

# How PDFs can conceal New Physics

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The interpretation of LHC data, and the assessment of possible hints of new physics (NP), require precise knowledge of the proton structure in terms of parton distribution functions (PDFs). These are usually extracted with a data-driven approach, assuming that the underlying theory is the SM, and later used as inputs for theoretical predictions in searches for NP. The evident inconsistency of the procedure demands an investigation as to whether NP could inadvertently be absorbed in the proton parametrisation and hinder the discovery of subtle deviations from the SM. In order to tackle this problem, we devise two strategies. First, we develop a robust framework to perform simultaneous fits of SMEFT Wilson coefficients and PDFs, enabling us to disentangle the different sources of information coming from the data. Secondly, we present a systematic methodology designed to determine whether global PDF fits can inadvertently fit away signs of NP in the high-energy tails of distributions.

## Alternate track

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