Update on $Z \rightarrow e^+e^-$ analysis

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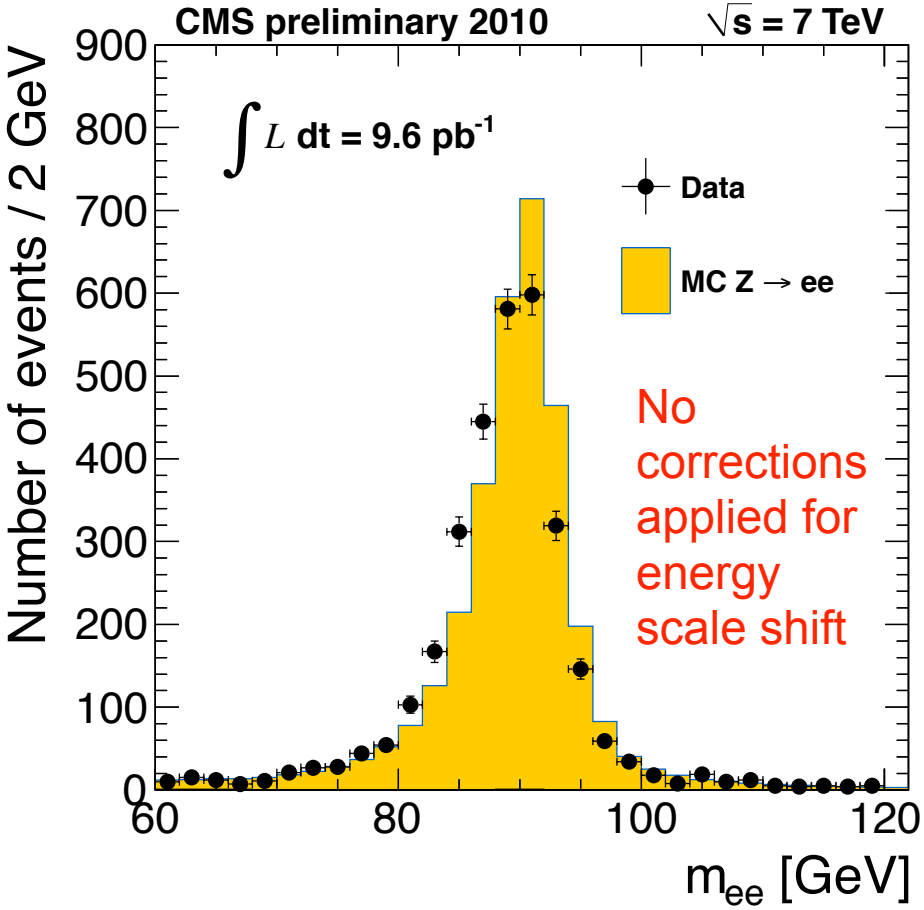
*on behalf of **Z Signal Extraction** team*

