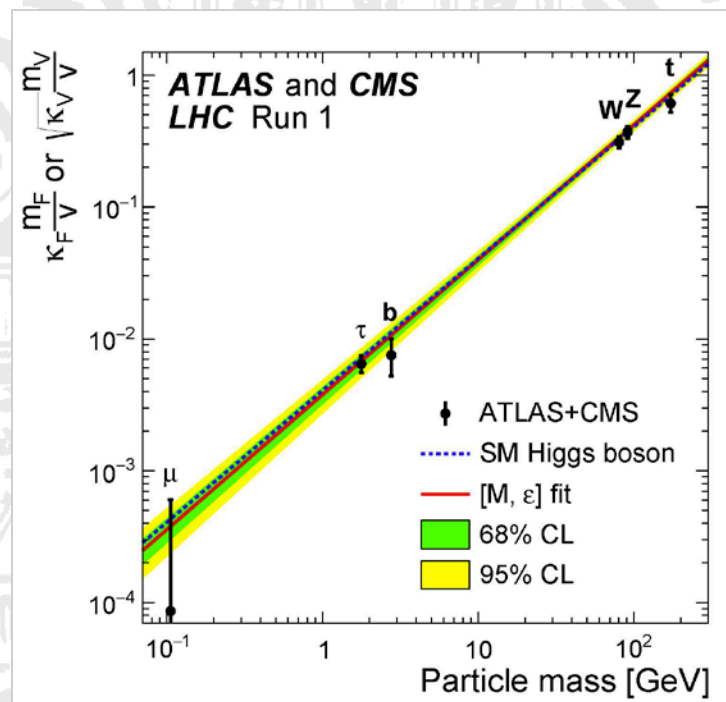




PHYSIKALISCHES KOLLOQUIUM

AM 28. NOVEMBER 2016 UM 17 UHR C.T.

IM GROßEN HÖRSAAL



THE HIGGS BOSON AND ITS PROPERTIES

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Where does mass come from? This is one of the most fundamental questions in physics. There are actually several facets to this question. One fundamental aspect to this is the question how elementary particles acquire their mass. A viable theoretical solution to this problem was devised by Robert Brout, François Englert, Peter Higgs, and others in the 1960s. This theoretical description is nowadays part of the Standard Model of particle physics under the name "Brout-Englert-Higgs mechanism". A direct prediction of this mass-generating mechanism is the existence of a spin-0 particle, the Higgs boson. This new type of particle was finally discovered in 2012 at the ATLAS and CMS experiments at CERN near Geneva, Switzerland.

Since the discovery of the Higgs boson in 2012, the Large Hadron Collider has delivered much more data and will do so at an ever increasing rate for many years to come. This opens up the possibility to rigorously study the properties of the Higgs boson and thus test the predictions of the Standard Model precisely. The properties of interest are the mass of the Higgs boson, which is the only quantity that is not predicted by theory, the spin of the Higgs boson, and the interaction of the Higgs boson with all particles of the Standard Model. The current status of this research, as well as an outlook into the near future, will be presented and discussed in this colloquium.