



LHC Seminar

SPEAKER: William James Barter (CERN)
TITLE: **Latest LHCb measurements of Electroweak Boson Production in Run-1**
DATE: Tue 27/10/2015 11:00
PLACE: Filtration Plant

ABSTRACT

We present the latest LHCb measurements of forward Electroweak Boson Production using proton-proton collisions recorded in LHC Run-1. The seminar shall discuss measurements of the 8 TeV W & Z boson production cross-sections. These results make use of LHCb's excellent integrated luminosity determination to provide constraints on the parton distribution functions which describe the inner structure of the proton. These LHCb measurements probe a region of phase space at low Bjorken-x where the other LHC experiments have limited sensitivity. We also present measurements of cross-section ratios, and ratios of results in 7 TeV and 8 TeV proton-proton collisions. These results provide precision tests of the Standard Model.

The seminar shall also present a measurement of the forward-backward asymmetry (A_{FB}) in Z boson decays to two muons. This result allows for precision tests of the coupling of the Z boson to left and right handed particles, providing sensitivity to the effective weak mixing angle ($\sin^2(\theta_W^{\text{eff}})$). The A_{FB} distribution visible in the LHCb acceptance is particularly sensitive to $\sin^2(\theta_W^{\text{eff}})$, as the forward phase-space means that the initial state quark direction is better known than in the central region. This reduces theoretical uncertainties in extracting $\sin^2(\theta_W^{\text{eff}})$ from A_{FB} , and allows LHCb to make the currently most precise determination of $\sin^2(\theta_W^{\text{eff}})$ at the LHC.

Organised by: M. Mangano, C. Lourenco, G. Unal.....
Tea and Coffee will be served at 10h30