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## Strategies for detecting long-lived particles at LHC experiments

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The detection of long-lived particles (LLPs) in high energy experiments are key for both the study of the Standard Model (SM) of particle physics and to search for new physics beyond it.

Many interesting decay modes involve strange particles with large lifetimes such as Ks or L0s. Exotic LLP are also predicted in many new theoretical models. The selection and reconstruction of LLPs produced in proton-proton collisions at the Large Hadron Collider (LHC) at CERN is a challenge. These particles can decay far from the primary interaction vertex and are hard to select by the trigger systems of the experiments and difficult to isolate from the SM backgrounds. In this talk several strategies followed by ATLAS, CMS and LHCb experiments are reviewed. The importance of new hardware architectures in the first stage of the high level trigger (HLT), making them more performant in terms of flexibility, speed and efficiency, is outlined. In particular, the use of accelerators for higher pile-up conditions during the HL-LHC era is presented.

### Consider for promotion

Yes

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