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Imposing exclusion limits on new physics with machine-learned likelihoods

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Machine-Learned Likelihood (MLL) is a method that combines the power of current machine-learning techniques to face high-dimensional data with the likelihood-based inference tests used in traditional analyses. MLL allows estimating the experimental sensitivity in terms of the statistical signal significance through a single parameter of interest, the signal strength. Here we extend the MLL method by including in it the exclusion hypothesis tests and apply it to case studies of interest in the search for new physics at the LHC, comparing the MLL performance to estimate exclusion limits with respect to experimental analyses of ATLAS and CMS and previous phenomenological studies.

In-person participation

Yes

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