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Measuring mass and width of the W-boson with the ATLAS detector

In 2017, the ATLAS collaboration measured the W-boson mass using pp-collision data taken in 2011 at sqrt(s) = 7 TeV, resulting in a precision of 19 MeV. We present a revised analysis of the same dataset, improving the fit methods and including a measurement of the width of the W-boson. A precise measurement of these quantities in the decay of the W-boson represent an excellent precision test of the Standard Model (SM). A detailed comparison with the previous analysis design will be presented. In particular, the estimate of the multi-jet background and the treatment of some systematic uncertainties have been improved. In addition, a newly developed profile likelihood fit is used to improve the statistical interpretation of the measurement. The carefully performed cross-checks with the previous results will be discussed.

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