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Search for millicharged particles in proton-proton collisions at $\sqrt{s}=13$ TeV with the milliQan Demonstrator (8' + 2')

Wednesday, June 3, 2020 5:00 PM (10 minutes)

In this talk, we will present the results of a recent search for fractionally charged particles using a data sample of proton-proton collisions provided by the CERN Large Hadron Collider in 2018. This search was carried out with a prototype scintillator-based detector, which allows the first sensitivity to particles with charges $\leq 0.1e$ at a hadron collider. The existence of new particles with masses between 20 and 4700 MeV is excluded at 95% confidence level for charges between 0.006e and 0.3e, depending on their mass. New sensitivity is achieved for masses larger than 700 MeV. We will discuss the concept of the experiment, the results of the search, and the plan for the full milliQan detector given the successful operation of the prototype.

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