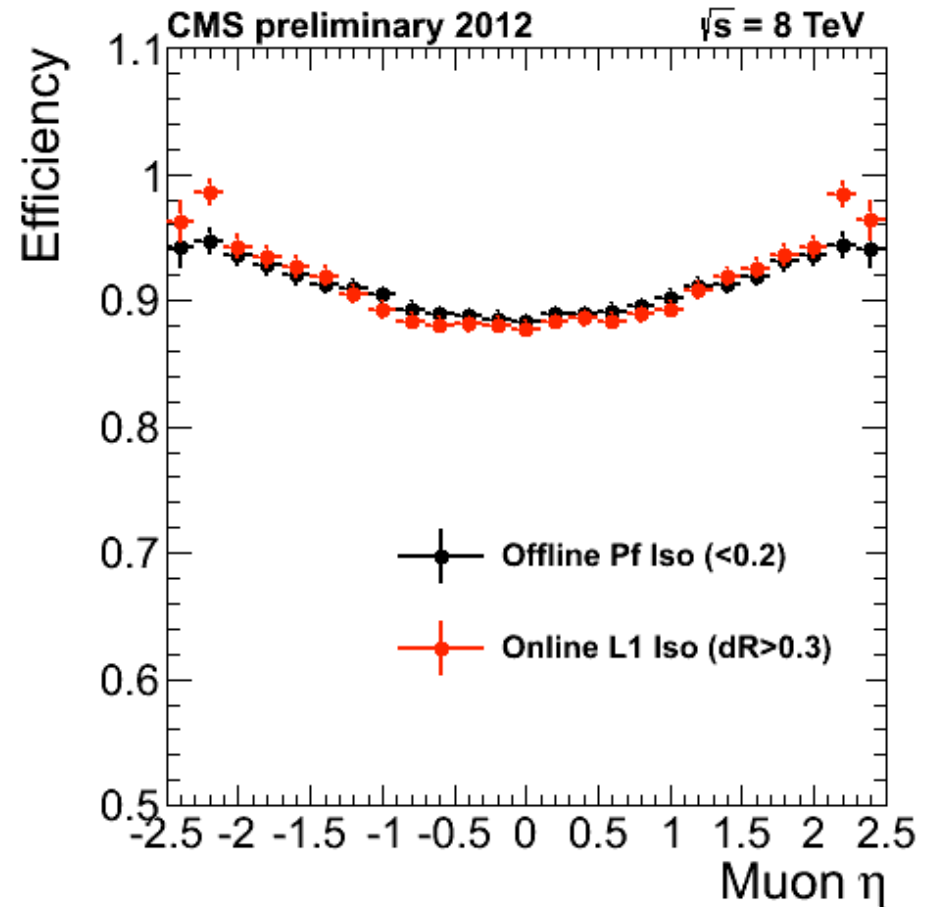
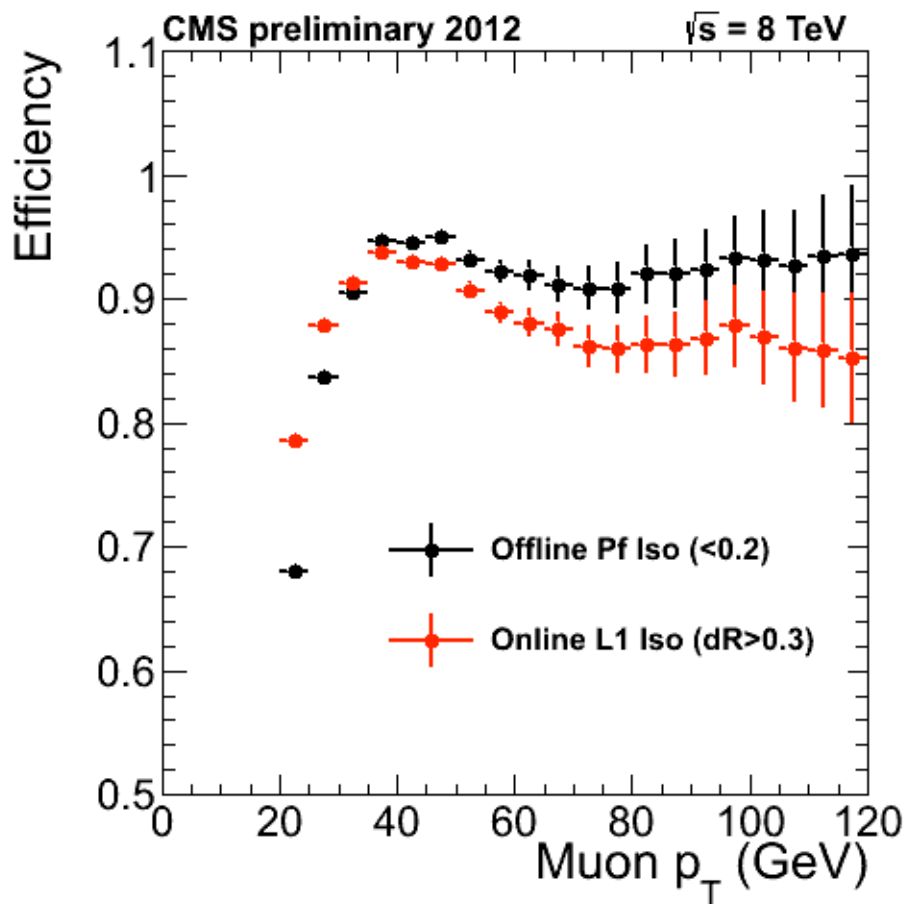
## Efficiency sample