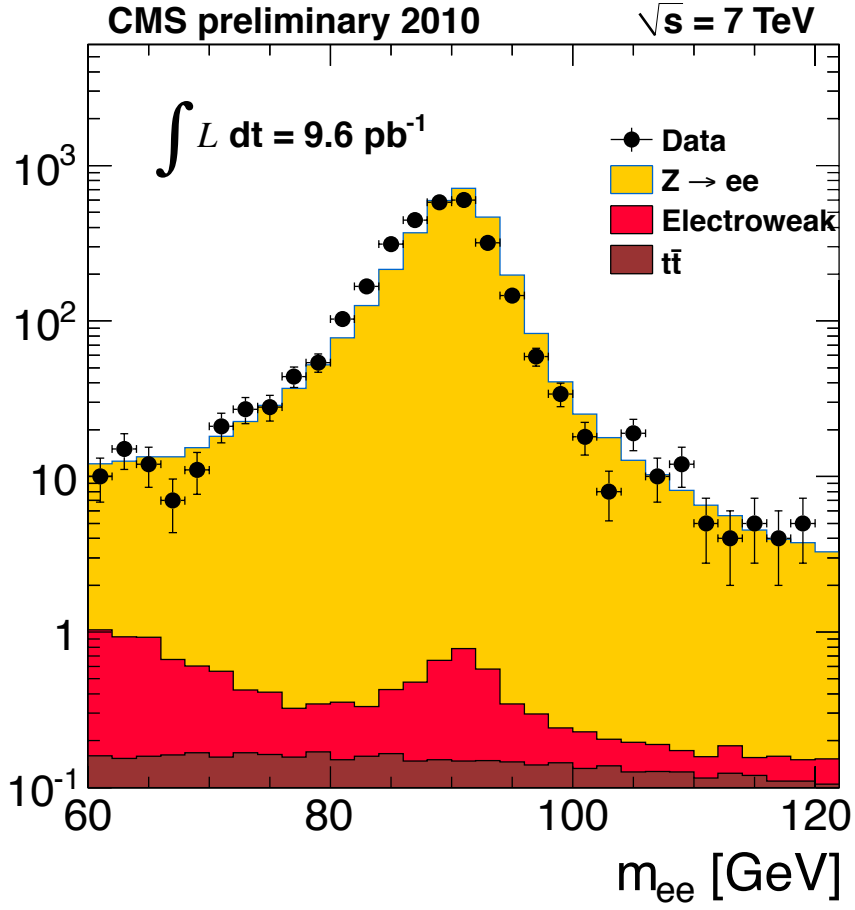
A quick look at Run-2010B data certified in JSON file of Oct 29
(9.6 pb^{-1}, run range used 146240-148068)

VBTF meeting
(November 5, 2010)

Using 9.6 pb^{-1} of Run-2010B data

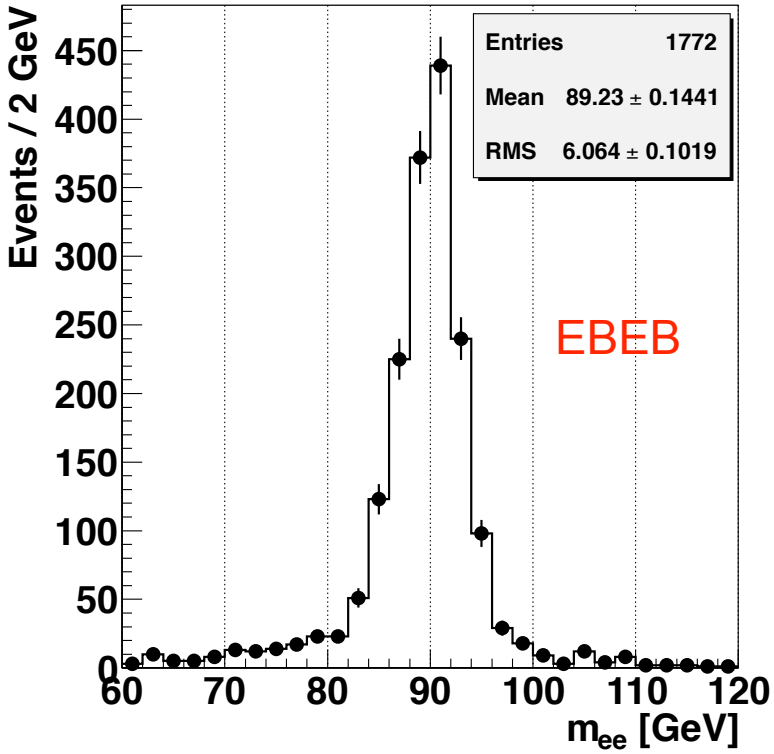
- Have 3083 golden Z→ee events using "WP80" electron selection
  - EBEB = 1772, EBEE = 1024, EEEE = 287 (w/o escale correction)
  - Electron trigger HLT_Ele17 now has tighter cuts than WP95

