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CMS-DP-2012/024
Photon Energy Scale with Z->mumugamma events

Abstract: Photon Energy Scale of the CMS Electromagnetic calorimeter, measured using FSR photons from Z->mumugamma events, based on the 2011 pp data sample. **Conclusion:** The photon energy scale agrees to within 1.3 % between DATA and MC. The energy scale agrees to better than 0.5 % with that obtained using the method of DP 2012/007.

CDS entry

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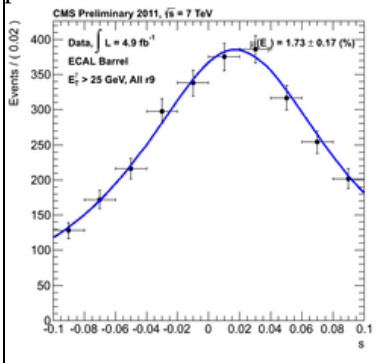
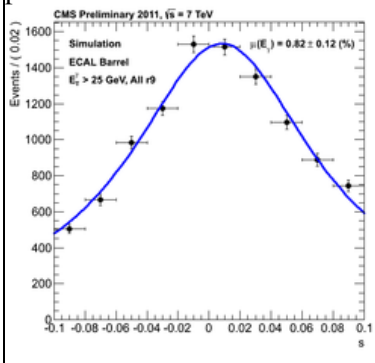
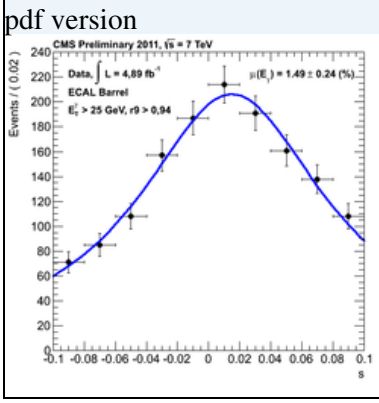
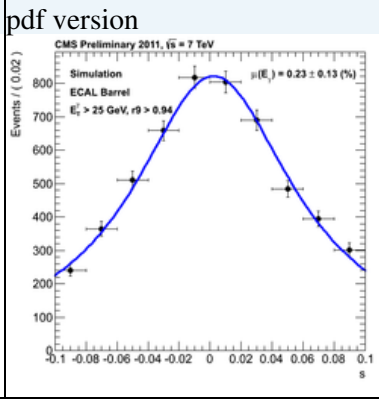
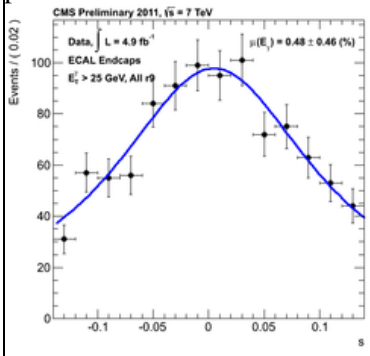
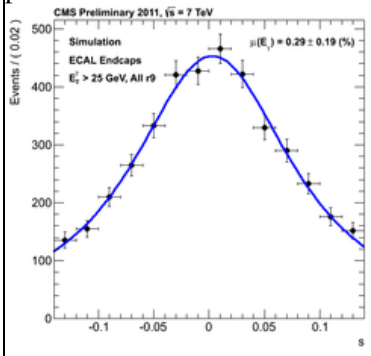
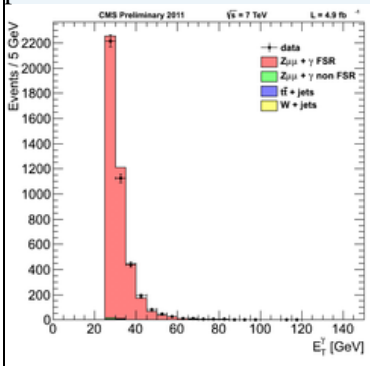
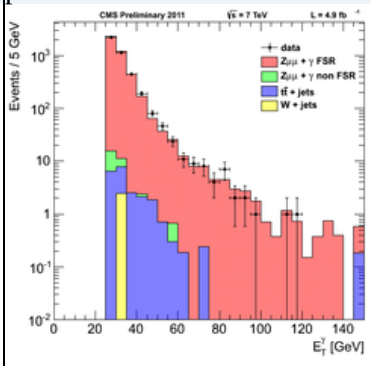
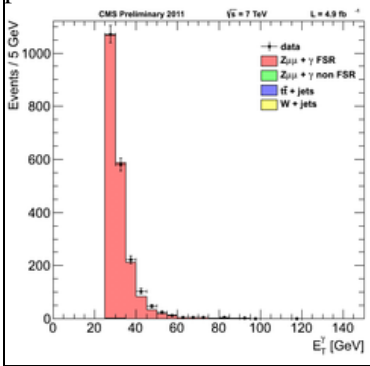
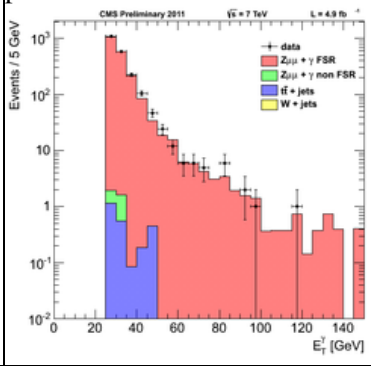
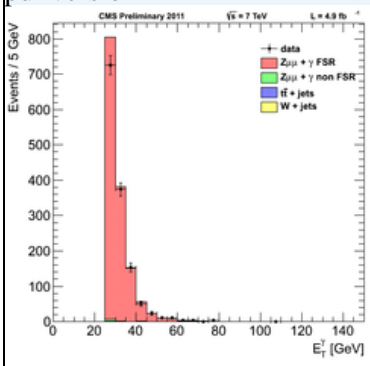
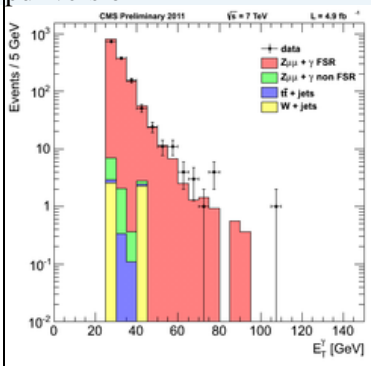
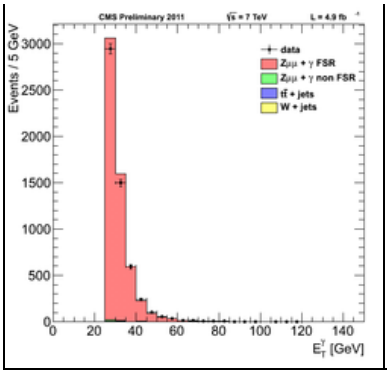
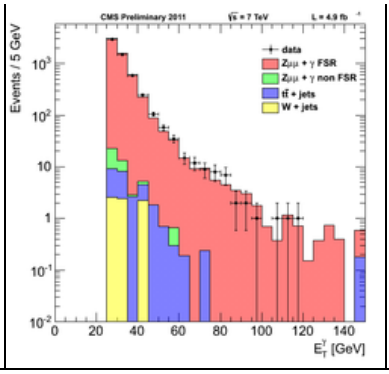
Figure		Caption
pdf version $s = \frac{m^2_{\mu\mu\gamma} - m^2_{\mu\mu}}{m^2_{Z_0} - m^2_{\mu\mu}} - 1$		Definition of photon energy scale estimator, s, from Z->mumugamma final states. The terms are as follows: m_mumugamma is the reconstructed invariant mass of the Z->mumugamma final state; m_mumu is the reconstructed invariant mass of the mumu system, and m_Z is the PDG value of the Z boson. The energy scale value is extracted from the mean of an unbinned fit of a Voigtian function to the s distribution.
