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New-Physics agnostic searches for New Physics

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We propose a new search strategy, based on deep-learning (DL) anomaly detection, to search for new physics in all-jet final states without specific assumptions. The DL model identifies events with anomalous radiation pattern in the jets. This is done applying a threshold to the reconstruction loss. The threshold is tuned so that the rejected events provide an estimate of the QCD-background distribution of analysis-specific interesting quantities. The method can be generalized to many final states without re-training the model and allows to determine the presence of a new-physics signal without making specific assumptions on the signal shape.

Consider for promotion

Yes

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