

Measurement of Diffraction and Underlying Event at ATLAS

Tuesday 4 February 2020 11:00 (30 minutes)

In this talk, we present two measurements sensitive to non-perturbative physics performed using data collected by the ATLAS experiment at the Large Hadron Collider. First, a measurement of charged-particle distributions sensitive to the properties of the underlying event is presented for an inclusive sample of events containing a Z-boson, decaying to a muon pair. Unfolded differential cross sections are presented for charged particle multiplicity and charged particle transverse momentum in regions of azimuth measured with respect to the Z-boson direction. In addition, a measurement of single diffractive dissociation ($pp \rightarrow pX$) is presented. The intact proton is reconstructed and measured in the ALFA forward spectrometer, while charged particles from the dissociative system (X) are reconstructed and measured using the ATLAS inner tracking detector and calorimeters. Differential cross sections are presented as a function of the proton fractional momentum loss, the four-momentum transfer squared, and the size of a rapidity gap measured from the edge of the ATLAS calorimeters. The results are interpreted in the framework of Regge phenomenology.

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