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Systematic Effects in Jet Tagging Performance for the ATLAS Detector

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Machine learning based jet tagging techniques have greatly enhanced the sensitivity of measurements and searches involving boosted final states at the LHC. However, differences between the Monte-Carlo simulations used for training and data lead to systematic uncertainties on tagger performance. This talk presents the performance of boosted top and W boson taggers when applied on data sets containing systematic variations that approximate some of these differences. The taggers are shown to have differing sensitivity to the systematic variations, with the most powerful taggers showing the largest sensitivity. This trend presents obstacles for the further deployment of machine learning techniques at the LHC, and an open challenge for the HEP-ML community.

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