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Thinking outside the ROCs: Designing Decorrelated Taggers (DDT) for jet substructure

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Summary

We explore the scale-dependence and correlations of jet substructure observables to improve upon existing techniques in the identification of highly Lorentz-boosted objects. Modified observables are designed to remove correlations from existing theoretically well-understood observables, providing practical advantages for experimental measurements and searches for new phenomena. We study such observables in W jet tagging and provide recommendations for observables based on considerations beyond signal and background efficiencies.

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