



RESEARCH

CMS AND ATLAS HAVE ANNOUNCED NEW RESULTS ON THE HIGGS BOSON'S PROPERTIES

CERN's CMS and ATLAS experiments have announced new results indicating that the Higgs boson decays into two muons: second generation elementary particles, similar to electrons but heavier. The work was presented at the International High Energy Physics Conference ICHEP 2020. Following the discovery of the Higgs boson, announced at CERN in 2012, physicists have studied this particle, generated in the collisions of the LHC accelerator, through the particles generated by its decay. In this case, the CMS and ATLAS researchers observed the rare decay of the Higgs boson into two muons, with a significance that reached 3 sigma for the CMS experiment, the standard to announce experimental evidence. Obtained by studying a rare phenomenon involving only one Higgs boson out of 5000, these results for the first time indicate that the Higgs boson interacts with second generation elementary particles, in accordance with the prediction of the Standard Model: a result that will be further refined with the data collected in the next series of collisions. The threshold of experimental evidence of this important process was reached by the CMS experiment also thanks to the use of Deep Learning tools, i.e. techniques developed in the field of Artificial Intelligence and commonly used by the IT giants in our mobile phones or self-driven cars. ■

CMS <https://cms.cern/news/cms-sees-evidence-higgs-boson-decaying-muons>

ATLAS <https://atlas.cern/updates/physics-briefing/new-search-rare-higgs-decays-muons>