Contribution ID: **669** Type: **talk**

Measurements of the elastic, inelastic and total cross sections in pp collisions with ATLAS sub-detectors

Thursday 23 July 2015 17:00 (15 minutes)

The total pp cross section is a fundamental parameter of the strong interaction which cannot be calculated in QCD but still can be measured using the optical theorem, which states that the total cross section can be obtained from the extrapolation to t=0 of the differential elastic cross section measured at small four-momentum transfer t.

The ATLAS Collaboration has collected 80 mub-1 of elastic data in a dedicated run with high beta* optics at 7 TeV centre-of-mass energy with the ALFA Roman Pot detector in order to perform this measurement. From the extrapolation of the differential elastic cross section to t=0 using the optical theorem the total cross section is extracted with the luminosity-dependent method. In addition the nuclear slope of the elastic t-spectrum, the total elastic and inelastic cross sections are determined. First LHC Run-2 results will be included for the measurement of the inelastic pp cross-section using minimum bias scintillators, if available.

additional information

Submitted on behalf of the ATLAS Standard Model Physics Group by the ATLAS Speakers Committee representative Alex Read (a.l.read@fys.uio.no). Alex is not the speaker! A speaker will be selected by the Speakers Committee when the abstract is accepted.

Author: ATLAS

Presenter: GRAFSTROM, Per (Universita e INFN, Bologna (IT))

Session Classification: QCD and Hadronic Physics

Track Classification: QCD and Hadronic Physics