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Search for light long-lived particles at future colliders

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Our search for new physics scenarios beyond the standard model requires special attention to the light particles, as they could have escaped our conventional searches. We focus on the prospect of detecting light long-lived particles (LLP) coming from the decays of SM Higgs boson and B-mesons at future colliders. Dedicated LLP detectors can play a crucial role in probing highly displaced light LLPs having large decay lengths. We propose dedicated, optimistic LLP detectors for future colliders and compare their sensitivity with the proposed transverse detectors like MATHUSLA, CODEX-b for HL-LHC, and DELIGHT (Detector for long-lived particles at high energy of 100 TeV) for FCC-hh.

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