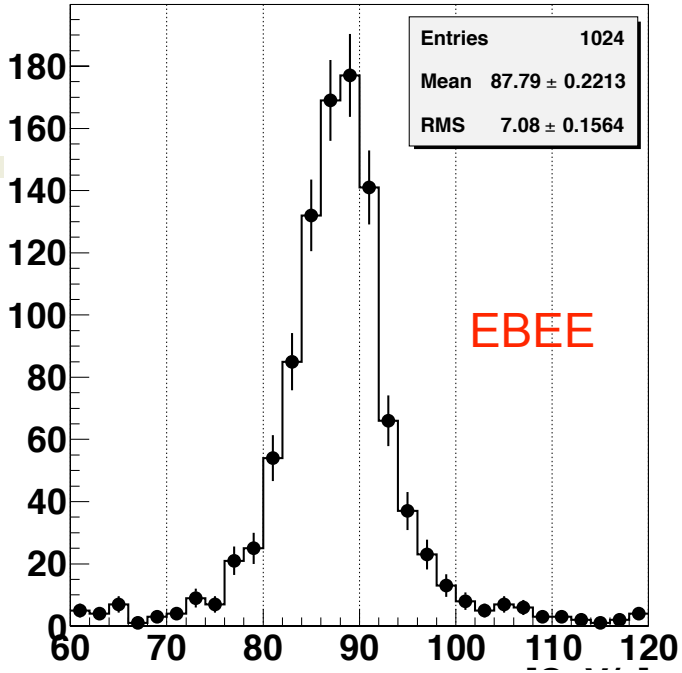


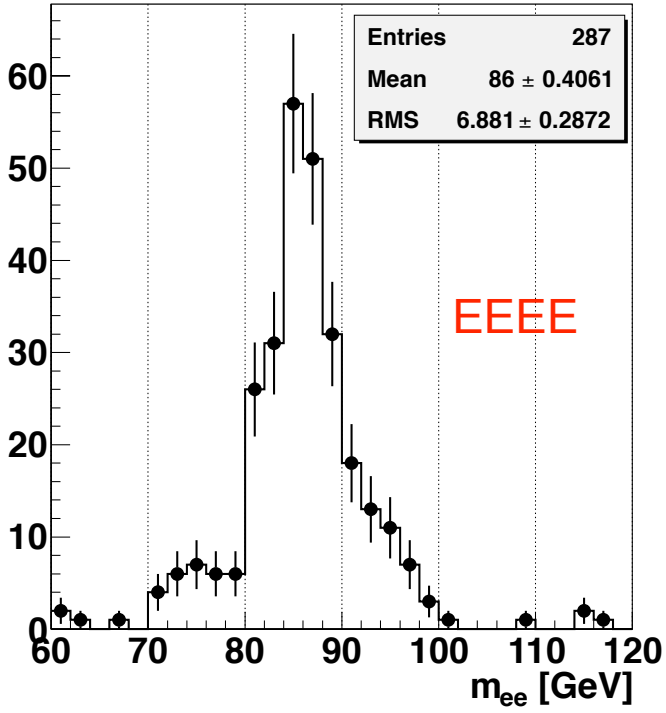


ECAL "transparency loss"

- Escale from π^0 is already there in EB
- ECAL transparency loss causes energy loss, mostly in EE







