

## DIS2011

### Electroweak Physics and Beyond the Standard Model Parallel Session V, Wednesday 13<sup>th</sup> of April 2011, 09:00-10:45

**Title:** Z' bosons from E(6): collider and electroweak constraints

Jens Erler (IF-UNAM Mexico)

Many models beyond the Standard Electroweak Theory, top-down or bottom-up, contain extensions of the gauge symmetry group by extra U(1)' factors which can be understood or treated as subgroups of E(6). A brief overview of such models is followed by a systematic classification. I then describe how the resulting extra massive neutral gauge bosons can be searched for and in case of positive evidence diagnosed using electroweak and collider data.

**Title:** Weak mixing angle at EIC

Yingchuan Li (Brookhaven)

The high energy polarized Electron-Ion Collider provides an opportunity to study electroweak parity violation at high  $Q^2$  with great precision. In particular, by measuring polarization asymmetries in ep- and ed-DIS over a broad region of scale, one can measure the weak mixing angle and its evolution as a function of  $Q$ . We demonstrate such capability for an EIC with integrated luminosity of 200 /fb, and CM energy of 140 GeV. A statistical determination of  $\sin^2 \theta_W$  to about  $\pm 0.25\%$  is found for a range of  $Q^2$ .

**Title:** Measurement of the forward-backward charge asymmetry in Z/gamma\* events with the D0 detector at the Tevatron

Hang Yin

We present a measurement of the forward-backward charge asymmetry for dielectrons produced via and intermediate Z/gamma\* boson with mass between 50 and 1000 GeV using about 5 /fb of data collected by the D0 detector in ppbar collisions at  $\sqrt{s} = 1.96$  TeV. We also extract the weak mixing angle ( $\sin^2 \theta^{\text{eff}}_W$ ) and Z to light quark couplings.

**Title:** RS Graviton

John Strologas

We present a search for Randall-Sundrum gravitons decaying to two photons or two leptons, using 5.4-5.7 fb<sup>-1</sup> of data collected with the CDF-II detector at Fermilab.

**Title:** Flavoring the Type-III 2 Higgs doublet model

Andrew Blechman (Wayne State)

We reconsider the flavor problem in the models with two Higgs doublets. By studying two generation toy models, we look for flavor basis independent constraints on Yukawa couplings that will give us the mass hierarchy while keeping all Yukawa couplings of the same order. We then generalize our findings to the full three generation Standard Model. We find that we need two constraints on the Yukawa couplings to generate the observed mass hierarchy, and a slight tuning of Yukawa couplings of order 10%, much less than the Standard Model. We briefly study how these constraints can be realized, and show how flavor changing currents are under control for various flavor standard candles such as meson mixing and forbidden decays, as well as possible new signals.