- $Z \rightarrow \mu\mu$  in data in runs 2012 C (HCP: 7/fb)
  - Muon  $p_T > 20$  GeV,  $|\eta| < 2.4$
- Require good quality criteria
  - Reconstructed as a Global and Tracker Muon
  - $\geq 10$  tracker hits,  $\geq 1$  pixel hits (Tracker track)
  - $\geq 2$  muon hits of the Global track
  - $\chi^2/\text{ndf} < 10$  global fit

## Rate sample

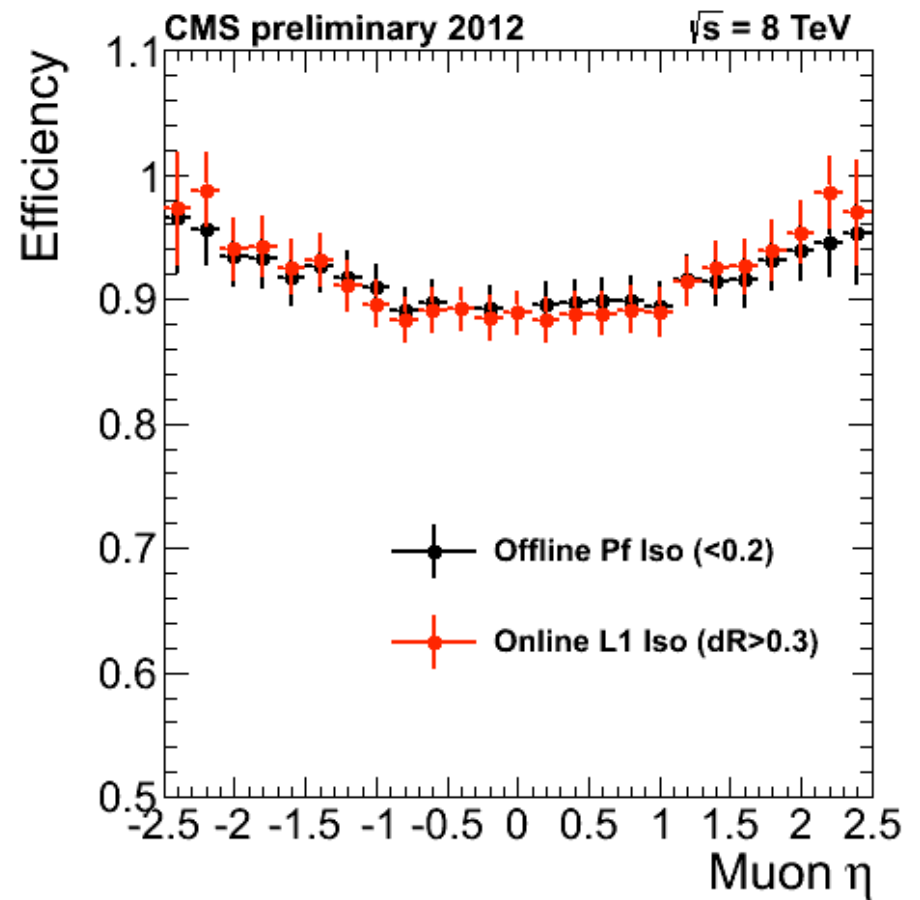
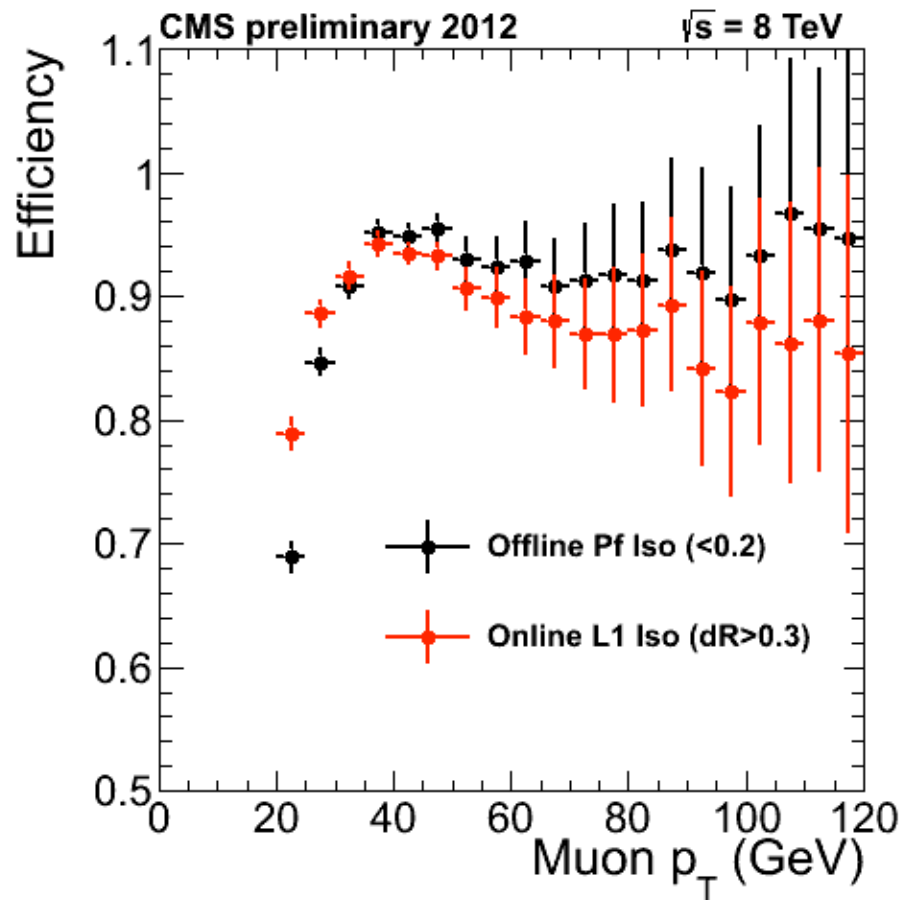
- ZeroBias3 (run: 198609)
  - High pileup run ( $\sim 66$  pileup)

