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Conference Abstracts for the Electroweak Group

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This list is provisional and subject to change.

W Boson Production with the CMS Detector in pp Collisions at $\sqrt{s} = 7$ TeV

Abstract

The production of W bosons has been observed in pp collisions at a center-of-mass energy of 7 TeV using data collected in the CMS experiment. Events were selected containing an isolated, energetic electron or muon. The presence of an energetic neutrino is demonstrated using the distribution of missing transverse energy (MET), which is calculated from calorimetric and tracking information in three ways. Data-driven methods are used to estimate reconstruction and triggering efficiencies, and well as the main backgrounds. The yield is NNN in the electron channel, and MMM in the muon channel, for an integrated luminosity of LLLL pb⁻¹. Kinematic distributions for the signal are shown.

Notes

- It may make sense to have separate talks for the electron and muon channel.
 - One could have a talk dedicated to the MET measurement.
 - Details such as the energy and luminosity are subject to change, of course.
 - It might not be possible to measure efficiencies from the data - depends on the luminosity and the quality of the data.
-

Z Boson Production with the CMS Detector in pp Collisions at $\sqrt{s} = 7$ TeV

Abstract

The production of Z bosons has been observed in pp collisions at a center-of-mass energy of 7 TeV using data collected in the CMS experiment. Events were selected containing a pair of isolated, energetic electrons or muons. Data-driven methods are used to estimate reconstruction and triggering efficiencies, and well as the main backgrounds. The yield is NNN in the electron channel, and MMM in the muon channel, for an integrated luminosity of LLLL pb⁻¹. Kinematic distributions for the signal are shown

Notes

- It may make sense to have separate talks for the electron and muon channel.
 - One could have a talk dedicated to the MET measurement.
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 - It might not be possible to measure efficiencies from the data - depends on the luminosity and the quality of the data.
-

Charge Asymmetry of Leptons from W Boson Decays Produced in pp Collisions at $\sqrt{s} = 7$ TeV

Abstract

W bosons have been reconstructed through their decays to charged leptons and neutrinos. In pp collisions,

more W^+ are produced than W^- . On the basis of LLLLLL pb^{-1} of data collected by the CMS experiment, the ratio $(W^+)/ (W^-)$ has been measured: $xxxxx \pm xxxx$, to be compared to the prediction $yyyyy \pm yyy$ based on the PPPPPP program and the SSSSS parton distribution function set.

Notes

- This abstract needs some work.
- Hard to tell whether this will be available early - should follow naturally on the first W analysis.
- The title hints at the real thing: lepton charge asymmetry as a function of η . But we might want to be content with just the inclusive charge asymmetry, as stated in the abstract.

Transverse Momentum Distribution of Z Bosons Produced in pp Collisions at $\sqrt{s} = 7 \text{ TeV}$

Abstract

The transverse momentum (q_T) distribution of Z bosons produced in pp collisions at a center-of-mass energy of 7 TeV has been measured using data recorded with the CMS experiment. The Z bosons were reconstructed through their decays to electron and muon pairs. The normalized distribution, $(1/\sigma_0) (d\sigma/dq_T)$, is presented, where σ_0 is the total inclusive cross section for $pp \rightarrow Z \rightarrow ee$ or $\mu\mu$. Simulations based on tuned Monte Carlo models are compared to the data. A good agreement is found after tuning the parameters controlling the non-perturbative part of the q_T spectrum.

Notes

- Muon results might be ready long before electron results.
- Ultimately we will want an unfolded spectrum, but this might not be ready right away.

Invariant Mass Spectrum of Lepton Pairs Produced in pp Collisions at $\sqrt{s} = 7 \text{ TeV}$

Abstract

The invariant mass spectrum for ee and $\mu\mu$ pairs has been measured using data collected by the CMS experiment for pp collisions at a center-of-mass energy of 7 TeV. The measurement $d\sigma/dM$ extends from 20 GeV up to 200 GeV. The integrated luminosity is LLLL pb^{-1} . Kinematic distributions are well reproduced by a simulation based on PYTHIA. Evidence for final-state radiation is shown. Sensitivity to parton distribution functions is explored.

Notes

- Muon results might be ready before the electron results.
- Ultimately we will want an unfolded spectrum, but this might not be ready right away.
- The upper range of the spectrum will depend on the luminosity logged.

-- MichaelSchmitt - 03-Jan-2010

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