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Simultaneous extraction of PDFs and SMEFT parameters from jet and ttbar data

Thursday 24 August 2023 09:45 (15 minutes)

Duration: 12'+3'

Recasting phenomenological Lagrangians in terms of SM effective field theory (SMEFT) provides a valuable means of connecting potential BSM physics at momenta well above the electroweak scale to experimental signatures at lower energies. In this work we jointly fit the Wilson coefficients of SMEFT operators as well as the PDFs using jet and top quark pair data, obtaining self-consistent constraints to possible BSM physics effects. Global fits are boosted with machine-learning techniques in the form of neural networks to ensure efficient scans of the full PDF+SMEFT parameter space. We focus on several operators relevant for top-quark pair and jet production at hadron colliders and obtain constraints on the Wilson coefficients. We find mild correlations between the extracted Wilson coefficients, PDFs, and other QCD parameters, and see indications that these correlations may become more prominent in future analyses based on data of higher precision.

Collaboration / Activity

Collider Phenomenology

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