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Review of the First W Boson Mass Measurement with the ATLAS Detector

Friday, 1 June 2018 14:00 (20 minutes)

A precise measurement of the W boson mass represents an important milestone to test the overall consistency of the Standard Model. Since the discovery of a Higgs Boson, the W boson mass is predicted to 7 MeV precision, while the world average of all measurements is 15 MeV, making the improved measurement an important goal. Large samples of leptonic decays of W and Z bosons were collected by the ATLAS detector with efficient single lepton triggers in the 7 TeV data set corresponding to an integrated luminosity of 4.6 fb^{-1}. With these samples the detector and physics modelling has been studied in great detail and enabled a W boson mass measurement with a precision of 19 MeV, which will be presented in this talk. Special focus will be drawn on the modeling of the production processes of W bosons in proton-proton collisions, that are crucial for this measurement.

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