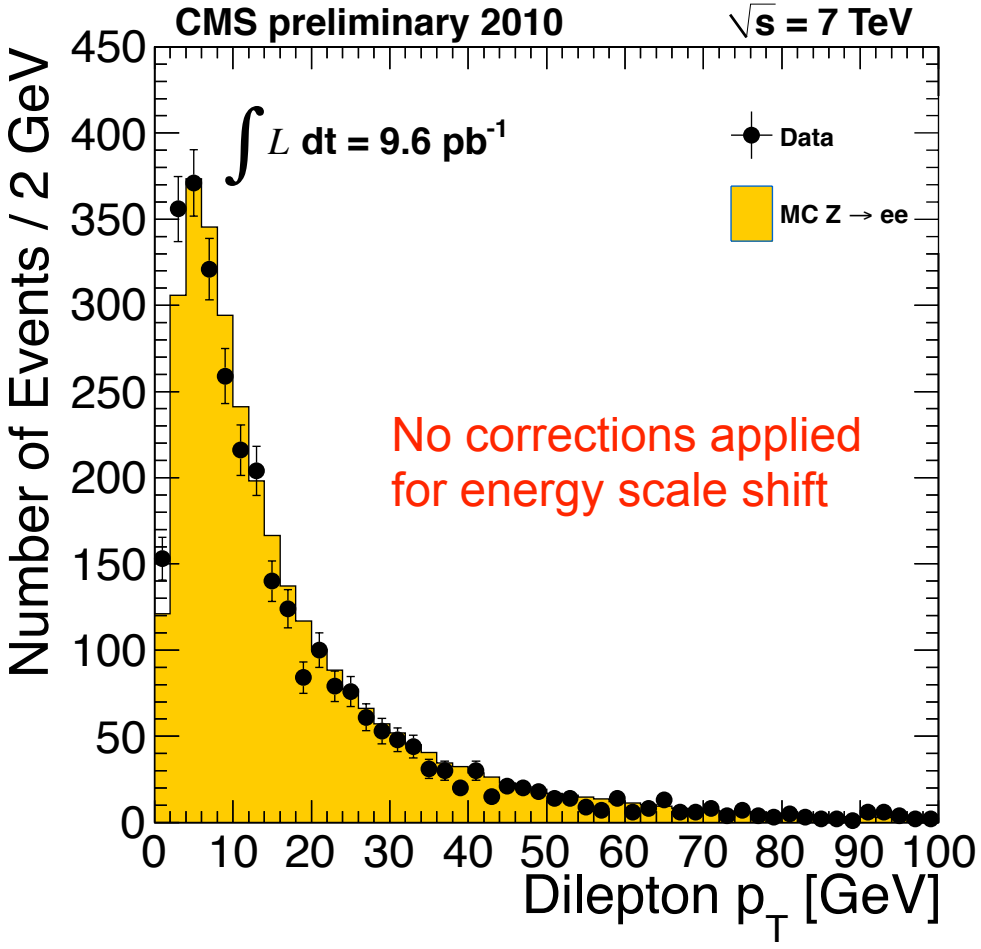
Please see details and likely re-Reco plans at:

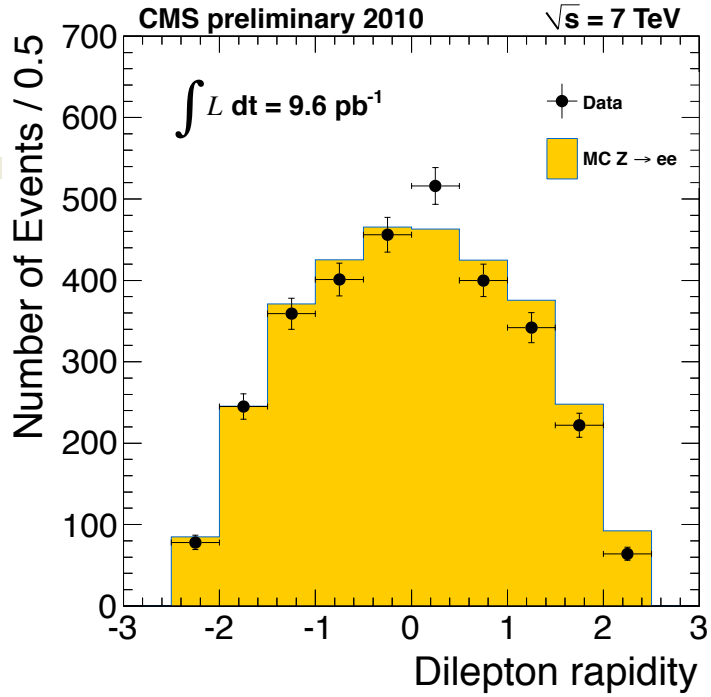
https://hypernews.cern.ch/HyperNews/CMS/get/egamma/885.html

