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Drell-Yan tails as flavour probes of new physics

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The study of high- p_T tails at the LHC can be a complementary probe to low-energy observables when investigating the flavour structure of the Standard Model and its extensions. The Mathematica package HighPT allows to compute Drell-Yan cross-sections for dilepton and monolepton final states at the LHC. The observables can be computed at tree-level in the SMEFT, including the relevant operators up to dimension-eight, with a consistent expansion up to $\mathcal{O}(\Lambda^{-4})$. Furthermore, hypothetical TeV-scale bosonic mediators can be included at tree-level in the computation of the cross-sections, thus allowing to account for their propagation effects. Using the Run-2 searches by ATLAS and CMS, the likelihood for all possible leptonic final states can be constructed within the package, which therefore provides a simple framework for high- p_T Drell-Yan analyses. We introduce the main functionalities of HighPT, by deriving constraints on semileptonic operators in the SMEFT, and comparing these to low-energy and electroweak data.

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