pdf version 	pdf version 	Energy scale estimator, s, from Z->mumugamma final states for 2011 Data (left) and Monte Carlo simulation (right). All photons in the ECAL barrel, with transverse energy > 25 GeV are used.
pdf version 	pdf version 	Energy scale estimator, s, from Z->mumugamma final states for 2011 Data (left) and Monte Carlo simulation (right). Photons in the ECAL barrel, with shower shape R9 > 0.94 and transverse energy > 25 GeV are used.

pdf version 	pdf version 	Energy scale estimator, s, from Z->mumugamma final states for 2011 Data (left) and Monte Carlo simulation (right). All photons in the ECAL endcaps, with transverse energy > 25 GeV are used.
pdf version 	pdf version 	Transverse energy distribution of selected photons from Z->mumugamma final states for 2011 Data (left) and Monte Carlo simulation (right). All photons in the ECAL barrel, with transverse energy > 25 GeV are used.
pdf version 	pdf version 	As above, but for photons in the ECAL barrel with R9>0.9 and transverse energy > 25 GeV.
pdf version 	pdf version 	As above, but for all photons in the ECAL endcaps, with transverse energy > 25 GeV.
pdf version	pdf version	As above, but for photons in either the ECAL barrel or endcaps, with transverse energy > 25 GeV.





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