# Efficiency as a function of $p_T$ and $\eta$



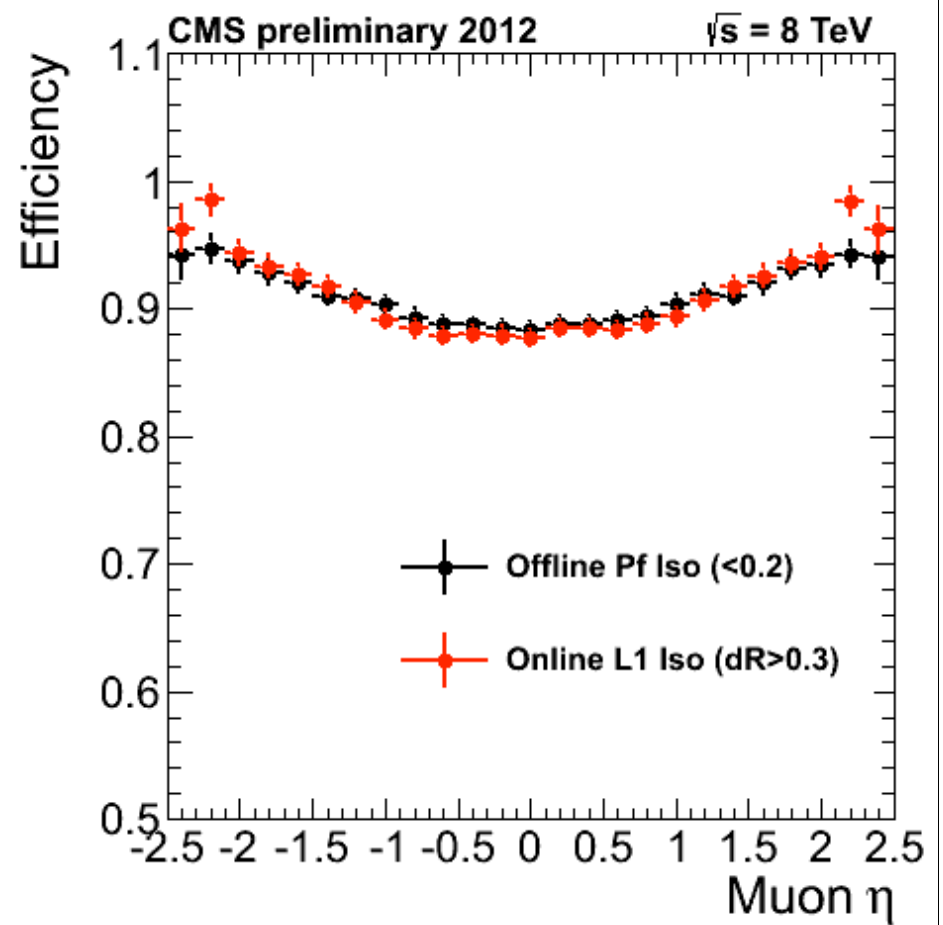
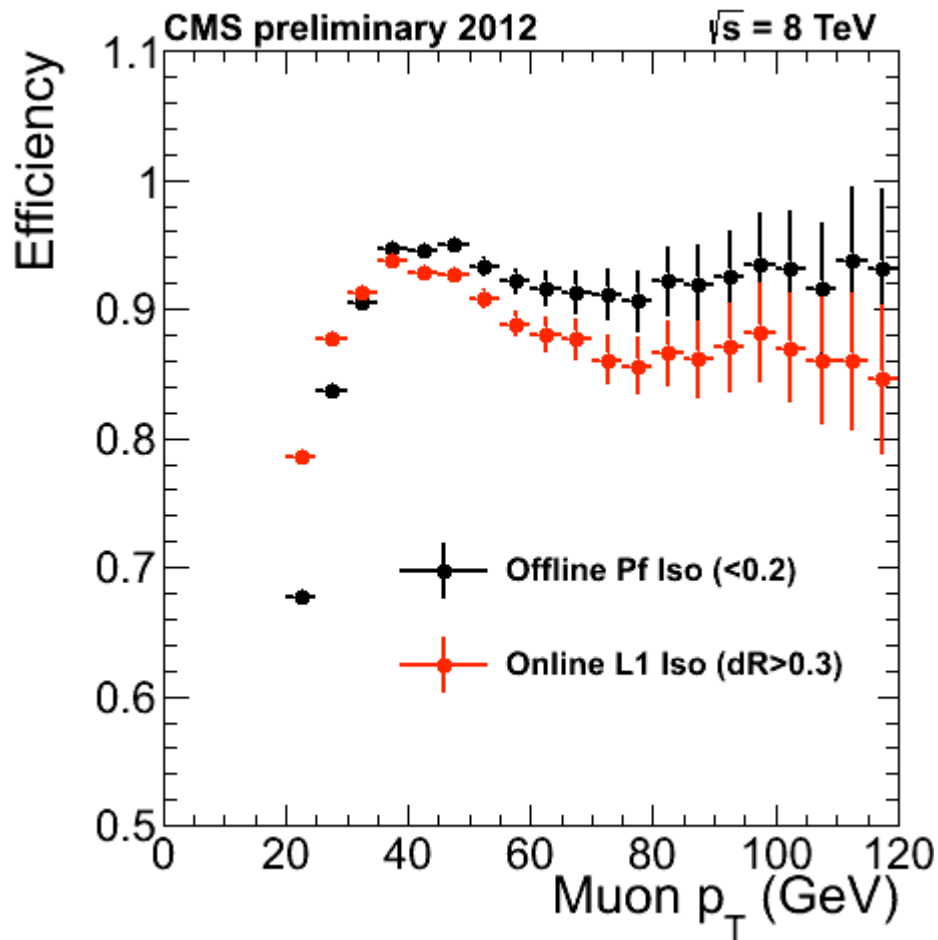
Integrated over all pileup epochs

