

DELIGHT and FOREHUNT: dedicated detectors at FCC-hh for light long-lived particles

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Our efforts in searching for hints of new physics require close attention to the signatures of light particles arising in theories beyond the Standard Model (BSM) physics, as they could have eluded our searches. In many theories, these light BSM particles can have long lifetimes and are worth exploring. We focus on light long-lived particles (LLPs) coming from the decay of the discovered Higgs boson and B -mesons. Given the need to optimise the designs of dedicated LLP detectors for future colliders, we propose dedicated LLP detectors for the 100 TeV collider experiment, DELIGHT (Detector for long-lived particles at high energy of 100 TeV) and FOREHUNT (FORward Experiment for HUNDred TeV), and study their sensitivities for LLPs in the Higgs portal.

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