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(I) Searches for long-lived particles with MATHUSLA

Tuesday 20 June 2023 13:15 (30 minutes)

Long-lived particles (LLPs) are well-motivated signatures that can appear in many models of physics beyond the Standard Model. The Detection ability of LLPs at current accelerator-based experiments is restricted, as they may decay outside of the tracking acceptance of these experiments, especially for LLPs with masses above GeV and lifetimes at the limit set by Big Bang Nucleosynthesis, ~10^7–10^8 m. In order to directly detect the decays of LLPs across a broad range of masses and lifetimes, MATHUSLA experiment is proposed for the HL-LHC at CERN to be located on the surface above the CMS experiment, with a decay volume of 100m x 100m x 30m instrumented with plastic scintillators and SiPM readout. LLPs that decay within this volume are reconstructed by tracking their decay products and finding a displaced vertex. This talk presents the physics cases and development progress of MATHUSLA experiment.

Keyword-1

Long-lived particles

Keyword-2

MATHUSLA

Keyword-3

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