

Abstract:

The mass of the Λ_b baryon has been studied in proton-proton collisions using experimental data from the ATLAS detector at the LHC in CERN. The mass is measured by reconstructing momenta of products in the studied decay. Decay channel $\Lambda_b \rightarrow J/\psi(\mu^+\mu^-)\Lambda(p\pi^-)$ is chosen for the mass reconstruction in this work. The selection criteria are applied in order to minimize background effect and, therefore, obtain the value of the mass of the Λ_b baryon with the lower statistical error. The systematic error is obtained from a comparison of the three statistical models describing experimental data. The result of measurement of the Λ_b baryon mass in the ATLAS experiment performed in this work is: $m_{\Lambda_b} = (5619.1 \pm 1.0)$ MeV.