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Techniques for the model-independent interpretation of hidden particle searches

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Hidden particles can help explain many important hints for new physics, but the large variety of viable hidden sector models poses a challenge for the model-independent interpretation of hidden particle searches. We present techniques published in 2105.06477 and 2203.02229 that can be used to compute model-independent rates for hidden sector induced transitions. Adapting an effective field theory (EFT) approach, we develop a framework for constructing portal effective theories (PETs) that couple standard model (SM) fields to generic hidden particles. We also propose a method to streamline the computation of hidden particle production rates by factorizing them into i) a model-independent SM contribution, and ii) a observable-independent hidden sector contribution.

Summary

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