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Measurements of the top-quark mass using the ATLAS detector at the LHC

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The top-quark mass is one of the key fundamental parameters of the Standard Model that must be determined experimentally. Its value has an important effect on many precision measurements and tests of the Standard Model. The Tevatron and LHC experiments have developed an extensive program to determine the top quark mass using a variety of methods. In this contribution, the top quark mass measurements by the ATLAS experiment are reviewed. These include measurements in two broad categories, the direct measurements, where the mass is determined from a comparison with Monte Carlo templates, and determinations that compare differential cross-section measurements to first-principle calculations. Individual measurements in both categories have yielded mass measurements with sub-GeV precision, and combined results including several measurements approach the 500 MeV mark. The most recent measurements are presented, as well as a new study on the interpretation of the MC mass parameter and the deployment of a new MC model.

In-person participation

Yes

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