

Abstract Submitted
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Connecting jet substructure to hadronization at the EIC MRIGANKA MOULI MONDAL, CFNS, Stony Brook University, MIGUEL ARRATIA, University Of California, Riverside, YANG-TING CHIEN, ABHAY DESHPANDE, ROLI ESHA, HENRY KLEST, CFNS, Stony Brook University, RAGHAV KUNNAWALKAM, WayneState University, SEAN PREINS, University Of California, Riverside, GEORGE STERMAN, Stony Brook University, JINLONG ZHANG, CFNS, Stony Brook University, CFNS-JET-DISCUSSIONS TEAM — EIC provides a unique laboratory for a precise study of both perturbative and non-perturbative QCD. Jets are multi-scale objects which inherently contain information related to time-evolution of QCD matter from short to long distances scales. Utilizing the Center-of-Mass Energy (CMS) variability in the EIC & the PID capabilities of the EIC detectors, one can study hadronization within jets in a wide kinematic regime by characterizing the x and Q^2 scales of the process. We propose a new class of jet substructure observables constructed with identified leading and first subleading particles within jets (for example, pion-pion). Comparing numbers of events where their electric charges are of the same sign (N_{CC}) or opposite sign ($N_{C\bar{C}}$), we define an asymmetry observable by $r = (N_{CC}N_{C\bar{C}})/(N_{CC} + N_{C\bar{C}})$ as functions of jet observables. These include the formation time extracted from the two leading particle kinematics, which gives information on the space-time evolution of jets. We will show how the multi-differential charged correlations for identified particle species are sensitive for various MC event generators at EIC to HERA center of mass energies.

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