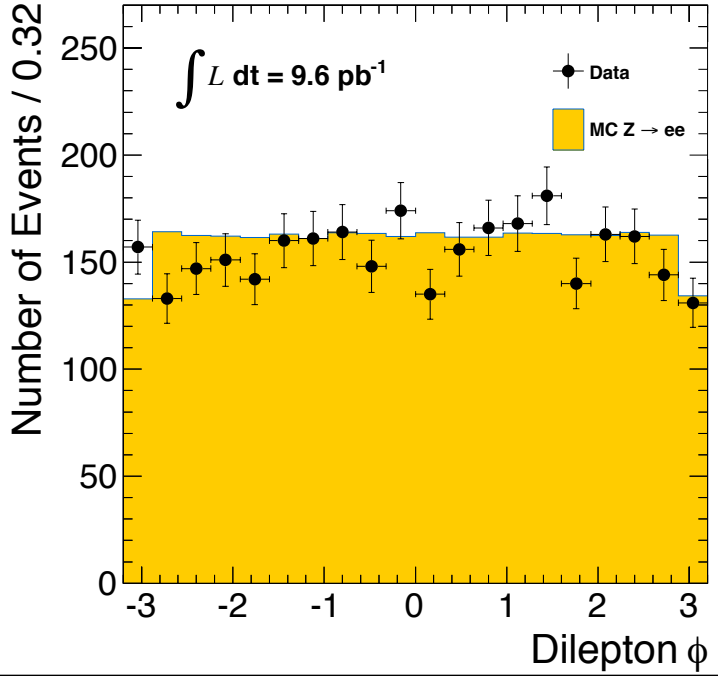
https://hypernews.cern.ch/HyperNews/CMS/get/ecal-calibration/81.html

https://twiki.cern.ch/twiki/bin/view/CMS/ECALDPGLaserWorkflowChallenge#Rereco_plan

