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On the reinterpretation of fiducial cross-section measurements in the view of new physics

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Fiducial production cross-section measurements of Standard Model processes, in principle, provide constraints on new physics scenarios via a comparison of the predicted Standard Model cross-section and the observed cross-section. This approach received significant attention in recent years, both from direct constraints on specific models and the interpretation of measurements in the view of effective field theories. A generic problem in the reinterpretation of Standard Model measurements is the corrections application of to data to account for detector effects. These corrections inherently assume the Standard Model to be valid, thus implying a model bias of the final result. In this work, we study the size of this bias by studying several new physics models and fiducial phase–space regions. The studies are based on fast detector simulations of a generic multi-purpose detector at the Large Hadron Collider. We conclude that the model bias in the associated reinterpretations is negligible only in specific cases, however, typically on the same level as systematic uncertainties of the available measurements.

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Secondary track (number)

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