

(online) Why we need factorization for jet physics in Heavy Ion collisions.

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I argue that the jet transport parameter used in literature as a measure of jet quenching should be further factorized to manifestly separate out the universal physics of the Quark Gluon Plasma medium from the properties of the jet. Doing so will allow us to considerably expand the study of jets in Heavy Ion collisions to a precision computation of a vast array of distinct jet substructure observables currently available for pp and ep colliders. Factorization makes this possible by allowing us to recompute the jet function for different observables while reusing the definition of the medium structure function which can be proved to be universal irrespective of the medium size. Furthermore, factorization provides us with an operator definition for the universal medium physics which is especially important for a strongly coupled medium for efficient computation on the lattice/Quantum computer. Factorization will also help establish universality of functions between jet observables in heavy ion collisions and the upcoming Electron Ion collider.

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