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A fast evaluation method for higher point energy correlators and a new probe for medium properties

Energy correlators characterize the energy flow in scattering events produced at colliders. They have recently received a lot of interest both theoretically and experimentally, and a range of promising applications have been proposed, including the study of hadronization, as a potential probe for identifying the emergent scales in a Quark-Gluon Plasma as well as studying the deadcone effect. Higher-point correlators have been proposed as valuable tools for testing QCD, e.g. for studying its anomalous dimensions, and measuring the value of strong coupling by looking at the ratios of correlators. The standard approach for evaluating of higher-point correlators is computationally very intensive. In this talk, I will present a fast method, enabling a speed up in computation time by at least a few orders of magnitude, depending on the desired accuracy. I will discuss the underlying idea we utilize and highlight the different approximations along with their overall performance. Based on our fast method, I will introduce a new probe of the medium properties that uses energy correlations based on the formation time associated to radiation.

Category

Theory

Collaboration

Author: BUDHRAJA, Ankita (Nikhef)Co-author: Prof. WAALEWIJN, Wouter (Nikhef/University of Amsterdam)Presenter: BUDHRAJA, Ankita (Nikhef)

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