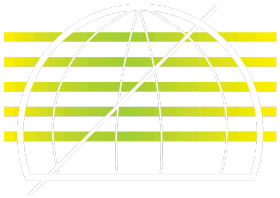

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Sensitivity of MATHUSLA to high-energy cosmic rays

Monday, 26 September 2022 17:30 (20 minutes)

In order to complement the searches of neutral Long Live Particles (LLPs) at the next HL-LHC at CERN a new experiment has been proposed, which is called MATHUSLA, to be located at ground level near the interaction point of CMS. The proposal aims to build a massive scintillator tracking detector system to monitor a large volume of air (100 m x 100m x 30 m) in search of decays from LLPs that are expected to be produced at the CMS interaction point during the HL-LHC runs. One of the backgrounds in this experiment would be the extensive air showers induced by cosmic rays of high energy in the atmosphere. However, such events are interesting from the astrophysical point of view. The addition of a layer of RPCs will make possible a detailed study of air showers from cosmic rays. In this talk, we will explore the performance of the MATHUSLA detector with the addition of an RPC layer for the investigation of these high-energy cosmic rays using the results of CORSIKA for air showers and a ROOT toy model of the experiment.

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