

## DIS2011

### Electroweak Physics and Beyond the Standard Model Parallel Session VII, Thursday 14<sup>th</sup> of April 2011, 09:00-10:45

**Title:** Anomalous gamma gamma WW and gamma gamma ZZ couplings in photon induced processes at the LHC

Christophe Royon, E, Chapon, O. Kepka

We present a new method to test the Standard Model expectations at the LHC using photon-induced WW production. Both W decay in the main ATLAS or CMS detectors while scattered protons are measured in forward detectors. The sensitivity to anomalous WW gamma gamma and ZZ gamma gamma quartic couplings can be improved respectively by four orders of magnitude compared to the present LEP limits, allowing to probe with an unprecedented precision higgsless or extra dimension models.

**Title:** Model Building in the LHC Era (title and abstract to be updated)

Neil Christensen (Univ. of Wisconsin)

We have recently entered a new era of particle physics. The Large Hadron Collider has turned on and will soon reveal the source of the breaking of the electroweak symmetry, one of the truly great mysteries of high energy physics. There are many models devised by theorists to achieve this breaking and it is now up to experiment to determine which model is correct. Most likely, none of the models will be exactly right and as the data pours in, we will enter a very exciting data driven model cycle where we will throw old models away, devise new models and tweak current models to fit the data in an iterative process. This will require our best efforts to: build new improved models, implement those new models in LHC simulation software, simulate LHC collisions and make predictions, compare those predictions with the results of experiment and, finally, close the feedback loop by tweaking our (or starting with a fresh) model. I will discuss this process both from top down and from the bottom up with some examples. Along the way, I will describe some of the exciting new technology which greatly improves this process.

**Title:** Studies of single electroweak bosons final states at D0:

Adam Lyon (Fermilab)

With large data sets still increasing, W and Z boson physics at the D0 and CDF experiments at the Tevatron  $\sqrt{s} = 1.96$  TeV ppbar collider is particularly useful for studying many aspects of the Standard Model. In this presentation, we summarize electroweak measurements of Z/gamma\* transverse momentum and the W mass.

**Title:** W and Z boson production cross section measurements in ATLAS

Verena Ingrid Martinez Outschoorn (Harvard University)

Differential and inclusive cross sections for electroweak boson production are presented, in the electron, muon and tau decay channels. The data from pp collisions at 7 TeV were collected during 2010 using the ATLAS detector, are compared to the predictions of next-to-leading-order and, where available, next-to-next-leading order QCD.

**Title:** Measurement of the polarization of high transverse momentum W bosons at 7 TeV

Markus Stoye (CERN)

The measurement of the polarization of W bosons with large transverse momentum in pp collisions at  $\sqrt{s} = 7$  TeV is presented. The measurement is based on 36 /pb of data recorded by the CMS detector at the LHC. Large transverse momentum W bosons predominantly exhibit left-handed helicity states for both charges of the W boson, an effect which increases with transverse momentum. A transverse momentum threshold of 50 GeV is applied. The polarization of high transverse momentum W bosons and their subsequent V-A decay lead to distinct charge dependent decay kinematics. These properties can be utilized to separate W+jet and t-tbar events, as well as new physics processes with high transverse momentum W bosons as a background.