# Low pileup (0–10)



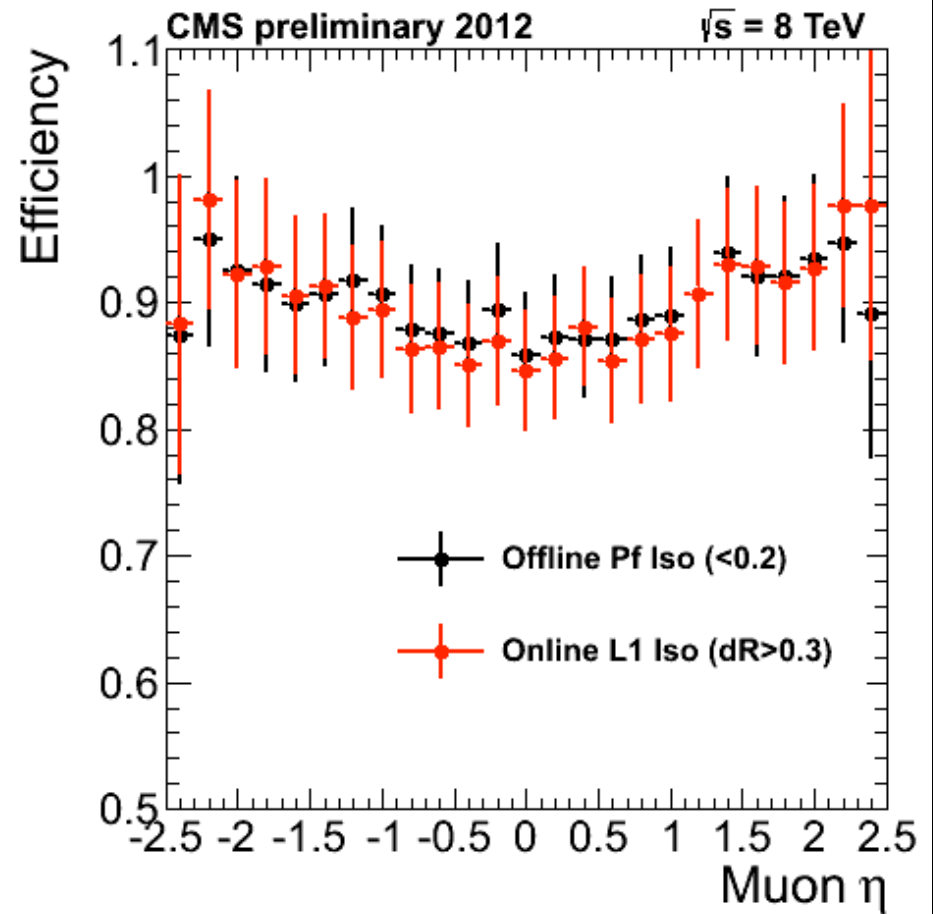
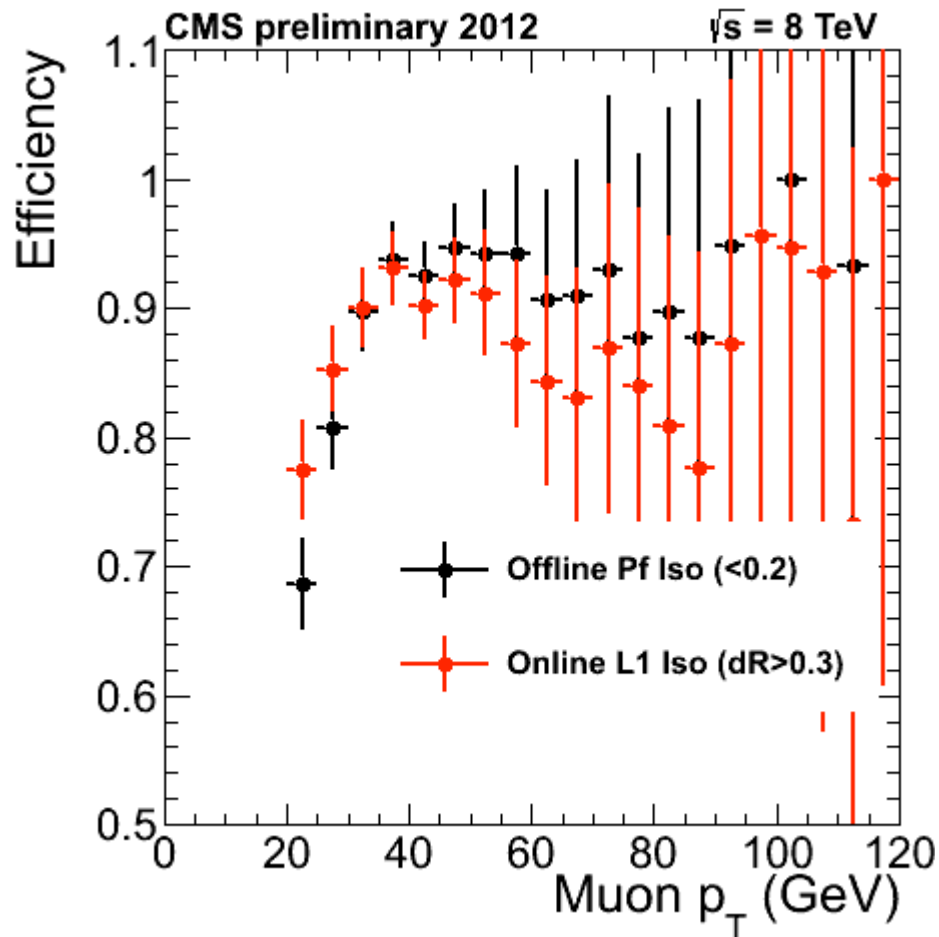
Effect of pileup seems negligible

