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Utilizing Machine Learning In BSM Physics Searches At The LHC

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Recent searches for supersymmetric particles at the Large Hadron Collider have been unsuccessful in detecting any BSM physics. This is partially because the exact masses of supersymmetric particles are not known, and as such, searching for them is very difficult. The method broadly used in searching for new physics requires one to optimise on the signal being searched for, potentially suppressing new physics which may actually be present that does not resemble the chosen signal. The problem being that in order to detect something with this method, one must already know what to look for. I will show that a variety of machine-learning techniques can be used to define a “signal-agnostic” search. This is a search that does not make any assumptions about the signal being searched for, allowing it to detect a signal in a more general way. This method is applied to simulated top-squark data and the results are explored.

Consider for promotion

No

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