EPS-HEP2023 conference



Contribution ID: 128

Type: Poster

Search for heavy, long-lived, charged particles with large ionisation energy loss and time-of-flight with the ATLAS experiment

We present a new search for hypothetical massive, charged, long-lived particles with the ATLAS detector at the LHC using an integrated luminosity of 140 fb-1 of proton???proton collisions at sqrt(s) = 13 TeV. These particles are expected to move significantly slower than the speed of light and should be identifiable by their high transverse momenta and anomalously large specific ionisation losses measured in the pixel detector. This information can be used in combination with the speed measured by Time-of-Flight in the ATLAS calorimeters. Results are presented covering particles with lifetimes down to O(3) ns and with masses ranging from 200 GeV to 3 TeV. Interpretations for pair-production of R-hadrons, charginos and staus in scenarios of supersymmetry compatible with these particles being long-lived are presented, with mass limits extending beyond those from previous searches in broad ranges of lifetime.

Collaboration / Activity

ATLAS

Primary authors: ATLAS SPEAKER TO BE ASSIGNED; RESSEGOTTI, Martina Presenter: RESSEGOTTI, Martina Session Classification: Poster session

Track Classification: Searches for New Physics