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Recursive Soft Drop

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We introduce a new jet substructure method based on a recursive iteration of the Soft Drop algorithm. The recursive soft drop algorithm introduces an additional parameter N to define the number of layers of soft drop declustering, providing an optimized grooming strategy for boosted objects with (N+1)-prong decays, as well as improved stability in high pileup conditions. We discuss the infinite N limit, where groomed jets have a null area, and investigate their properties. We show promising applications to jet mass resolution in boosted top and W bosons, and demonstrate how recursive soft drop grooming can substantially mitigate pileup effects when used in conjunction with existing pileup-removal methods.

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