Z p_T, rapidity, azimuth

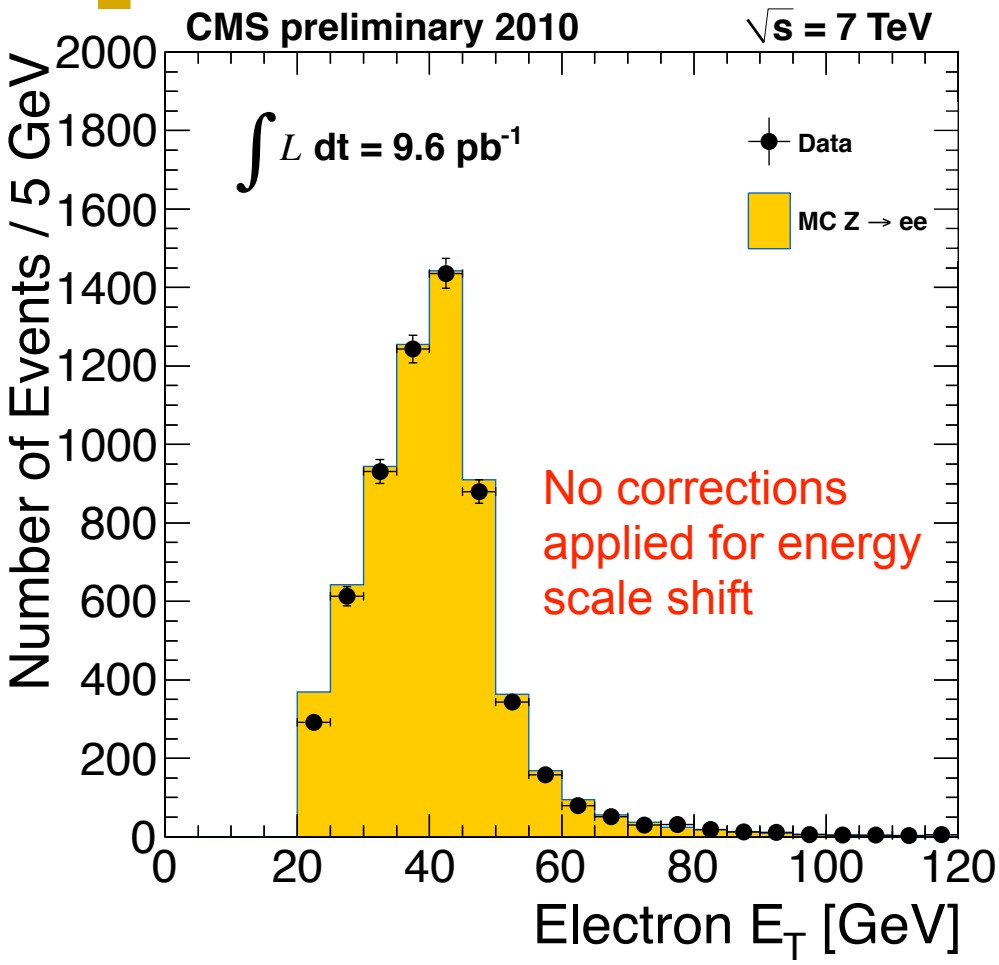


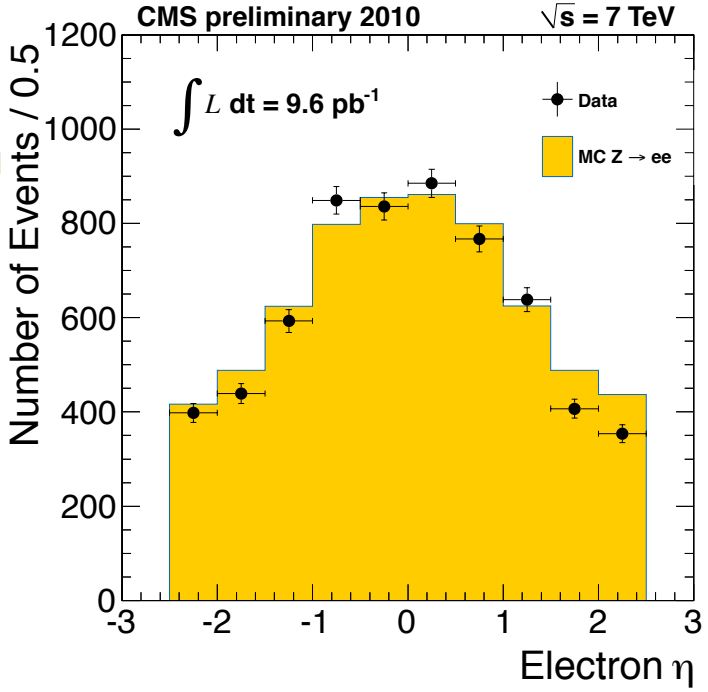


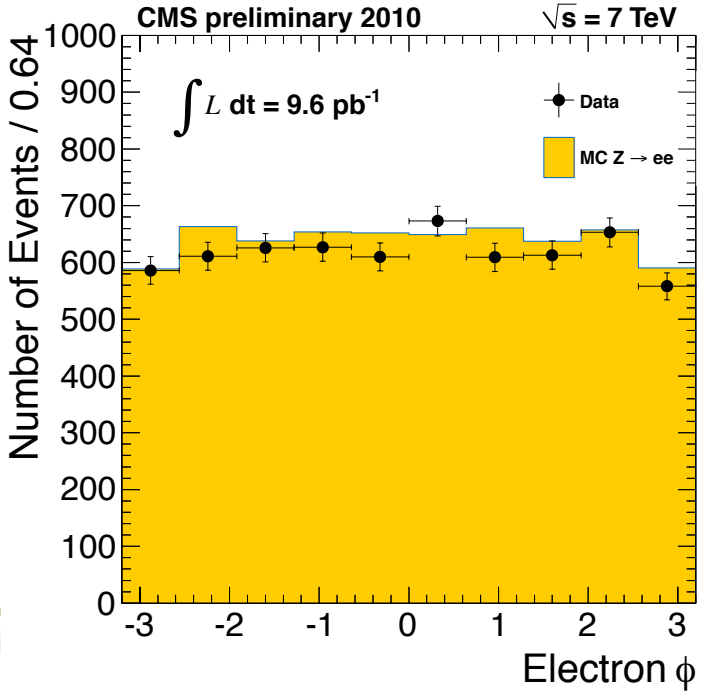


✦Distributions are in agreement with NLO predictions.

