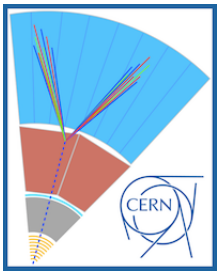

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Probing exotic long-lived particles from the prompt side using the CONTUR method

Thursday, 5 June 2025 12:40 (17 minutes)

A method to derive constraints on new physics models featuring exotic long-lived particles using detector-corrected measurements of prompt states is presented. The CONTUR workflow is modified to either account for the fraction of long-lived particles which decay early enough to be reconstructed as prompt, or to be sensitive to the recoil of such particles against a prompt system. This makes it possible to determine how many of signal events would be selected in the RIVET routines which encapsulate the fiducial regions of dozens of measurements of Standard Model processes by the ATLAS and CMS collaborations. New constraints are set on several popular exotic long-lived particle models in the very short-lifetime or very long-lifetime regimes, which are often poorly covered by direct searches. The probed models include feebly-interacting dark matter, hidden sector models mediated by a heavy neutral scalar, dark photon models and a model featuring photophobic axion-like particles.

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