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Constraining long-lived particles from Higgs boson decays at the LHC with displaced vertices and jets

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Long-lived particles (LLPs) originating from decays of Standard-Model-like or beyond-the-Standard-Model Higgs bosons are often featured with signatures of displaced vertices (DVs) and jets at colliders. In this work, we show that a recent ATLAS search for DVs plus jets, with its recast implementation, can efficiently place bounds on such hadronically or semileptonically decaying LLPs. In particular, we find the search is uniquely sensitive to LLP proper decay lengths of about 1-100 mm, probing complementary regions in the parameter space of the relevant models compared to other prompt and LLP searches.

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