

Conformal colliders meet the LHC

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Many New Physics searches and QCD precision measurements at particle colliders involve the study of jet substructure for final state hadrons. While traditionally the state of the art for studying jets at particle colliders have been event shape observables, recently it has been better understood that measuring correlation functions of energy flow operators inside a jet can be a very powerful tool for phenomenology, which naturally stems from first principles of quantum field theory.

In this talk we present a bridge between the huge theoretical progress made to understand the energy correlators from the field theory perspective and their practical implementation into the real world of hadron colliders. I will show a factorization formula we have derived using soft-collinear effective theory (SCET), that together with the fragmenting jet formalism, makes it possible to study such energy correlators inside a jet in the complicated LHC environment.

I will show results for the scaling behavior of the two point energy correlators at NLL and multipoint projected operators at NLL. In addition I will show a comparison of our results with the CMS open data.

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