Electron P_T, rapidity, azimuth

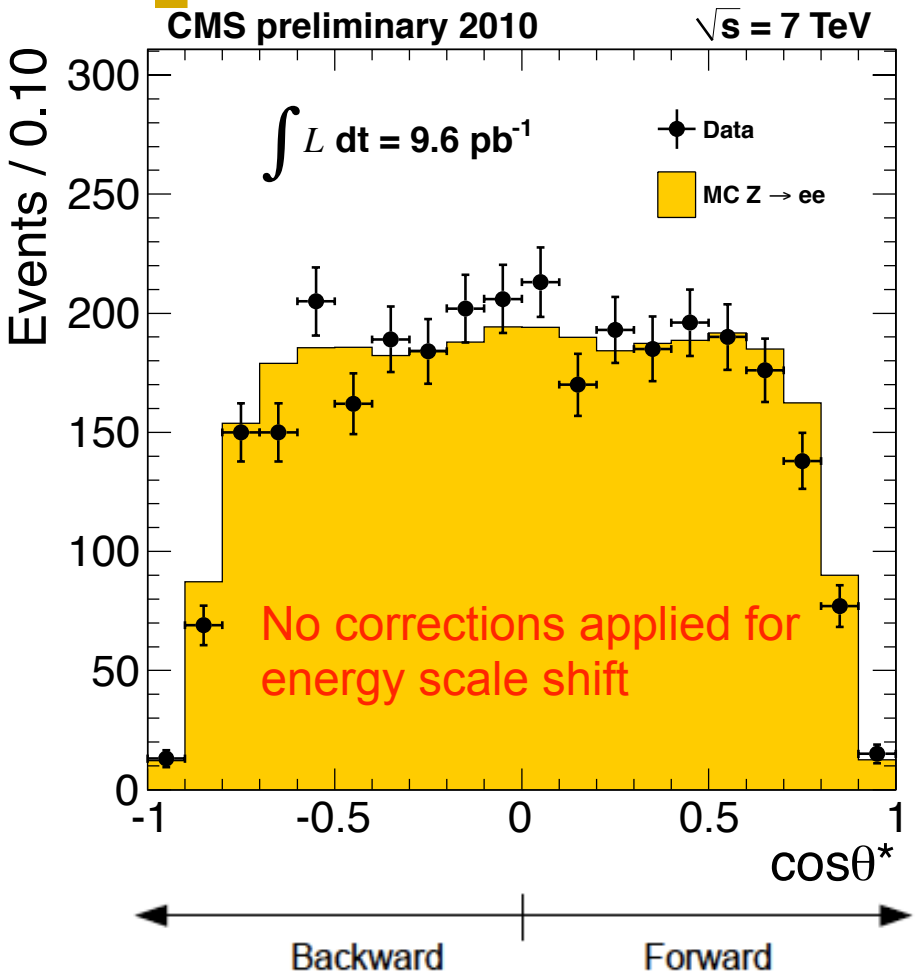




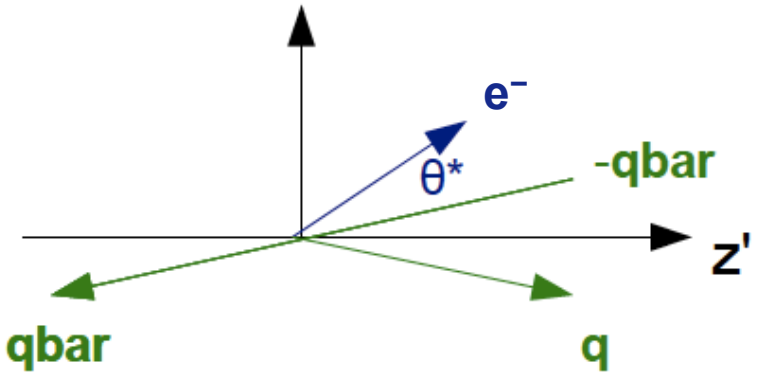


✦Distributions are in agreement with NLO predictions.

