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Novel Jet Observables from Machine Learning

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Ref [1] presented a method to construct novel observables exclusively from information identified by the machine, by using a parametrization of the N -body phase space coordinates at the point of saturation of discrimination power. We have now studied how to extend this approach in an automated way to higher N -body phase space. We use boosted Z' vs QCD discrimination as a testing ground to present a machine learning framework that adversarially carries out the task of developing the optimal discriminant for the problem. Following on from a long string of results that have improved upon previous N -prong taggers, this technique has important implications for future development of optimal discrimination observables.

[1] K. Datta and A. Larkoski, *Novel Jet Observables from Machine Learning*, JHEP **03**, 086 (2018)

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