

Missing Energy plus Jet in the SMEFT

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The Standard Model Effective Field Theory serves as a widely utilized framework for exploring new physics (NP) effects in a model-independent manner.

In previous studies, Drell-Yan collider data has stood out as a promising signature due to its energy enhancement relative to Standard Model predictions.

In our investigation, we expand on this, by analyzing the “missing energy + jet” signature, which exhibits various forms of energy growth depending upon the operator type in play.

Overall we consider gluonic and electroweak dipole operators, semileptonic four-fermion operators and Z-penguin operators.

Constraints on gluon dipole operators are the strongest, probing NP scales up to 14 TeV, and improve over existing ones from collider studies.

Additionally, our analysis of flavor-changing neutral current four-fermion operators has yielded competitive bounds compared to existing literature, and led to improvements for certain flavor combinations.

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