

Optimizing Boosted Decision Trees for SUSY Searches at ATLAS

With searches for new physics in the ATLAS experiment at the LHC, it is possible to encounter $O(100000)$ background events compared to $O(10)$ expected signal events. In the face of such challenging conditions, it can be difficult to do a traditional cut-based analysis to minimize background while still preserving reasonable signal efficiency such that the limits on new physics can be extended. The method of boosted decision trees (BDTs) is a machine learning-based multi-variable analysis technique which could offer potentially better performance. This poster will discuss what BDTs are, how they work, and how they are used and optimized in the search for electroweak SUSY in the two-lepton, same-sign channel at ATLAS.

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