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Search for new, long-lived, charged particles using ionization in the ATLAS Pixel Detector

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Several extensions of the Standard Model predict the existence of charged, very massive, and long-lived particles. Because of their high masses these particles would propagate non-relativistically through the ATLAS pixel detector and are therefore identifiable through a measurement of large specific energy loss. Measuring heavy, long-lived particles through their track parameters in the pixel detector allows sensitivity to particles with lifetimes in the nanosecond range and above. This search presents an inner detector driven method for identifying such particles in proton-proton collisions at 13 TeV with the 2015 dataset corresponding to an integrated luminosity of 3.5 pb^{-1}. Subject to the progress of data-taking in 2016, new results of this search might be shown in addition.

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