

Abstract Submitted
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Clustering of Mini-jets in High-Energy Proton+Proton Collisions¹ NANXI YAO, University of California, Los Angeles, Department of Physics and Astronomy — The jets, narrow bundles of hadrons, manifest the properties of quarks and gluons in high-energy p+p and heavy-ion collisions. Observation of jets helps to investigate the quark gluon plasma (QGP) created in such collisions, and plays a significant role in understanding Quantum Chromodynamics (QCD). Although jets are usually distinguished with high-momentum hadrons, mini-jets and mini-dijets will clarify multiple parton interactions in the low transverse-momentum region. In this poster, an algorithm of finding mini-jets is presented, based on K-means clustering method [1]. We partition particles from p+p collisions at 200 GeV simulated by PYTHIA8.1 into clusters by minimizing a potential of the system, and determine the center of the clusters. To further evaluate the cluster-finding algorithm, we analyze differential correlations between cluster centers in the pseudorapidity and azimuthal angle space. This study will pave the road for future application in heavy-ion collisions. [1] C. Wong, L. Wen, G. Wang and H. Z. Huang: “On the Clustering Properties of Mini-Jet and Mini-Dijet in High-Energy pp Collisions”, 2018; [<http://arxiv.org/abs/1801.00759> arXiv:1801.00759].

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