Z production topology: cosine θ*



Collins–Soper frame

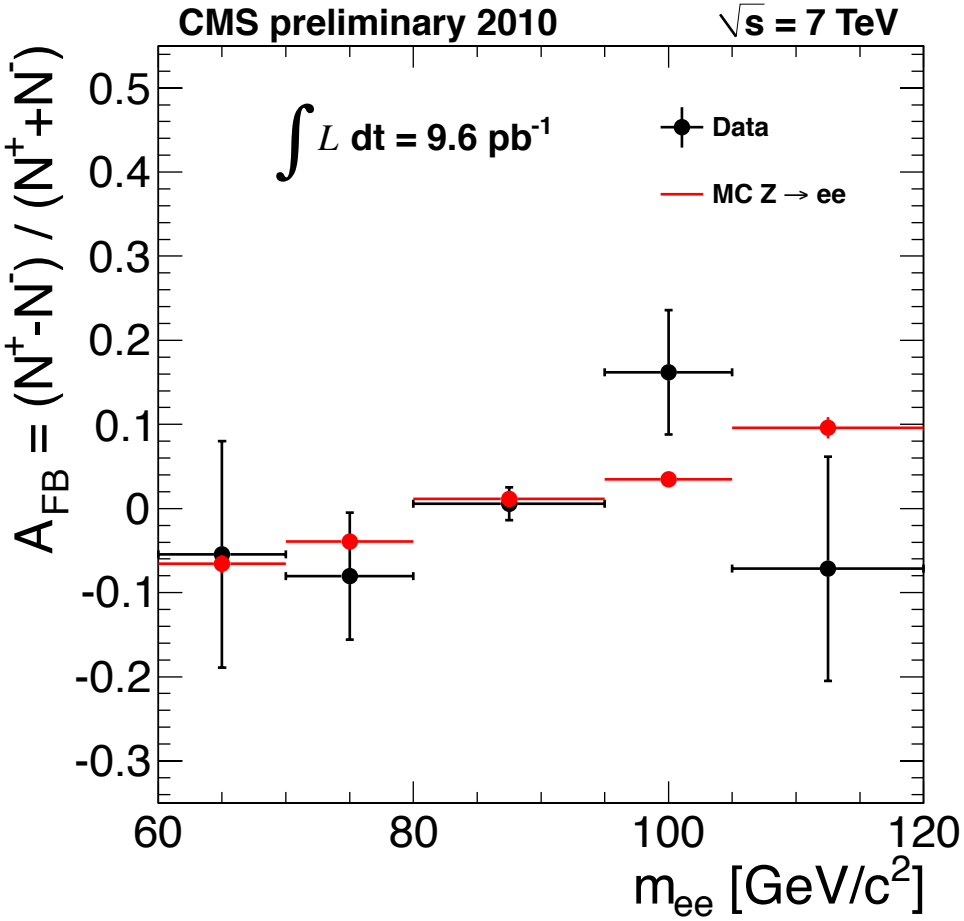


θ* is the angle between the electron momenta and the z' axis that bisects the angle between **q** and **−qbar**.

J.C. Collins and D.E. Soper, Phys. Rev. D 16, 2219 (1977)

✦Good agreement with NLO prediction.

Z forward–backward asymmetry



- **Forward** events (cosΘ*>0)
- **Backward** events (cosΘ*<0)

For each Z mass bin, we compute the asymmetry given by

$$A_{fb} = \frac{(N_f - N_b)}{(N_f + N_b)}$$

Observed asymmetry is consistent with NLO predictions.