

DIS2011

Electroweak Physics and Beyond the Standard Model Parallel Session VIII, Thursday 14th of April 2011, 11:15-13:00

Title: Diboson final states at the Tevatron

Joe Haley (Northwestern U)

The increasing size of the data set delivered by the Tevatron collider at $\sqrt{s}=1.96$ TeV makes the diboson physics program more accessible for probes of the electroweak gauge structure in the Standard Model. Here we summarize the recent measurements of the diboson production such as cross sections and limits on trilinear gauge boson couplings using 4 - 6 /fb of data collected by the CDF and D0 detectors. The analyzed processes are $WZ \rightarrow l\nu$, $ZZ \rightarrow ll$ and $ll\nu\nu$, $WW+WZ \rightarrow \text{MET}+bb$, $WZ+ZZ \rightarrow jjll$, $Z\gamma \rightarrow ll\gamma$ and $\nu\nu\gamma$, and $W\gamma \rightarrow \mu\nu\gamma$.

Title: WW production cross section measurement in ATLAS

Jianbei Liu (University of Michigan)

A measurement is presented of the $W+W-$ production cross section in proton-proton collisions at 7 TeV in the di-lepton decay channel. The data used correspond to an integrated luminosity of 35 /pb. The major backgrounds for such final states come from W +jets, Z +jets and top events, and these are estimated using both simulated samples and data-driven methods. Events with high p_T jets are rejected to reduce these backgrounds, resulting in a total background contribution estimated to be less than 20% of the expected signal. The measurement in each of the three di-lepton final states (ee , $\mu\mu$ and $e\mu$) is consistent with the next-to-leading order standard model predictions.

Title: W+photon and Z+photon production measurements in ATLAS

Andrea Bocci (Duke University)

Measurements are presented of high energy photons produced in association with W and Z bosons in pp collisions at $\sqrt{s} = 7$ TeV using the ATLAS detector. The analysis uses W and Z bosons selected with leptonic ($l = \text{electron or muon}$) decays. Subsets of these events are identified by demanding an electromagnetic object passing isolated photon selection criteria. Using 35 /pb of data we isolate signals of $l + \text{missingET} + \text{photon} + X$ and $l + l + \text{photon} + X$ production with a photon of transverse energy greater than 15 GeV and a lepton-photon separation ΔR greater than 0.7. The production cross sections and the kinematic distributions of the leptons and photons are compared to Standard Model predictions.