# Moderate pileup (10–25)

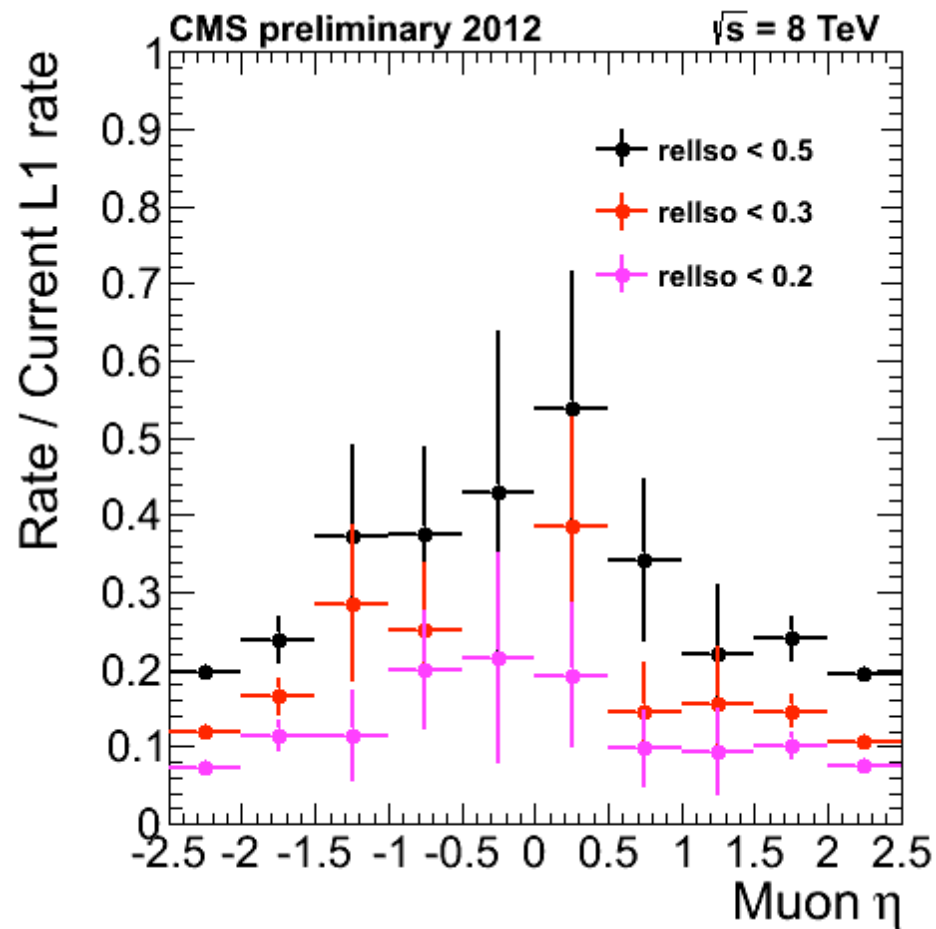
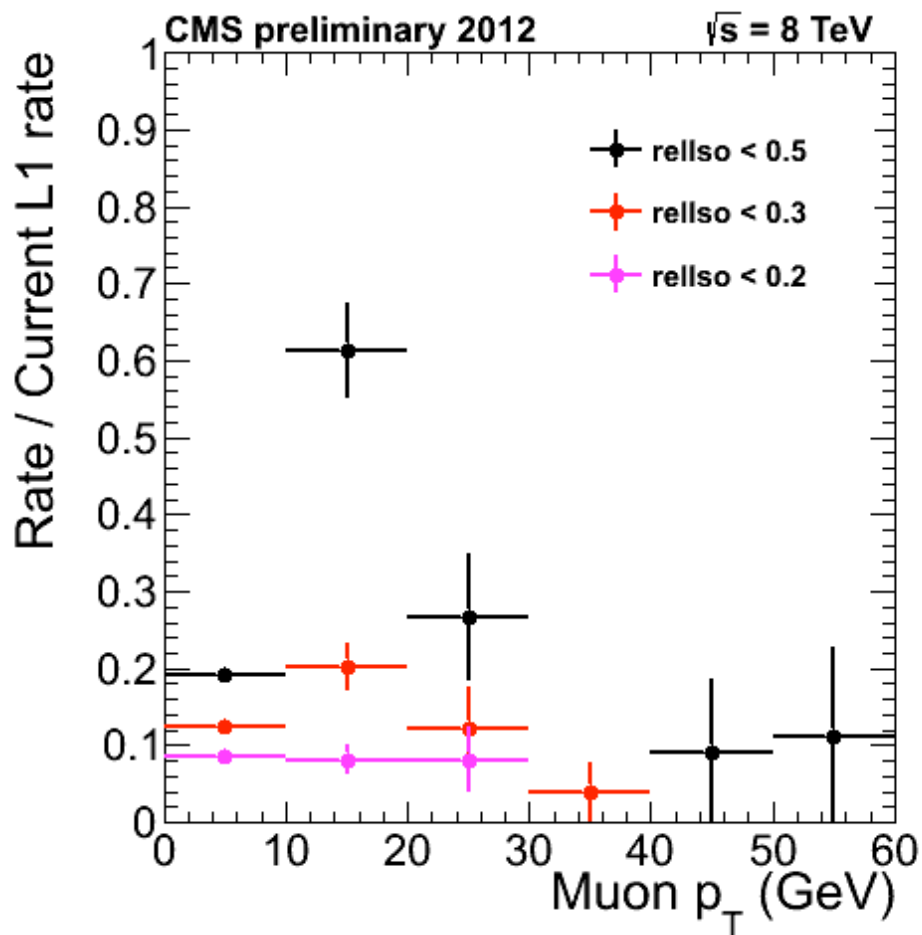


Effect of pileup seems negligible

# High pileup (25–50)



# Rates



L1 rate: somewhat consistent with the study of UCSD folks.  
Need to run over more MinBias events.

**BACKUP SLIDES**